

Visual Building User Manual



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Visual Building Ltd

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Table of contents

1	INTRODUCTION.....	14
1.1	GENERAL	14
1.2	DOCUMENTATION	15
1.3	64-BIT AND 32-BIT VERSIONS.....	15
1.4	INSTALLATION	16
1.5	LICENSING	17
1.6	UPDATE FUNCTIONS FOR PROGRAM AND CATALOGUE	20
1.7	VISUAL BUILDING VERSIONS	22
1.8	HOW TO GET STARTED	23
1.8.1	<i>Watch a few videos.....</i>	24
1.8.2	<i>Create your own project.....</i>	24
1.8.3	<i>Training Course.....</i>	24
1.8.4	<i>Browse the Forum.....</i>	24
1.8.5	<i>Specialisation.....</i>	25
2	USER INTERFACE	26
2.1	RIBBON BAR OR CLASSIC TOOL BAR	26
2.2	CLASSIC TOOLBAR	26
2.2.1	<i>Layout of the User Interface.....</i>	26
2.2.2	<i>Tooltips.....</i>	28
2.2.3	<i>Toolbars.....</i>	29
2.2.4	<i>Toolbar Lock.....</i>	29
2.2.5	<i>Default Toolbar.....</i>	29
2.2.6	<i>3D View Toolbar.....</i>	30
2.2.7	<i>Views Toolbar.....</i>	30
2.2.8	<i>Plug-In Toolbar.....</i>	32
2.2.9	<i>What Toolbar.....</i>	33
2.2.10	<i>What Toolbar – Components.....</i>	33
2.2.11	<i>What Toolbar – Stairs.....</i>	33
2.2.12	<i>What Toolbar – Roof.....</i>	34
2.2.13	<i>What Toolbar – 2D Graphic.....</i>	34
2.2.14	<i>What Toolbar – Terrain.....</i>	34
2.2.15	<i>What Toolbar – Diagnostics.....</i>	35
2.2.16	<i>What – 3D Converter.....</i>	35
2.2.17	<i>What Toolbar – Surface Editor.....</i>	35
2.2.18	<i>What – Plan Layout.....</i>	36
2.2.19	<i>What – Door and Window Construction.....</i>	36
2.2.20	<i>What – 3D Constructions.....</i>	36
2.2.21	<i>Plug-In Menubar.....</i>	37
2.2.22	<i>How Toolbar.....</i>	37
2.3	RIBBON BAR	37
2.3.1	<i>Application Toolbar.....</i>	38
2.3.2	<i>Quick Access Toolbar.....</i>	40
2.3.3	<i>File Tab.....</i>	41

2.3.4	<i>Building Tab</i>	42
2.3.5	<i>2D & Layout</i>	43
2.3.6	<i>3D Functions</i>	43
2.3.7	<i>Construction</i>	44
2.3.8	<i>Terrain</i>	45
2.3.9	<i>Edit</i>	46
2.3.10	<i>View</i>	47
2.3.11	<i>Help</i>	48
2.3.12	<i>Selection</i>	48
2.4	DOCUMENTS AND VIEWS	49
2.5	CATALOGUE AND PROJECT ADMINISTRATION	49
2.6	FEATURES OF DIALOGS	49
2.6.1	<i>Catalogue Selection in dialogs</i>	51
2.6.2	<i>Material Selection and Texture Coordinates</i>	51
2.6.3	<i>Properties and Representation of Building Materials</i>	53
2.6.4	<i>Calculations in Input Fields</i>	56
2.6.5	<i>Text Properties</i>	56
2.6.6	<i>Layer construction of Building Components</i>	57
2.6.7	<i>Selecting Colours, Defining your own Colours</i>	58
2.7	INPUT AIDS	58
2.7.1	<i>Insertion using 'Ctrl+ w', Changing Reference Points</i>	58
2.7.2	<i>Construction support</i>	59
2.7.3	<i>Example of the Use of Construction Aids</i>	59
2.7.4	<i>Example using Coordinates</i>	62
2.7.5	<i>Adjust, Insert and Delete Polygon-points</i>	63
2.7.6	<i>Angle grid</i>	64
2.7.7	<i>Move Selected Element, Move Selected Element with Reference Point</i>	65
2.8	EDITING TOOLS	66
2.8.1	<i>Delete and Select Wizards</i>	67
2.9	MULTIPLE COPIES OF OBJECTS	69
2.10	MOVING OBJECTS TO OTHER LAYERS	70
3	START WIZARD	71
3.1	THE BUILDING / PROJECT WIZARD	71
3.2	STEP 1: EDIT PROJECT DATA	72
3.3	STEP 2: BASIC SETTINGS AND SHAPE SELECTION	72
3.4	STEP 3: EDIT DIMENSIONS	73
3.5	STEP 4: CREATE FLOORS	74
3.6	STEP 5: ROOF	75
3.7	TRAINING VIDEOS	77
3.8	PROJECT SELECTION.....	77
4	FIRST STEPS	78
4.1	USING THE CLASSIC TOOLBAR USER INTERFACE	78
4.1.1	<i>Creating a project</i>	78
4.1.2	<i>Creating Views</i>	81

4.1.3	<i>Inserting Walls</i>	85
4.1.4	<i>Inserting Windows</i>	97
4.1.5	<i>Inserting Doors</i>	102
4.1.6	<i>Inserting Stairs</i>	104
4.1.7	<i>Copying a Floor</i>	108
4.1.8	<i>Inserting a Roof</i>	111
4.1.9	<i>Inserting Dormers</i>	117
4.2	USING THE RIBBON BAR USER INTERFACE.....	120
4.2.1	<i>Creating a project</i>	121
4.2.2	<i>Creating Views</i>	124
4.2.3	<i>Inserting Walls</i>	126
4.2.4	<i>Inserting Windows</i>	136
4.2.5	<i>Inserting Doors</i>	140
4.2.6	<i>Inserting Stairs</i>	143
4.2.7	<i>Copying a Floor</i>	147
4.2.8	<i>Inserting a Roof</i>	151
4.2.9	<i>Inserting Dormers</i>	157
5	PROJECT FILES	161
5.1	SAVING PROJECTS	161
5.2	DIRECTORY NAVIGATION PANEL.....	162
5.3	ADDITIONAL SAVE OPTIONS.....	164
5.4	ADMINISTRATOR PRIVILEGE	165
6	PROPERTIES OF VIEWS	166
6.1	ARRANGING VIEWS	166
6.2	TAB PAGES	166
6.3	SWITCHING VIEWS	166
6.4	VISIBILITY	167
6.5	SCALE	170
6.6	SETTING A 3D VIEW POINT	171
6.7	ZOOMING, SCROLLING AND ROTATING	172
6.7.1	<i>Zooming</i>	172
6.7.2	<i>Additional Functions in 3D Views</i>	173
6.7.3	<i>Scrolling</i>	173
6.7.4	<i>Rotating in 3D Views</i>	173
6.8	SNAP FUNCTION	173
6.9	2D VIEWS / CROSS-SECTIONS	173
6.9.1	<i>Creating Cross-Sections</i>	174
6.9.2	<i>Options for Cross-Section Symbols</i>	175
6.9.3	<i>Exterior Views with hidden lines</i>	176
6.9.4	<i>Removing Floor Lines in Elevation View</i>	178
6.9.5	<i>Saving Images from 2D Views</i>	179
6.10	2D GRAPHIC VIEWS AND PARALLEL PERSPECTIVES	179
6.11	COPYING AND EDITING MATERIALS AND TEXTURES	181
6.12	VIEW POINTS	181

6.13	SAVING VIEWS.....	182
6.14	3D FULL SCREEN MODE.....	182
6.15	PRESENTATION AND SKETCH VIEWS.....	183
7	3D VIEW SETTINGS.....	184
7.1	GENERAL.....	184
7.2	APPEARANCE.....	184
7.3	SNAP POINTS AND DIMENSIONS.....	186
7.4	SUN POSITION.....	186
7.5	RAYTRACER.....	188
7.5.1	<i>Raytracing Detail.....</i>	<i>189</i>
7.5.2	<i>Shadows, ambient occlusion and smooth shadows.....</i>	<i>190</i>
7.6	WALKTHROUGH.....	194
7.6.1	<i>Creating videos of walkthroughs.....</i>	<i>195</i>
7.7	VISIBLE CATEGORIES.....	195
7.8	VISIBLE LAYER.....	195
8	GENERAL SETTINGS.....	197
8.1	UNITS.....	197
8.2	THE GRID.....	198
8.3	SELECTION.....	198
8.4	THE SNAP FUNCTION.....	199
8.5	TOOLS.....	199
9	PROGRAM SETTINGS.....	201
9.1	FOLDERS.....	201
9.2	MESSAGES AND DIALOGS.....	201
9.3	UPDATE.....	202
10	THE CATALOGUE.....	204
10.1	THE CONTENTS.....	204
10.1.1	<i>Windows/Doors/Skylights/Walls.....</i>	<i>204</i>
10.1.2	<i>3D Objects.....</i>	<i>204</i>
10.1.3	<i>Textures.....</i>	<i>205</i>
10.1.4	<i>Materials.....</i>	<i>205</i>
10.1.5	<i>2D Symbols.....</i>	<i>207</i>
10.2	CREATING YOUR OWN DIRECTORIES, MODIFYING PREVIEW IMAGES.....	207
10.3	ADDITIONAL FUNCTIONS.....	207
10.3.1	<i>Snap Points for 3D Objects.....</i>	<i>207</i>
10.3.2	<i>Effect of Snap Points when Positioning 3D Objects.....</i>	<i>208</i>
10.3.3	<i>Additional Information and Properties for 3D Objects.....</i>	<i>208</i>
10.3.4	<i>Open File, Selecting Files Locally.....</i>	<i>214</i>
10.4	CREATING YOUR OWN BRICK TEXTURES.....	215
10.4.1	<i>Existing tile catalogues.....</i>	<i>215</i>
10.4.2	<i>Creating a new tile image.....</i>	<i>216</i>
11	MANUFACTURERS CATALOGUE.....	220

11.1	VIEWS IN THE MANUFACTURERS CATALOGUE	220
11.2	MANUFACTURERS' INFORMATION	220
11.3	MANUFACTURER AND PRODUCT SEARCH.....	222
11.4	PRESENTATION LINK	225
11.5	INFORMATION LINK.....	226
11.6	PRODUCT FOLDERS	226
12	MERCANTILE DIRECTORY.....	227
13	THE PROJECT VIEWER.....	228
13.1	GENERAL.....	228
13.2	PROJECT PROPERTIES	229
13.3	BUILDINGS.....	229
13.4	FLOORS / CREATING NEW FLOORS.....	229
13.4.1	<i>Lengthen, Rotate, Mirror, Copy Buildings</i>	231
13.5	APARTMENTS	234
13.6	LAYERS	235
13.6.1	<i>Levels of Layers</i>	235
13.6.2	<i>Floors/Rooms with Split Levels</i>	235
13.6.3	<i>Changing the Height or Level of Floors</i>	236
13.7	ROOMS.....	238
13.7.1	<i>Properties of Rooms</i>	239
13.7.2	<i>Labelling Rooms</i>	239
13.7.3	<i>Calculating Areas</i>	240
13.7.4	<i>The Floor, Material and structural Layers</i>	240
13.7.5	<i>Room Labelling</i>	241
13.7.6	<i>Input Text</i>	242
14	GENERAL FUNCTIONS.....	243
14.1	GUIDELINES	243
14.1.1	<i>2D Guidelines</i>	243
14.1.2	<i>3D Guidelines</i>	244
14.2	MEASUREMENT	248
14.2.1	<i>Measure Distance</i>	248
14.2.2	<i>Measure Distance between line and a point</i>	248
14.2.3	<i>Measure Polygon Length</i>	249
14.2.4	<i>Measure Angle</i>	249
14.3	DIMENSIONS	249
14.3.1	<i>General</i>	249
14.3.2	<i>2D and 3D Single Dimensions</i>	251
14.3.3	<i>2D and 3D Multiple Dimensions</i>	253
14.3.4	<i>Height Dimensions</i>	253
14.3.5	<i>Angle Dimensions</i>	253
14.4	TEXT	254
14.4.1	<i>Autotext</i>	254
14.5	ITEM TEXT.....	255

14.6	2D SYMBOLS.....	257
14.7	TITLE BLOCKS, AUTOTEXT IN 2D SYMBOLS	258
14.8	PRINTING 2D VIEW.....	259
14.9	GROUPS.....	260
14.10	DISPLAY LAYER PRIORITY	261
14.11	NORTH ARROW AND ORIGIN	261
14.12	TRANSFER PROPERTIES.....	261
14.12.1	<i>Selecting Properties</i>	262
14.12.2	<i>Selecting target Objects</i>	262
14.12.3	<i>Selecting Objects manually</i>	263
15	BUILDING COMPONENTS	264
15.1	WALLS.....	264
15.1.1	<i>Wall Types</i>	264
15.1.2	<i>Insertion Modes</i>	265
15.1.3	<i>Input Aids</i>	266
15.1.4	<i>Wall Properties</i>	267
15.1.5	<i>Layer construction / Multi-layer walls</i>	268
15.1.6	<i>Edit walls</i>	269
15.2	WALL STYLES FOR ESTATE AGENT USE.....	271
15.2.1	<i>Create External Wall for Floor plan</i>	273
15.2.2	<i>Create Internal Wall for Floor plan</i>	273
15.3	SUPPORTS	274
15.4	CEILINGS	274
15.4.1	<i>Automatic Ceilings</i>	275
15.4.2	<i>Deactivating Automatic Ceilings</i>	276
15.4.3	<i>Manual Ceilings</i>	277
15.4.4	<i>Properties of Ceilings</i>	277
15.5	WINDOWS AND DOORS.....	277
15.5.1	<i>Setting Direction of Opening on Insertion</i>	278
15.5.2	<i>Changing the Direction of Opening</i>	278
15.5.3	<i>Selecting or Changing Windows and Doors on Insertion</i>	279
15.5.4	<i>Selecting Windows and Doors from the Catalogue</i>	279
15.5.5	<i>Opening, Hinges</i>	280
15.5.6	<i>Representation in 2D Plan Views</i>	281
15.5.7	<i>2D Representation of Doors, Side Panels, Folding and Sliding Doors</i>	282
15.5.8	<i>Window Sills</i>	284
15.5.9	<i>Door Frames</i>	284
15.6	WINDOW CONSTRUCTIONS	285
15.6.1	<i>General</i>	285
15.6.2	<i>Catalogue of Window Constructions</i>	286
15.6.3	<i>Editing Window Constructions</i>	286
15.6.4	<i>Modifying Profiles</i>	292
15.6.5	<i>Bars for Window Constructions</i>	293
15.6.6	<i>Editing Bars</i>	294
15.6.7	<i>Drawing Bar Arrangements</i>	296

15.7	BAY WINDOW	298
15.8	OPENINGS	299
15.9	SLOTS	299
15.10	SKYLIGHTS	300
15.11	SOLAR ELEMENT.....	301
15.12	CHIMNEYS	303
15.13	BEAMS – LOWER/UPPER BEAMS	304
16	ROOF-CONSTRUCTION	305
16.1	ROOFS.....	305
16.1.1	<i>Inserting Roofs.....</i>	305
16.1.2	<i>The Roof Construction Dialog</i>	306
16.1.3	<i>Roof Construction</i>	319
16.2	DORMERS.....	324
16.2.1	<i>Shed Dormer.....</i>	324
16.2.2	<i>Flat Dormer</i>	327
16.2.3	<i>Hipped roof dormer</i>	327
16.2.4	<i>Triangular Dormer</i>	328
16.2.5	<i>Trapezoidal Dormer</i>	329
16.2.6	<i>Barrel roof dormer.....</i>	329
16.2.7	<i>Bat dormer</i>	330
16.3	2D REPRESENTATION OF ROOFS.....	331
16.3.1	<i>General.....</i>	332
16.3.2	<i>Architectural display options.....</i>	332
16.4	VISIBILITY OF ROOF DETAILS	333
17	ADVANCED ROOF FEATURES	334
17.1	MERGE ROOFS	334
17.2	ROOF EXTENSIONS.....	336
17.2.1	<i>Inserting a Roof Extension.....</i>	337
17.2.2	<i>Deleting a Roof extension</i>	339
17.2.3	<i>Multiple Extensions.....</i>	340
17.2.4	<i>Roof Cut-Outs</i>	340
17.3	CIRCULAR ROOF	342
17.4	HALL CONSTRUCTION.....	344
17.4.1	<i>Adjust Purlin settings</i>	345
17.5	ROOF LATHING.....	349
17.5.1	<i>Uniform roof lathing for entire roof.....</i>	350
17.5.2	<i>Roof lathing for single roof surface.....</i>	350
17.5.3	<i>Roof Lathing Dialog</i>	351
17.6	SHED PURLINS	352
17.6.1	<i>Shed purlins for entire roof.....</i>	352
17.6.2	<i>Shed purlins for single roof surface.....</i>	352
17.6.3	<i>Purlin Dialog.....</i>	352
17.7	ROOF BEAMS	353
17.7.1	<i>Insert element with 2 points.....</i>	353

17.7.2	<i>Insert element with 2 points in plane</i>	355
17.7.3	<i>Insert single rafter</i>	355
17.8	EDIT ROOF ELEMENTS	356
17.8.1	<i>Trim at plane</i>	356
17.8.2	<i>Trim at 2 planes</i>	356
18	STAIRS	357
18.1	INSERTING DIFFERENT TYPES OF STAIRS.....	357
18.2	GEOMETRY	358
18.3	TYPE OF CONSTRUCTION, SOLID- AND WOODEN STAIRCASES.....	361
18.4	HANDRAILS	362
18.5	STAIRWELLS	363
18.6	COMBINE LANDINGS	364
18.7	2D REPRESENTATION OF STAIRS.....	365
19	2D GRAPHICS	368
19.1	REPRESENTATION	368
19.1.1	<i>Outlines</i>	369
19.1.2	<i>Fill Properties</i>	370
19.2	INSERTING IMAGES	370
19.3	VISIBILITY OF 2D ELEMENTS	371
19.4	DISPLAY PRIORITY.....	371
19.5	EDITING 2D ELEMENTS	371
19.5.1	<i>Parallel Copy</i>	372
19.5.2	<i>Trimming Lines</i>	373
19.5.3	<i>Trimming a Line at an Intersection</i>	374
19.5.4	<i>Tools for Inputting Parallel Lines and Polygons</i>	375
19.5.5	<i>Scaling 2D-Elements</i>	375
19.5.6	<i>Scaling Images and 2D Elements numerically</i>	376
19.6	EXTENDED FILL PROPERTIES	377
19.6.1	<i>Section Hatch patterns</i>	379
19.6.2	<i>Roof Surface Fill Patterns</i>	379
19.6.3	<i>Wall Surface Fill Patterns</i>	379
19.6.4	<i>Floor Surface Fill Patterns</i>	380
19.6.5	<i>Terrain Fill Patterns</i>	381
19.6.6	<i>Wall Layer Fill Patterns</i>	382
19.6.7	<i>Floor Layer Fill Patterns</i>	382
19.6.8	<i>2D Object Fill Patterns</i>	383
19.7	CREATING FILL PATTERNS	385
20	TERRAIN	386
20.1	GENERAL.....	386
20.2	TERRAIN PROPERTIES.....	386
20.3	TERRAIN FORMS.....	388
20.4	TERRAIN ELEMENTS.....	389
20.5	TERRAIN CONTOURS	389

20.6	TERRAIN SHAPE.....	390
21	SURFACE EDITOR.....	391
21.1	DEFINING SURFACE AREAS.....	391
21.2	DEFINITION USING A RECTANGLE OR POLYGON.....	393
21.3	THE 'SURFACE ELEMENT' DIALOG.....	394
21.3.1	Surface Area using 3D View Textures.....	398
21.3.2	Surface Area 2D View using Fill Patterns.....	400
21.4	MISCELLANEOUS.....	400
22	WINDOW CONSTRUCTION.....	401
22.1	USER INTERFACE.....	401
22.1.1	Start the window construction.....	401
22.1.2	Creating a new construction - General properties.....	402
22.1.3	Profiles, dimensions of components.....	403
22.1.4	Set the design grid.....	404
22.2	FRAME.....	404
22.3	CASEMENTS.....	404
22.3.1	Casement properties.....	406
22.4	POST AND BAR.....	409
22.5	PARAMETERS.....	409
22.5.1	Grid parameters.....	410
22.5.2	Frame parameter.....	412
22.6	BARs.....	412
22.6.1	General.....	412
22.6.2	Bars edit / manage.....	413
22.6.3	Draw bar images.....	416
22.7	SAVING AND LOADING CONSTRUCTIONS.....	417
23	2D-DXF / DWG IMPORT.....	418
23.1	GENERAL.....	418
23.2	STARTING 2D DXF / DWG IMPORT.....	418
23.3	2D DXF / DWG IMPORT USER INTERFACE.....	419
23.4	INSERTING AN IMPORTED SYMBOL.....	420
23.5	PROPERTIES OF SYMBOLS.....	421
23.6	SCALING SYMBOLS IN THE PLAN.....	422
23.7	SAVING IMPORTED SYMBOLS.....	423
24	2D-DXF / DWG EXPORT.....	424
24.1	GENERAL.....	424
24.2	STARTING 2D DXF/DWG EXPORT.....	424
25	PLAN LAYOUT.....	426
25.1	GENERAL.....	426
25.2	PLAN VIEWS AND PLAN PARTS.....	427
25.3	CREATING A NEW PLAN VIEW.....	428

25.3.1	<i>Page Properties of a Plan View</i>	429
25.3.2	<i>Visible Categories of a Plan View</i>	429
25.4	ADDING A NEW PLAN PART TO THE PLAN	430
25.5	ADDING AN EXISTING VIEW AS A PLAN PART	431
25.6	DELETING AN ACTIVE PLAN PART.....	432
25.7	SCALE OF PLAN PARTS/ REMOVING SCALING	432
25.8	ENLARGING / REDUCING / REPOSITIONING PLAN PARTS.....	432
25.9	VISIBILITIES IN PLAN PARTS	432
25.10	EDITING PLAN VIEWS WITH OTHER FUNCTIONS.....	433
25.11	REFRESHING VIEWS AND PLAN PARTS.....	433
25.12	ZOOMING AND SCROLLING IN PLAN VIEWS AND PLAN PARTS.....	433
26	3D CONSTRUCTIONS.....	434
26.1	SOME EXAMPLES FOR THE USE OF 3D CONSTRUCTIONS	434
26.2	SAVING 3D CONSTRUCTIONS / CATALOGUE	438
26.2.1	<i>Visibility of 3D Constructions and Subtraction Solids</i>	439
26.2.2	<i>2D Representation of 3D Constructions</i>	440
26.2.3	<i>Materials of 3D Constructions</i>	440
26.2.4	<i>What to use - 3D Objects or 3D Constructions?</i>	441
26.3	PERFORMANCE, RESOLUTION, NUMBER OF SURFACES	443
26.4	2D CONTOURS AND PROFILES, THE BASIS FOR ROTATION, SWEEP AND EXTRUSION SOLIDS	444
26.4.1	<i>Saving Contours and Profiles</i>	444
26.4.2	<i>Inputting Contours, Creating Contours</i>	445
26.4.3	<i>Performance, Number of Segments in Contours and Profiles</i>	447
26.4.4	<i>Using Images as a Basis for Modelling</i>	447
26.5	PRIMITIVES	449
26.5.1	<i>Inputting Primitives</i>	450
26.6	EXTRUSION SOLIDS	451
26.7	ROTATION SOLIDS.....	452
26.7.1	<i>Inputting Rotation Solids</i>	454
26.8	SWEEP SOLIDS	455
26.8.1	<i>Inputting Sweep Solids</i>	455
26.8.2	<i>Polylines, Example for Baseboards</i>	457
26.8.3	<i>Polygon, Example for Ceiling Moulding</i>	460
26.8.4	<i>Contour / Path, Example for a Drainpipe</i>	462
26.9	SUBTRACTION SOLIDS	465
26.9.1	<i>Converting 3D Constructions to Subtraction Solids</i>	467
26.9.2	<i>Examples of the Use of Subtraction Solids</i>	468
26.9.3	<i>Example of a Subtraction Solid in the Terrain</i>	468
26.9.4	<i>Example of a Subtraction Solid in Roofs</i>	470
26.10	EDITING / BOOLEAN OPERATIONS.....	471
26.10.1	<i>Merge / Union</i>	472
26.10.2	<i>Separate</i>	474
26.10.3	<i>Intersection</i>	474
26.10.4	<i>Difference</i>	475
26.10.5	<i>Trimming at a Plane</i>	476

26.11	DIMENSIONS	479
26.12	TRANSFORMATION.....	480
27	3D CONVERTER.....	483
27.1	TOOLBAR.....	483
27.2	RIBBON BAR.....	484
27.3	THE 3D CONVERTER USER INTERFACE	484
27.3.1	<i>The File Selection Area</i>	<i>485</i>
27.3.2	<i>The Tree view of Sub-Objects, Materials and Light Sources</i>	<i>485</i>
27.3.3	<i>The Properties Area</i>	<i>486</i>
27.3.4	<i>The 3D Preview Window with Editing Functions.....</i>	<i>487</i>
27.3.5	<i>The 3D Preview Context Menu</i>	<i>488</i>
27.4	EDITING AND CONVERTING OBJECTS	488
27.4.1	<i>Saving Objects</i>	<i>488</i>
27.4.2	<i>Changing the Material of Sub-objects.....</i>	<i>489</i>
27.4.3	<i>Default Settings</i>	<i>490</i>
27.4.4	<i>Converting Complete Directories</i>	<i>491</i>
27.4.5	<i>Light Sources</i>	<i>493</i>
27.4.6	<i>Visibility of Surfaces.....</i>	<i>499</i>
27.4.7	<i>Recalculating a normal</i>	<i>501</i>
27.4.8	<i>Recalculating Texture Coordinates</i>	<i>503</i>
28	AREA CALCULATION	505
28.1	OVERVIEW.....	505
28.2	CALCULATING AREAS	506
28.3	USER INTERFACE	506
28.4	SETTINGS.....	507
28.5	REPRESENTATION	508
28.5.1	<i>Construction Elements in the 3D View</i>	<i>508</i>
28.5.2	<i>Room Data in the 3D View</i>	<i>508</i>
28.5.3	<i>Sub-areas in the 3D View</i>	<i>510</i>
28.5.4	<i>2D View.....</i>	<i>511</i>
28.6	EXPORTING ROOM DATA SHEETS.....	511
28.7	CALCULATING AREAS ACCORDING TO DIN 277.....	512
28.7.1	<i>Export.....</i>	<i>512</i>
28.8	DETERMINING LIVING SPACE ACCORDING TO THE LIVING SPACE CALCULATION	513
28.8.1	<i>Export.....</i>	<i>514</i>
28.9	SELECTING FILE NAME AND EXPORT FORMAT	514
29	QUANTITIES.....	516
29.1	GENERAL.....	516
29.2	IDENTIFYING THE ELEMENTS	517
29.3	ELEMENT PROPERTIES.....	518
29.4	OUTPUT OF RESULTS LIST	519
30	EXPORT MENU	520

30.1	OUTPUTTING REPORTS.....	520
30.2	EDITING LISTS, CREATING USER TEMPLATES.....	521
30.3	EXPORT 3D OBJECTS.....	522
31	SHORTCUT KEYS.....	525
32	SUPPORT.....	528
32.1	ONLINE SUPPORT.....	528
32.2	TUTORIAL VIDEOS.....	529
32.3	CATALOGUE EXTENSIONS.....	530
32.4	DIAGNOSTICS.....	530
32.4.1	<i>Start project diagnostic.....</i>	<i>530</i>
32.4.2	<i>Show log file.....</i>	<i>531</i>
32.4.3	<i>Test graphic hardware.....</i>	<i>532</i>
32.4.4	<i>Support Tool.....</i>	<i>532</i>
33	CONFIGURATION FILES.....	536
33.1	CACAD.EXE.CONFIG.....	536
33.1.1	<i>Render Timing.....</i>	<i>536</i>
33.1.2	<i>Error Log Report Level.....</i>	<i>537</i>
34	INDEX.....	538

1 INTRODUCTION

1.1 GENERAL

Visual Building is a very versatile software tool used by many different type of user, but each user having a common objective concerning the design and planning of buildings. This software is suitable to plan a single room, an apartment, an entire house, an office block or even the layout of an entire estate. You have the option of just working in 2D or using the automatically created 3D model.

The ability to position building components and objects using numerical reference points and guidelines, as well as with the aid of assistants or wizards, enables you to plan on multiple layers, many different types of building down to the smallest detail and precise measurement.

A comprehensive library of 3D objects from all areas of life makes a realistic presentation of your dream home or office possible. With Visual Building Professional and Premium additional objects, many of which are often offered by manufacturers on the internet – in various formats such as 3DS, 3D-DXF, can easily be imported.

By specifying the geographical location of your building, the program can simulate the lighting conditions in the building at various times of the day. Other light sources such as point lighting spot lighting and ambient lighting can also be defined. As a result you can obtain a view of the lighting conditions and help avoid the superfluous lighting. You can also examine the effects of shadows created by adjacent buildings and other objects such as trees.

You can decide the view you would like to edit, choosing between 2D plan, 3D and cross-section views. A special feature is that different views can be shown simultaneously. For example, during the creation of the floor plan in a 2D view, the result can also be viewed in the 3D view.

Various materials such as insulation, plaster, concrete and many others can be allocated to the structural layers used to define brick walls, ceilings and floors. The building materials used in a project, including quantities, can be exported as PDF lists.

Once you have completed planning, you can then place furniture objects, and add or edit the 2D graphics for these objects. Finally, you can export the entire project in one of several standard formats, to send to an architect or friends - or simply print it out, either to a printer or to a pdf writer if installed.

Virtual project planning, visualisation and costing based on manufacturer's catalogues, (where available, using real products and not abstract product objects, materials and components), enables you to realistically plan and furnish a building. Furthermore, the manufacturer can

reach the consumer directly through the software, with no additional marketing costs, as each object can contain manufacturer's data including web links.

In this respect, information concerning manufacturers is not limited to the building industry, but applies to any product whose use is meaningful in a spatial context. This information helps the user in assessing advice, in deciding what to purchase, to evaluate offers and in further dealings with the suppliers of a product. We are therefore not only interested in professional planning, but in a combination of planning and product presentation.

Visual Building's low introductory cost means that it is also an ideal candidate for use as a first introduction into the world of CAD and is therefore ideally suitable for use within education. The upgrade path allows the user to gradually add features, and not lose any financial or learning curve investment.

1.2 DOCUMENTATION

This documentation covers the following products:

Visual Building Basic
Visual Building Professional
Visual Building Premium

This is a generic document for all Visual Building versions and covers all possible features in all versions. Each feature is clearly identified as to what version it is or is not part of. With this information the user can easily see what powerful features are available in all versions.

The Quantities feature and the Advanced Roof features including the ability to merge roofs were added with Visual Building v4 release. The Start Wizard was also upgraded significantly with Visual Building v4 release.

With Visual Building v4.0.1.26 the optional but vastly preferable Ribbon bar was introduced. The Ribbon bar provides a more intuitive user interface than the original toolbar. The original toolbar is maintained to allow established users to continue to use what they know best. Irrespective of which UI you choose, the actual functions behind the UI controls remain identical.

1.3 64-BIT AND 32-BIT VERSIONS

With the introduction of Visual Building v5, Visual Building is also available as a 64 bit version. Previous versions prior to Visual Building v5 would always run as a 32 bit application, even on a 64 bit machine (like so many software applications). As a 32 bit application, Visual Building was limited to using only 3 GB memory, irrespective of the amount available. As a 64 bit

application, Visual Building now has access to all available memory when running in a 64 bit environment. This results in faster and larger projects.

1.4 INSTALLATION

The procedure for installing Visual Building is identical for all versions. The download version and the DVD distributed version are also identical. To install Visual Building, run the Visual Building installation .exe file. You will then be asked for the language to be used during the installation (English, German or French). Select the language and click OK.



The next dialog confirms the version that you are installing.



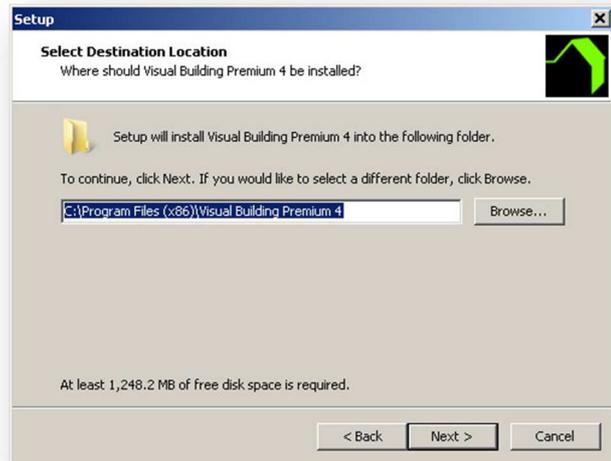
Click on Next to continue or Cancel to abort the installation.

The next dialog then gives you the opportunity to read the Software License Agreement. You must accept the agreement to continue with the installation.

Click on Next to continue or Cancel to abort the installation.



The Next button activates the following dialog:



Follow the on screen instruction to install the Visual Building software.

As the install proceeds you will see items being installed in languages other than English. Do not be concerned as a single install contains many different languages which you can switch between. The User Interface and all contents displayed will be in the language that you selected.

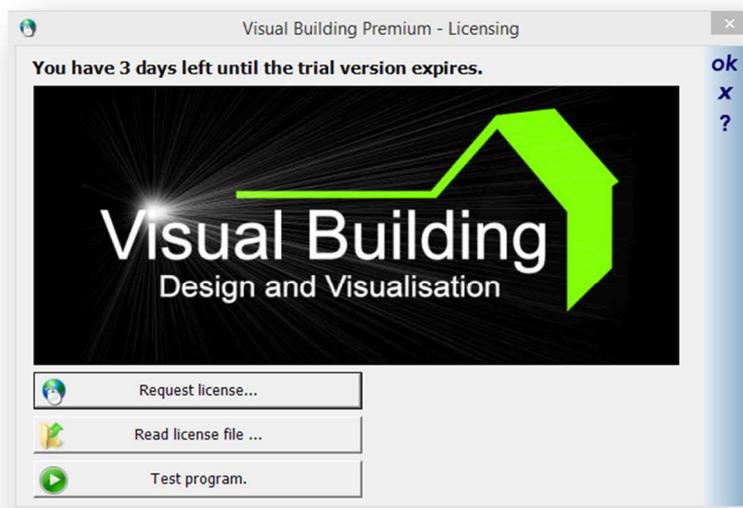
1.5 LICENSING

Currently the following products are exempt from this specific license mechanism:

Visual Building Basic

Visual Building Professional and Premium versions must be licensed for the system on which they are installed. When the program is started you can recognize this by the appearance of the following Licensing dialog box, which also shows the remaining trial period. After installation, the software is only executable for 7 days (not necessarily 7 consecutive days) and has to be activated within this period. To do this, simply obtain a license key using the options in the start dialog. To obtain a license key for a particular program package click on 'Buy license' or alternatively 'Request license'.

The license file with the suffix .key supplied on activation can then be read by clicking on 'Read license file'. If you have already purchased a license, you can still use this mechanism to obtain your license key. Don't worry, you will not be charged again, if you have already purchased a license.



To obtain a license click on the **Request license** button, and a dialog will display:

Not yet Purchased a License

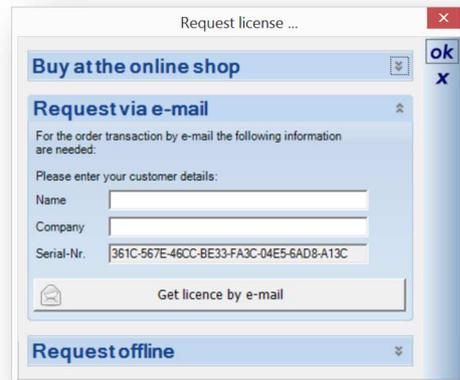
If you have not yet purchased a license, then click on the **Buy license now at the online shop**. This will take you to Visual Building online store, where you may purchase the license you require. On receipt of your order Visual Building Ltd will contact you to request your serial number.

Already Purchased a License

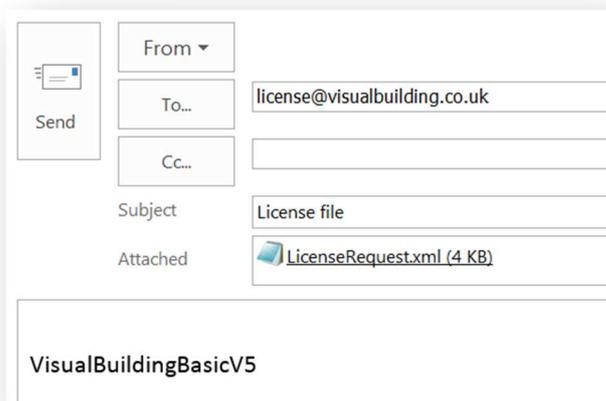
If you have already purchased a license, you need to request the license key by clicking on the **Request via e-mail**



This will activate a dialog which displays your unique serial number. Enter your Name and Company (if applicable) and click in the Get license by e-mail button.



If you have a Mapi compliant email program such as Outlook this will automatically create an email with the license request attachment, which you can send to license@visualbuilding.co.uk



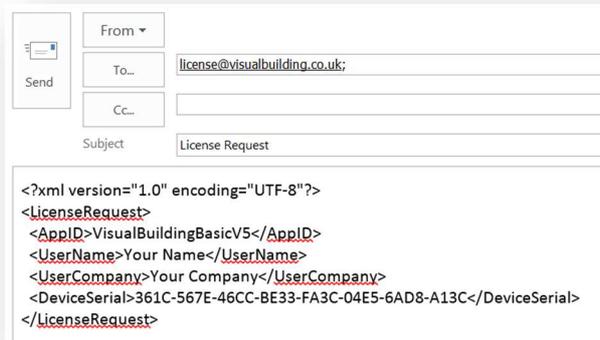
If you do not have a Mapi compliant email program and the automatic email creation does not work, or you have no email facility on the computer, then click on **Request offline**. This will activate a dialog which displays your unique serial number. Enter your Name and Company (if applicable)

Click on **Copy information to clipboard**



You can then paste the required information, which includes your serial number into your email program and send it to license@visualbuilding.co.uk

You can transfer this information to another computer that does have email capability.



On receipt of your serial number, we will issue your license key, normally within 24 hours on a working day, but please take into account time zone differences, weekends and public holidays, which may delay the response.

The license key response will contain exact instruction how to apply your license key

There is also a very detailed step by step set of instructions on how to license Visual Building Professional and Premium on our web site.

1.6 UPDATE FUNCTIONS FOR PROGRAM AND CATALOGUE

All program versions include a feature which helps you find information about updates, and new program and catalogue extensions.

Using the Classic toolbar this can be activated via the Plugin Menu, clicking on the Updates & Extensions tool.

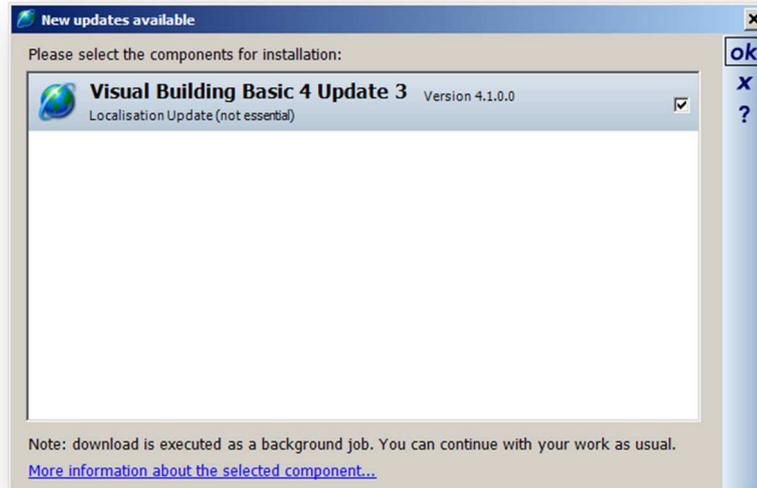
The same options are also available via the **Ribbon bar – Help tab – Updates & Upgrades group.**

The options can differ according to program version. If there is an internet connection active, the software checks the update status each time the program is started. It checks for newer program versions; however this does not apply to catalogue and program extensions. These must be searched for manually using the options under 'Updates & Extensions'.

If a new version is available, details of the new version are shown in a dialog box at every program start. You can then decide whether a download should be performed or not. If not, uncheck the box next to the version. According to update further information is provided in the form of a tooltip, which appears when the mouse is positioned over an entry.

Updates are always downloaded in the background to avoid effects on normal processing. Only the load on network or internet connections is increased. The downloaded files are stored in the user folder for the application:

e.g. C:\Users\Username\Documents\VERSIONNAME\Update.



You can check the status of the download at any time under 'Updates & Extensions'. The download will be resumed later even if you terminate the program or switch off your computer.

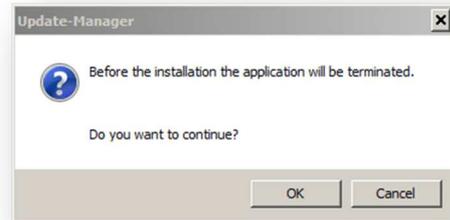
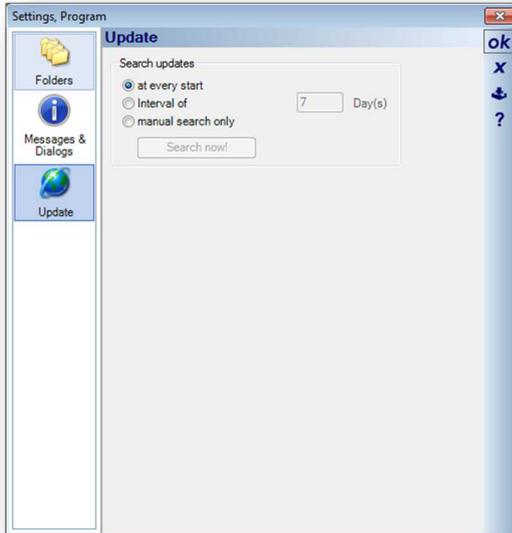
Once the download has been completed, the next time the program is started you will be requested to install the update. If you accept the update, you will be request to close the program to allow the update to proceed.

You will then be given the option to verify the downloaded update file is complete, but this step is not essential and may take a few minutes.

There may be an added delay, while your anti-virus program verifies the update. If you have problems downloading and installing the update, try temporarily switching your anti-virus program off.

The installation is performed via a standard Setup program, which you must complete as usual. The update file in the user folder can be deleted after a successful installation.

The options for the update function can be changed **Application Menu - Settings – Program – Update:**



You can disable this automatic process by selecting **Manual search only**.

1.7 VISUAL BUILDING VERSIONS

This document is generic for all versions. Where a feature is not available in a specific version we will document this with a **Version Note**:

The following is an abbreviated list of features, and a complete detailed product comparison for the different Visual Building versions is available at www.visualbuilding.co.uk

Visual Building Basic

- Project Wizard
- Editable Window / Door sizes
- Roof editor
- Stair editor
- Multilayer walls
- Wall editor
- Dimension and measurement tools
- Terrain editor
- Surface editor (tiled areas)
- Import bitmap (trace plans)
- Multiple 2D / 3D views
- World positioning for shadow calculations
- Ray tracing

- Walkthrough panel
- Create new 2D symbols
- Timber list report
- 2D Section views
- Isometric 2D projection view
- Enhanced 2D graphic edit tools
- Export .3ds, .cob
- Export to Google Sketchup (via .3ds)
- Item list report

Visual Building Professional

All the features of **Visual Building Basic +**:

- Import DXF/DWG*
- Create new 3D objects*
- Edit existing 3D object's materials
- Create light source objects (lamps)
- Import 3D objects (.3ds)
- 3D Section views
- Presentation Layout*
- Area / Volume reports

Visual Building Premium

All the features of Visual Building Professional +:

- Create new Window / Door designs*
- Export DXF/DWG*

*This feature was originally supplied as a plug-in, but is now supplied as standard features in specific products.

Visual Building Ltd offers upgrade options no matter what version you are using. Upgrade options are available on our website www.visualbuilding.co.uk

Or email customercare@visualbuilding.co.uk with your upgrade needs.

1.8 HOW TO GET STARTED

Irrespective of which version of Visual Building you choose to use, the basic core product and user interface are the same, and so getting started is also the same. We strongly recommend that you use the **Ribbon Bar** user Interface as it is more intuitive and operates in a fashion that may also be familiar to you within Microsoft Office products.

This manual is the Visual Building User manual and its best used as a reference manual explaining each function in detail. Certainly browse through this manual to be familiar with its contents, but we do not recommend reading it in full, because it will take a long time and reading such a manual without being familiar with the software will lead to confusion and boredom.

Your first step should be to watch a few of the video tutorials that we have created especially for the novice user. You can locate and watch these online at:

www.visualbuilding.co.uk/videos

1.8.1 Watch a few videos

You should watch **Tutorial 1 – Introduction** and then **Tutorial 2 – New Project** to allow you to become familiar with the user interface and software. These videos are deliberately short in order to keep your attention. The advantage of the tutorial video is that you can replay it, even stop and watch it frame by frame. If you have any question about any video, then please ask on the Visual Building forum.

1.8.2 Create your own project

Following the example in the video **Tutorial 2 – New Project**, create your own project

1.8.3 Training Course

Download and work through the FREE online training course. This is located at:

www.visualbuilding.co.uk/trainingcourse

The **Visual Building Training Course** will introduce you to the features described in this manual using step by step examples.

1.8.4 Browse the Forum

You should also browse through the Visual Building user forum located at:

www.visualbuilding.co.uk/forum

Currently there are over 6000+ users who may have already asked a question, which we will have promptly answered. Note the forum is divided by product version, but if you are using the

Premium version, then it's likely that question in the Basic or Professional versions are also applicable.

1.8.5 Specialisation

Once you have become familiar with the basics, you will be able identify the features you require to use specifically for your project. For example an Estate Agent will be more interested in the 2D plan aspects rather than the 3D visualisation, and an interior designer will be more interested in the 3D visualisation tools than the 2D drawing tools.

The software has features for every kind of use in the design and production of both 2D and 3D drawings and it's unlikely that any one project will require the use of every single feature.

2 USER INTERFACE

2.1 RIBBON BAR OR CLASSIC TOOL BAR

Visual Building supports two kinds of user interface, the **Classic toolbar** and the more modern **Ribbon bar**.

If you are an existing user of Visual Building, you may want to continue to use the **Classic toolbar**. If however you are a new user of Visual Building you will find the new **Ribbon bar** easier to navigate and locate the various tools. We recommend that you use the **Ribbon bar** interface; however your choice of interface is completely optional.

Many of our screen shots show the classic tool bar, but as we update our documentation, online videos and training courses we will use the **Ribbon bar**.

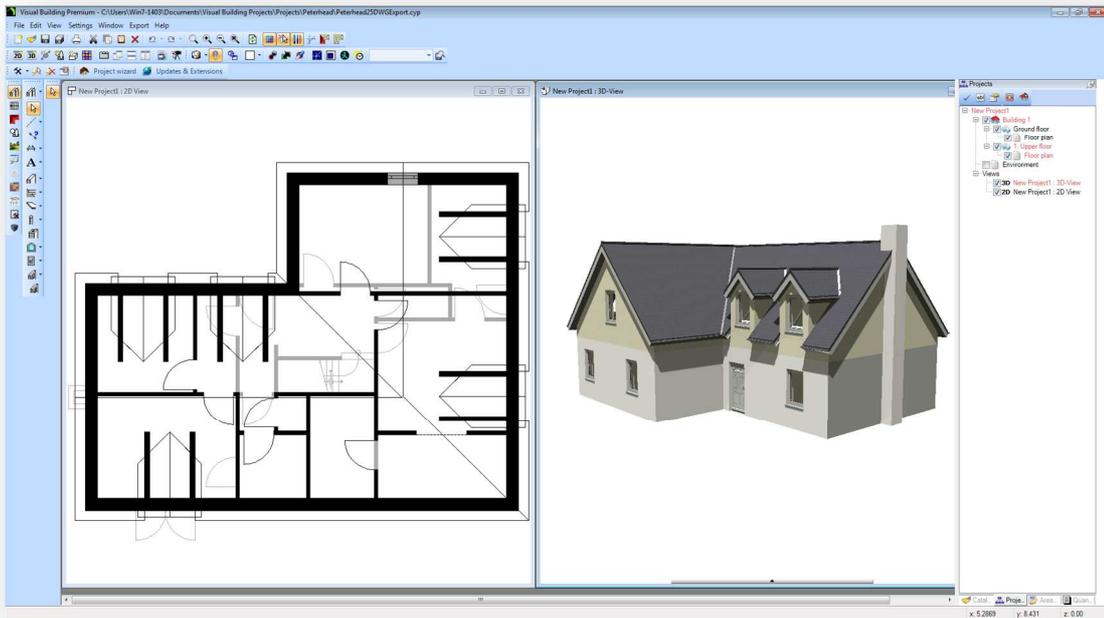
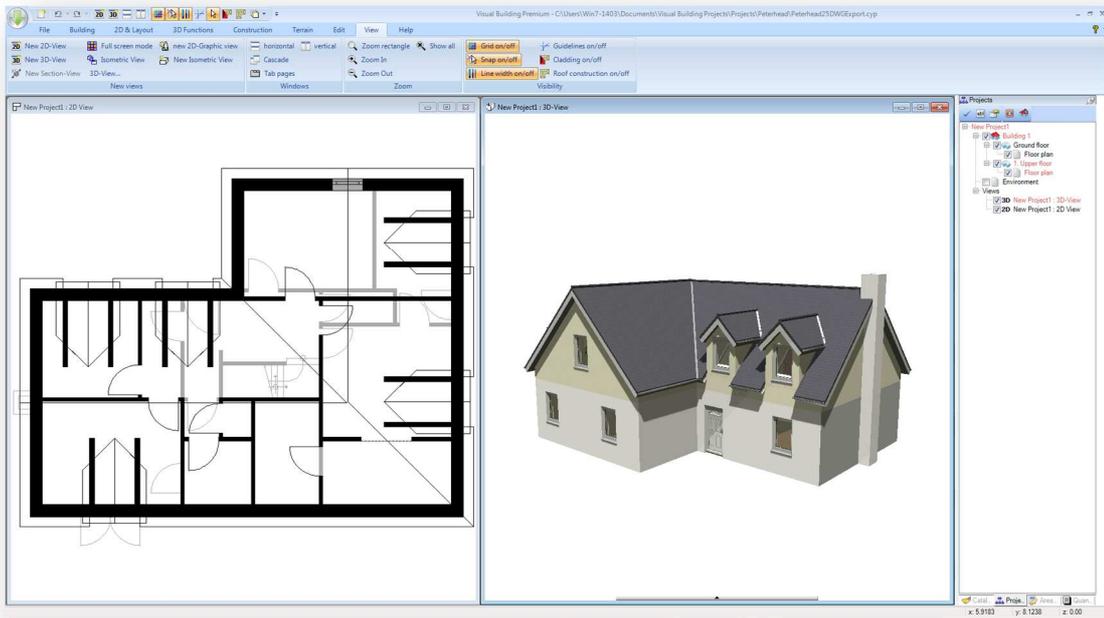
The dialogs activated via the tools in the user interface are the same irrespective of which user interface you are using.

2.2 CLASSIC TOOLBAR

If you prefer to use the new ribbon bar (recommended) then we suggest you skip this section and start reading the **Ribbon bar** chapter. **We strongly recommend that you use the new Ribbon bar.**

2.2.1 Layout of the User Interface

The user interface conforms to the operating system settings for the display of windows and buttons. The appearance of the user interface can therefore vary depending on the operating system being used.



Visual Building Premium's Classic toolbar user interface

The user interface will appear different depending upon the Windows version and style that you have installed. Microsoft Windows allows the user to change the style and presentation of the software. We are using standard default settings for each version of Windows.

The software has several toolbars which provides the user with access to the various program functions and features. After the initial installation, the toolbars and their functions are, from top to bottom and from left to right, as follows:

- Standard Toolbar:** Open and Close projects
Save
Print
Copy, Cut, Paste, Delete
Redo / Undo
Zoom (Rectangle, Zoom in, Zoom out, Show all)
Refresh

- View Toolbar:** Create 2D plan views
Create 3D views
Create 2D sectional views
Arrange views

- 3D View Toolbar:** Select representation mode (Textured, Wireframe, Wireframe with hidden line removal)
Parallel view
Background mode (monochrome, colour gradient, background image)
Ray tracing
Save image
Select and Create view points

- Plug-in Toolbar:** Select functions
2D Graphics
Construction elements (walls, supports, chimneys, doors, openings, roofs, dormers, skylights)

- General Functions:** Guidelines
Dimensions
Measuring functions
Text

Note that it is possible to change the position of a toolbar or even hide a toolbar, which is another reason your screen may look different to any example image. The Toolbar lock, described later does prevent you from accidentally moving your toolbars from their initial position.

2.2.2 Tooltips

Tooltip information appears when the mouse cursor hovers for more than 2 seconds over an element that has further information available. After a further 5 seconds the information will

disappear. Depending on the object or element, the tooltip information provides information about the product of a particular manufacturer, or displays additional data about the building and the layer in which the element is located. The tooltip information can also be used to identify certain elements.

2.2.3 Toolbars

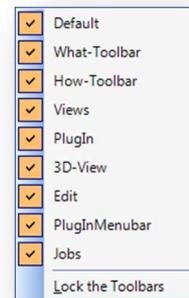
The toolbars are the main means of selecting what you want to do. Each Visual Building version has an increasing number of tools supporting the additional features.

The toolbars can be dragged to any edge of the screen and can also float over the work area, but after installation all the tools except for the **What** toolbar and **How** toolbar live at the top edge just under the menu bar. The **What** and **How** tool bars live on the left edge.

Most of the toolbars are static, i.e. they do not change, other than tools switching on/off, but the **What** and **How** tool bars do change depending upon what tool you are currently using.

2.2.4 Toolbar Lock

You can lock the toolbars into position by right clicking on the top tool bar area and from the pop up context menu select the Lock the Toolbars option. You can also hide any of the toolbars from this panel.



2.2.5 Default Toolbar



This toolbar contains the tools for **New, Open and Save** projects files.

Then there is the Print tool.

See: **Chapter 14.8 Printing 2D View** for details on the print tool.

You can also **Cut, Copy, Paste and Delete** objects using the tools in this toolbar.

Undo

The Undo list contains a list of the last 10 actions, which you can undo by clicking on the menu entry. Simply clicking on the undo tool without opening the undo list will undo the last action. Note that some actions cannot be undone.

Redo

The Redo list contains a list of the actions that you applied the undo tool to. Simply clicking on the Redo tool without opening the redo list will redo the last action that you undid.

The tools found in the **Zoom** group will allow you to zoom in or out any 2D or 3D view.

See: **Chapter 6.7 Zooming, Scrolling and Rotating** for details on the zoom controls.

The next group of tools enable you to toggle the Grid, Snap, Line Width and Guide lines.

The last but one tool how/hide the roof cladding.

Visual Building Professional and Premium have an additional tool allowing you to show/hide the roof construction. These are the last two tools on the right hand end of the toolbar.

2.2.6 3D View Toolbar



The 3D View toolbar contains tools that relate to the 3D View:

Display Mode, Light Sources, Isometric view, Background, Material transfer, Texture transfer, Save view, Edit Material, Raytrace, Raytrace details, Walkthrough, Shadow simulation and View point creation.



2.2.7 Views Toolbar

The Views toolbar enables you to Create new 2D view, Create new 3d views, Create new section / elevation views, Create a new 2D graphic view, Create a new isometric view, Switch a view to full screen mode, Create tabbed pages views, Cascade all view, Arrange all views horizontally, Arrange al views vertically, Save a view as a file and Save a 3D viewpoint.

See: **Chapter 5** Edit Toolbar

The Edit toolbar has 4 sub toolbars:



Edit

This tool contains an additional selection of tools- **Selection Wizard, Deletion Wizard, View Deletion Wizard.**

See: **Chapter 2.8.1 Delete and Select Wizards** for details concerning the Selection and Deletion wizards.

Edit Wall

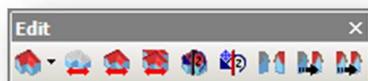
This toolbar contains tools to enable you to: **Extend wall, Trim wall, Change wall direction,**



Split wall and Edit fixed intersection.

See: **Chapter 15.1.6 Edit walls** for a detailed description of the wall editing tools.

Edit Building



The Edit Building toolbar will allow you to edit an entire building, or part of a building.

See: **Chapter 13.4.1 Lengthen, Rotate, Mirror, Copy Buildings** for a detailed description of the building editing tools.

Edit 2D Graphics

These tools allow you to edit lines created with the 2D editing tools. You can Copy lines, Trim



lines and Create a 2D contour from selected lines.

See: **Chapter 19.5 Editing 2D Elements** for more details for the 2D line editing tools.

Edit 3D Constructions

The Edit 3D Construction toolbar is only available in the Visual Building Premium version. These tools will allow you to edit objects created with the 3D Construction tool. You can Merge

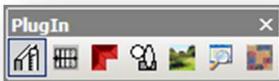


selected objects and perform other Boolean operations between two selected objects to create a new object.

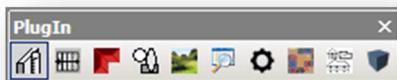
See: **Chapter 26.10 Editing / Boolean Operations** for more detail.

2.2.8 Plug-In Toolbar

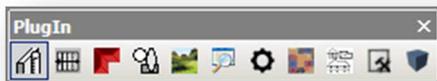
Plugin toolbar for Visual Building Basic



Plugin toolbar for Visual Building Professional



Plugin toolbar for Visual Building Premium

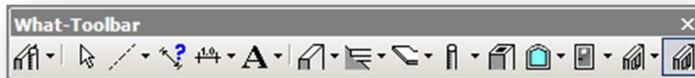


The Plug-In toolbar display the tools available for each version. The current selected Plug-In also appears in the first position of the What-Tool to further confirm the current selected Plug-In

The tools from left to right are: Stair Construction, Roof Construction, 2D Graphic editor, Terrain editor, Diagnostics, 3D Converter (Professional and Premium only), Surface Editor, Plan layout (Professional and Premium only), Door and Window Construction (Premium only) and 3D Constructions (Professional and Premium only).

2.2.9 What Toolbar

The contents of the **What** toolbar varies for each of the tools selected in the Plugin toolbar. Each **What** toolbar has its own **How** Toolbar. You will notice that the first 6 tools (Select, Guidelines, Measure, Dimensions, Text) appear in all What toolbars.



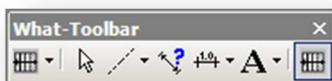
2.2.10 What Toolbar – Components

With the Component tool selected in the Plugin toolbar the What toolbar displays the following tools:

Select, Guidelines, Measure, Dimensions, Text, **Walls, Beams, Ceiling, Supports, Chimney, Window, Door, Cutout** and **Slot**.

2.2.11 What Toolbar – Stairs

With the Stairs tool selected in the Plugin toolbar, the What toolbar displays the following tools:



Select, Guidelines, Measure, Dimensions, Text, and **Stairs**

See: **Chapter 18 Stairs** for a description of the stairs tool.

2.2.12 What Toolbar – Roof

With the Roof tool selected in the Plugin toolbar, the What toolbar displays the following tools:



Select, Guidelines, Measure, Dimensions, Text, **Roof, Dormer, Skylights, Solar Elements,** and **Edit Roof Elements**

The last tool **Edit Roof Elements** only appears in the Visual Building Premium version.

2.2.13 What Toolbar – 2D Graphic

With the 2D Graphic tool selected in the Plugin toolbar, the What toolbar displays the following tools:

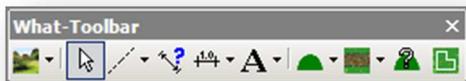


Select, Guidelines, Measure, Dimensions, Text, **Point, Line, Circle, Rectangle, Ellipse, Arch, Polygon** and **Insert bitmap.**

See: **Chapter 19 2D Graphics** for more details for the 2D Graphic tools.

2.2.14 What Toolbar – Terrain

With the Terrain tool selected in the Plugin toolbar, the What toolbar displays the following tools:

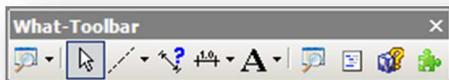


Select, Guidelines, Measure, Dimensions, Text, **Terrain form, Terrain elements, Terrain contours,** and **Plot areas**

See: **Chapter 20 Terrain** for more details on the terrain tools..

2.2.15 What Toolbar – Diagnostics

With the Diagnostics tool selected in the Plugin toolbar, the What toolbar displays the following tools:



Select, Guidelines, Measure, Dimensions, Text, **Project diagnostics, Log File, Test Graphic hardware, Support dialog.**

See: **Chapter 32.4 Diagnostics** for more details on the Diagnostic tools.

2.2.16 What – 3D Converter

The 3D Converter tools are available only within the Visual Building Professional and Premium versions. With the 3D Converter tool selected in the Plugin toolbar, the What toolbar displays the following tools:

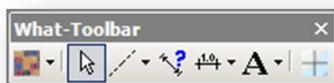


Select, Guidelines, Measure, Dimensions, Text, **Browse, and 2D Representation.**

Selecting the Browse tool will open the 3D Converter tool to enable you to load a 3D object for converting.

See: **Chapter 27 3D Converter** for more details on the 3D Converter tools.

2.2.17 What Toolbar – Surface Editor



With the Surface Editor tool selected in the Plugin toolbar, the What toolbar displays the following tools:

Select, Guidelines, Measure, Dimensions, Text and **Surface Editor**.

See: **Chapter 21 Surface Editor** for more details on the Surface Editor tool.

2.2.18 What – Plan Layout



The Plan layout tool is available only within Visual Building Professional and Premium. With the Plan layout tool selected in the Plugin toolbar, the What toolbar displays the following tools:

Select, Guidelines, Measure, Dimensions, Text, **New Plan view**, **Insert 2D plan part**, **Insert existing view**, and **Delete current part**.

See: **Chapter 25 Plan Layout** for more details on the Plan layout tool.

2.2.19 What – Door and Window Construction



The Door and Window construction tool is only available in the Visual Building Premium version. With the Door and Window construction tool selected in the Plugin toolbar, the What toolbar displays the following tools:

Select, Guidelines, Measure, Dimensions, Text, **New construction**, **Open construction**, **Save construction**, **Casements**, **Posts**, **Parameters**, and **Edit bars**.

See: **Chapter 22 Window construction** for more details on the Door and Window construction tool.

2.2.20 What – 3D Constructions



The 3D Construction tool is only available in the Visual Building Professional and Premium versions. With the 3D Construction tool selected in the Plugin toolbar, the What toolbar displays the following tools:

Select, Guidelines, Measure, Dimensions, Text, **Primitives**, **Extrude solids**, **Rotation solids**, **Sweep solids** and **Subtraction solids**.

See: **Chapter 26 3D Constructions** for more details on the Door and 3D Construction tool.

2.2.21 Plug-In Menubar



The Plugin Menu bar consists of the following tools:

Project Wizard and Updates and Extensions.

Details of the Project Wizard can be found in **Chapter 3 Project Wizard**.

2.2.22 How Toolbar

Each **What** Toolbar tool has its own **How** Toolbar.

2.3 RIBBON BAR

The latest versions of Visual Building now incorporates a ribbon style user interface. This style of user interface will be more familiar to users of Microsoft Office products and other newer .Net products.

The ribbon is a set of toolbars that is divided into 9 tabs, each defined by its functionality. This now eliminates the need to show all tool bars, and now only displays the tools specific to the current function.

Each tab contains one or more groups of tools, where each group contains related tools. The actual icon used for each tool will be familiar to user of Visual Building's classic user interface. This enables the user to quickly locate the correct tool without the need to search through and recognise many different tool icons.

You can also quickly scroll through all ribbon tabs using the mouse wheel, allowing you to quickly switch tabs.

The **Quick Access Toolbar** can be placed either above or below the Ribbon bar, where it looks and operates like a standard toolbar. The **Quick Access Toolbar** contains your most used tools, improving your efficiency.

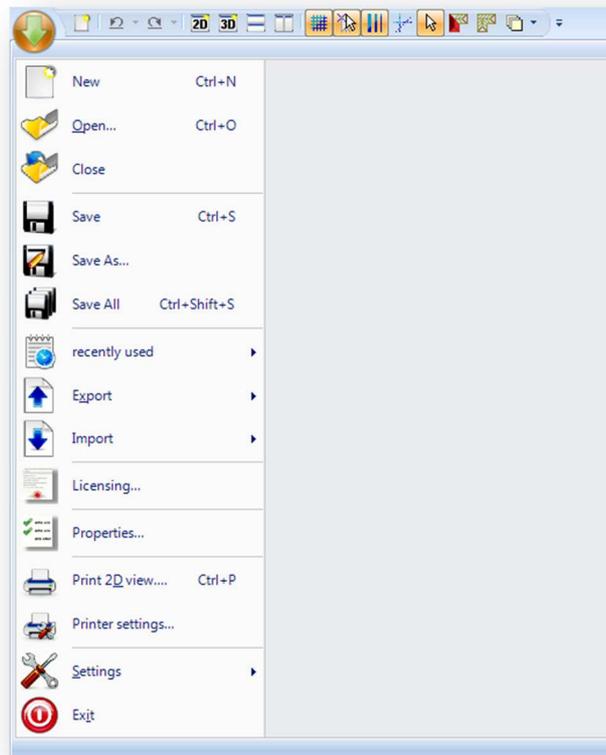
The **Application Toolbar** drops down to display a list of a several functions, allowing you to perform save and save as functions without disturbing your current ribbon layout.

Established users of Visual Building will be pleased to note that the new Ribbon bar uses the same tool icons as previously used in the Toolbar user interface. Previously, with the Toolbar user interface, selecting a tool, required the user to select a further action in the **What** toolbar, in addition to yet another option in the **How** toolbar. With the Ribbon bar all the tools and subsequent options are located together in a single location, thus improving usability, especially for new users.

Please note that the following images are from Windows 8, and the appearance that you see on your computer may vary depending upon the Windows version any personal settings within Windows that you may have made.

2.3.1 Application Toolbar

The Application Toolbar contains a drop down menu that contains the file open / save tools. These are the same tool functions as found in the ribbon bar **File** tab – general group.



New, Open, Close, Save, Save As, Save All

These tools are duplicates of the file open and save tools found in the Ribbon bar's **File** tab. Note the alternative short cut keys which you can employ to speed up your work flow.

Recently used

The Application toolbar also displays a list of the most recent used projects. Clicking on any entry in this list will then load that project.

Export

The Export tool menu entry opens a sub menu, allowing you to export Reports, 3D Formats, 2D formats and a Batch Format. The availability of these export tools varies with the Visual Building version that you have.

If the tool is not enabled then it's not available in your version. It's also possible that a tool is also not enabled because other requirements have not been met. For example to export a 3D Object you must have a 3D view open, and which must also be the current view, which contains a 3D object to be exported.

Import

Depending on the Visual Building version, you will have the Arcon XML Import tool and the 2D DXF-DWG import tool.

Licensing

This contains a list of modules that your version is licensed to use. To add additional modules, you should upgrade to either Visual Building Professional or Visual Building Premium.

Properties

The Properties tool will allow you to active the Project Properties dialog where you can define specific details concerning the current project.

Print 2D view

This will initiate the printer function using the properties defined in the Printer settings.

Printer Settings

This will allow you to select your printing device. This device can be either a physical printer attached to your computer, or to your network. You may also print to a PDF file, but you will need to install the PDF driver first.

Settings

The Settings menu contains several sub menus

Settings – General

This tool will display the **General Settings** dialog where you can define properties for your project such as units of measurement, grid size, selection options, and snap options.

See: General Settings for a detailed explanation.

Settings – Program

This tool will display the Program – settings dialog, where you can define and add the path names for the object, texture and material catalogues.

See: Program Settings for a detailed explanation.

Settings – 3D View

The 3D View Setting tool activates the 3D View Settings dialog, where you can adjust the appearance of the 3D view, including Background, Raytacing and layers.

See: 3D View Settings for more details

Settings – Language

A list of optional languages will be displayed here. Select the desired language and restart Visual Building to appear in the selected language.

Setting – Ribbon

This is where you can switch between the Ribbon UI and the older classic toolbar.

Exit

This will exit the Visual /building application.

2.3.2 Quick Access Toolbar

The Quick Access Toolbar is a customisable toolbar that contains a set of tools that are independent of the tab on the ribbon that is currently displayed. You can also move the Quick Access Toolbar from one of the two possible locations, and you can add buttons that represent tools from the Ribbon bar to the Quick Access Toolbar, thus creating a tool bar that consists of your most used tools.



From left to right, the default tools contained within the Quick access toolbar are:

Undo, Redo, New 2D view, New 3D view, Grid, Snap, Line width, Guide lines, Select and Last action.

Some of these tools also react to a right mouse click to activate the respective properties dialog. Apart from the **Undo, Redo** and **Last action** tools, all of these tools are duplicates of tools that are found in the Ribbon bar.

Undo

The Undo list contains a list of the last 10 actions, which you can undo by clicking on the menu entry. Simply clicking on the undo tool without opening the undo list will undo the last action. Note that some actions cannot be undone.

Redo

The Redo list contains a list of the actions that you applied the undo tool to. Simply clicking on the Redo tool without opening the redo list will redo the last action that you undid.

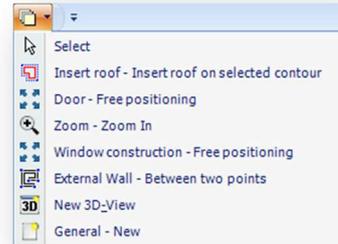
Last action

This drop down list shows the last 10 actions performed. Clicking on any of the last action menu entries will select that tool function again. You should not confuse this with the Undo / Redo lists which allows you to undo a specific tool action.

Adding a tool to the Quick Access Toolbar

On the ribbon, click the appropriate tab or group to display the tool that you want to add to the Quick Access Toolbar.

Right-click the command, and then click Add to Quick Access Toolbar on the activated context menu.



Remove a tool from the Quick Access Toolbar

On the Quick Access Toolbar, right click on the tool you wish to remove, and from the activated context menu click on **Remove from Quick Access Toolbar**.

Move the Quick Access Toolbar

If you don't want the Quick Access Toolbar to be displayed in its current location above the Ribbon bar, you can move it to the other location, below the Ribbon bar, where it is closer to the work area.

Click Customise Quick Access Toolbar, (the down arrow icon at the right end).

In the list, click **Show Below the Ribbon** or **Show Above the Ribbon**.

2.3.3 File Tab



General Group

The tools in this group control the loading and saving of projects, and a tool to Exit the program.

Print Group

This group contains the tools to modify your print settings and to initiate printing.

See: **Chapter 14.8 Printing 2D View** for details on the print tools.

Save Picture Group

This group contains a single tool **Save view As Picture**

See: **Chapter 6.13 Saving Views for details of the Save view as Picture tool**

2.3.4 Building Tab



Building Wizard Group

Activate the Building Wizard or load an example project from this group of tools.

Construction Elements Group

The tools used for inserting construction elements such as walls, beams, ceilings, supports, chimneys, windows, doors cut-outs and slots are located here.

Each tool contains a dropdown list of options, some of which contain additional drop down lists.

See: **Chapter 15 Building Components** for the tools found in this group

Stairs Group

This group contains a tool with a drop down list with the different stair types.

See: **Chapter 18 Stairs** for a description of the stairs tool.

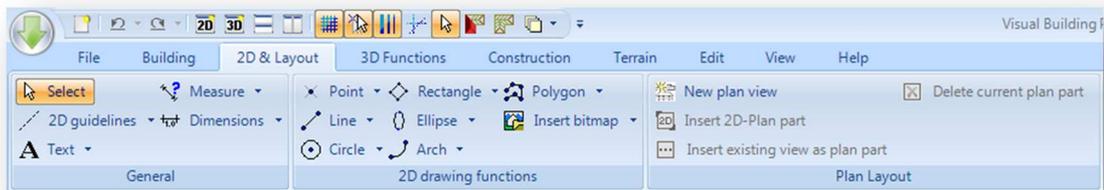
Roof & Dormers Group

This group presents the tools that allow you to insert a Roof, Dormers, Skylights and Solar panel elements.

In addition the Premium version also had an Edit elements tool.

2.3.5 2D & Layout

General Group



The General group contains some of the most used tools, such as Select Text and Guide lines. You will also find here the Dimension and Measure tools. Note that you can add an often used tool such as the Select tool to the Quick Access bar.

2D Drawing Functions Group

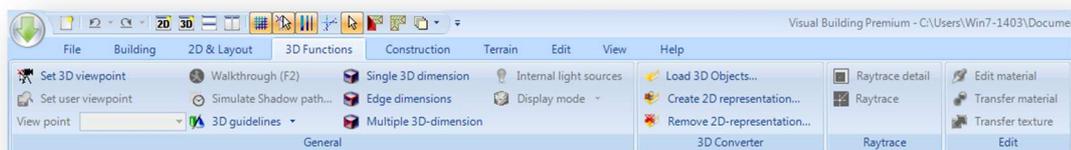
The 2D drawing functions found in this group will allow you to add Lines, Rectangles and Polygons to your 2D drawings. The Insert Bitmap tool will allow you to import an image file (.bmp, .png, .jpg, .gif) into your 2D plan view.

See: **Chapter 19 2D Graphics** for more details for the 2D Graphic tools.

Plan Layout Group

The Plan Layout Group is only available in the Professional and higher versions. This tool will allow you to layout your views into a single view.

See: **Chapter 25 Plan Layout** for details on this tool.



2.3.6 3D Functions

General Group

The 3D functions General group contains 3D tools that relate to 3D views. You can save 3V View points, and navigate through a 3D view using the 3D navigation walkthrough controls. You can also control the 3D guidelines and 3D dimensions lines displayed in the 3D view.

3D Converter Group

The 3D Group is only available in the Premium and higher versions. The Browse tool will allow you to browse and load a 3D Object for editing within the 3D Converter.

See: **Chapter 27 3D Converter** for more details on the 3D Converter tools.

Raytrace Group

The tools in this group will allow you to define the raytrace parameters and initiate the raytrace using those parameters. To set the raytrace parameters right click on the raytrace tool.

See: **Chapter 7.5 Raytracer** for more detail.

Edit Group

The Edit group contains tools to allow you to transfer materials and textures from a source surface to a target surface. You can also edit the selected material via the Edit Material dialog activated by the **Edit material** tool.

See: Textures for more details concerning textures

See: Materials for details concerning materials.



2.3.7 Construction

Surface Editor Group

The Surface Editor group currently consists of the **Create Surface Element** tool. This tool activates the **Surface Element** dialog, which allows you to create a surface area on a wall, floor or ceiling, and tile it with an appropriate texture.

See: **Chapter 21 Surface Editor** for more details.

3D Construction Group

The 3D Construction group is only available to Visual Building Premium, and contains the tools required to create and edit 3D construction objects.

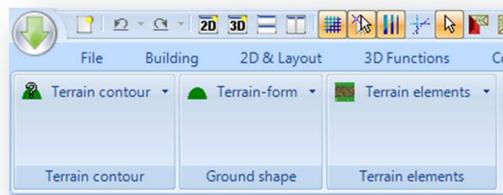
See: **Chapter 26 3D Constructions** for more details on the 3D Construction editor.

Window Construction Group

The 3D Window Construction group is only available to Visual Building Premium, and contains the tools required to create and new Window objects.

See: **Chapter 22 Window construction** for more details on the Door and Window construction tool.

2.3.8 Terrain



Terrain Contour Group

The Terrain contour group contains a tool that offers a drop down menu of additional tools. The **Set height point** tool allows you to set height points in your terrain. The **Set Height Contour** allows you to insert a contour line within your terrain.

See: **Chapter 20 Terrain** for more details on terrain height points and contours.

Ground Shape Group

The Ground Shape group offers you a tool with a drop down list of different terrain forms.

See: **Chapter 20.3 Terrain Forms** for more details on the different terrain forms available.

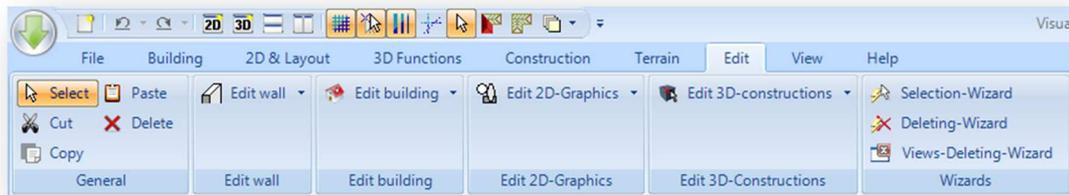
Terrain Elements Group

The Terrain Elements group offers you a tool with a drop down list of different terrain elements.

See: **Chapter 20.4 Terrain elements** for more details on the different terrain elements.

2.3.9 Edit

General Group



The General group contains the standard Select, Cut, Copy, Paste and Delete tools. These often used tools can also be added to the Quick Access toolbar and also activated by shortcut keys.

Edit Wall Group

This group contains a tool with drop down menu containing additional wall editing tools: **Extend wall**, **Trim wall**, **Change wall direction**, **Split wall** and **Edit fixed intersection**.

See: **Chapter 15.1.6 Edit walls** for a detailed description of the wall editing tools.

Edit Building Group

This group contains a tool with drop down menu containing tools allowing you to edit an entire building: **Mirror building**, **Move building**, **Copy building**, **Rotate building** and **Extend building**.

See: **Chapter 13.4.1 Lengthen, Rotate, Mirror, Copy Buildings** for a detailed description of the building editing tools.

Edit 2D Graphics Group

The Edit 2D Graphics group contains a tool with some additional 2D line editing tools.

See: **Chapter 19.5 Editing 2D Elements** for more details for the 2D line editing tools.

Edit 3D Constructions Group

The Edit 3D Constructions tool is only available to Visual Building Professional and Visual Building Premium. These tools allow you to merge and perform boolean operations upon two 3D construction objects.

See: **Chapter 26.10 Editing / Boolean Operations** for more detail.

2.3.10 View

New Views Group



This group contains tools to allow you to create new views. These include New 2D Views, New 3D Views, New Section Views, New 2D Graphic View, New Isometric View and a Full Screen Mode control.

Windows Group

The Windows group provides you with the tools to define how your view windows are displayed.

See: **Chapter 5**

Zoom Group

The tools found in the Zoom group will allow you to zoom in or out any 2D or 3D view.

See: **Chapter 6.7 Zooming, Scrolling and Rotating** for details on zoom control.

Visibility Group

This group contains tools to enable you to toggle the Grid, Snap, Line Width and Guide lines.

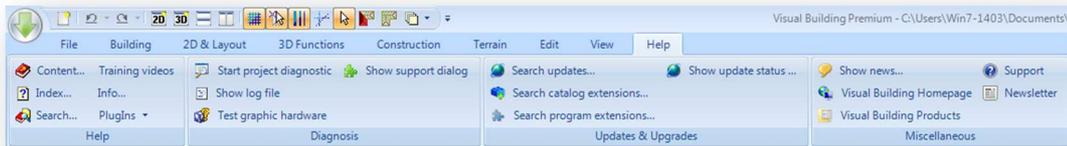
General Group

This group contains the Save view as picture tool, which will save the current view (either 2D or 3D) as a .jpg, .bmp, .gif or .png file, using definable properties.

See: **Chapter 6.13 Saving Views** for details.

2.3.11 Help

Help Group



The help group contains links to the help file and the online training videos.

Diagnostics Group

See: **Chapter 32.4 Diagnostics** for more details on the Diagnostic tools found in this group.

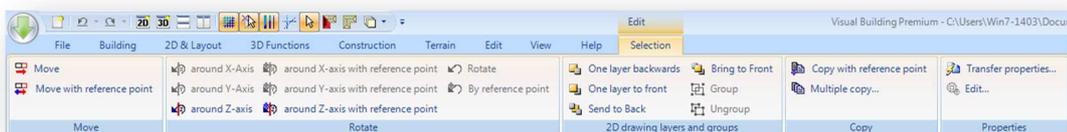
Update and Upgrades

You can establish if there are any updates or upgrades available.

Online Group

Visit the Visual Building web site and forum using the links in the Online group.

2.3.12 Selection



The selection tab only appears when an object is selected.

Move Group

The Move group contains the Move and Move with reference point tools.

See: **Chapter 2.7.7 Move Selected Element, Move Selected Element with Reference Point**

Rotate Group

The Rotate group contains a range of tools allowing you to rotate the selected object around the x, y and z axis and also around x, y z using a reference point.

2D Drawing layers

The 2D Layer group contains the tools that allow you to adjust the 2D object layers. Select the 2D object and you can adjust its layer level relative to other 2D objects.

Copy

The Copy group contains the tools allowing you to make either single or multiple copies relative to the original object.

See: **Chapter 2.9 Multiple Copies of Objects** for details of using the copy tool.

Properties

The Properties group contains the tools allowing you to either transfer or edit the properties of the current selected object.

2.4 DOCUMENTS AND VIEWS

All views have equal priorities, with all user actions (e.g. selection, insertion, positioning etc., if applicable) being performed in the same way in all views. All views are updated simultaneously so that the user can follow the effects of changes in 3D as well as in 2D. This is irrespective of the choice of user interface selected.

You can also change what is view displays, for example you can have 2 2D views where one view is set to display internal objects, and the other view is set not to display internal objects. Allowing you to decide what each individual view displays is a very powerful feature.

2.5 CATALOGUE AND PROJECT ADMINISTRATION

Situated in the right margin of the user interface is a toolbox, the contents of which can be selected using the tabs shown. The toolbox can be displayed permanently by fixing it with a 'pin'. If the toolbox is not 'pinned', it is moved after two seconds to the margin and minimised to increase the available work area. It reappears again if the cursor is positioned on one of the tabs which remain.

2.6 FEATURES OF DIALOGS

There are various types of dialogs, but they all have certain basic features in common. A dialog can consist of several parts which can be accessed either via a tree structure or a list of icons. Depending on the function of the dialog, various buttons appear in the right margin.



OK



Cancel



Save as default. The current settings become the default



Open or close the 3D preview



Open the Help file



Creates a new template in dialogs which save files, e.g. Materials

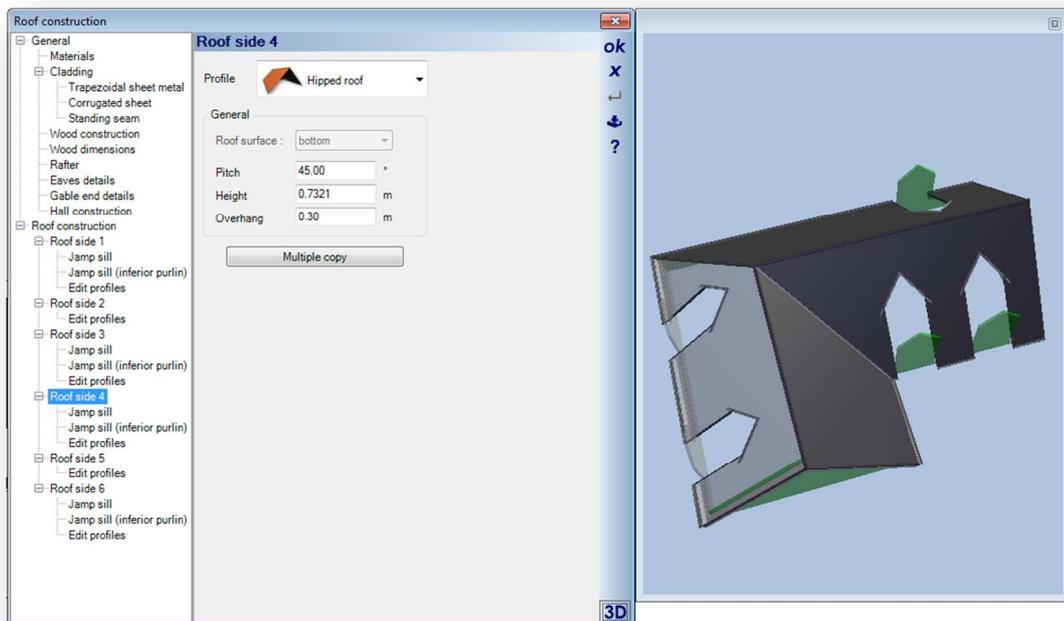


Opens a file, e.g. (*.mat) in the Materials dialog



Saves a file, e.g. (*.mat) in the Materials dialog

Probably the most comprehensive dialog is within the roof editor. It is used here as an example to demonstrate the possibilities offered in dialogs and to show, dependant on the dialog, the functions provided.

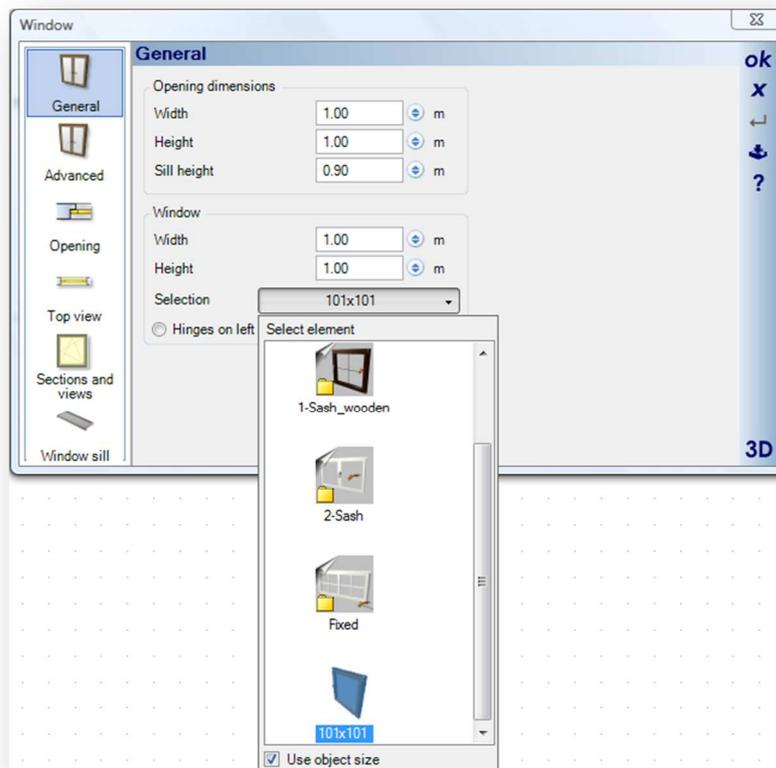


The 3D preview can in general be detached from the 'main' dialog and its size changed. If desired it can also be moved to a second monitor if available. The preview is also used in the roof dialog to select a roof surface - by simply clicking on the desired roof surface, which then becomes transparent and is highlighted in the associated tree structure. A right click in the 3D preview opens a context menu to change the representation mode, to activate ray tracing or to modify the background settings.

2.6.1 Catalogue Selection in dialogs

In some dialogs, not only “furniture and fittings”, but also building components can be selected from an associated catalogue.

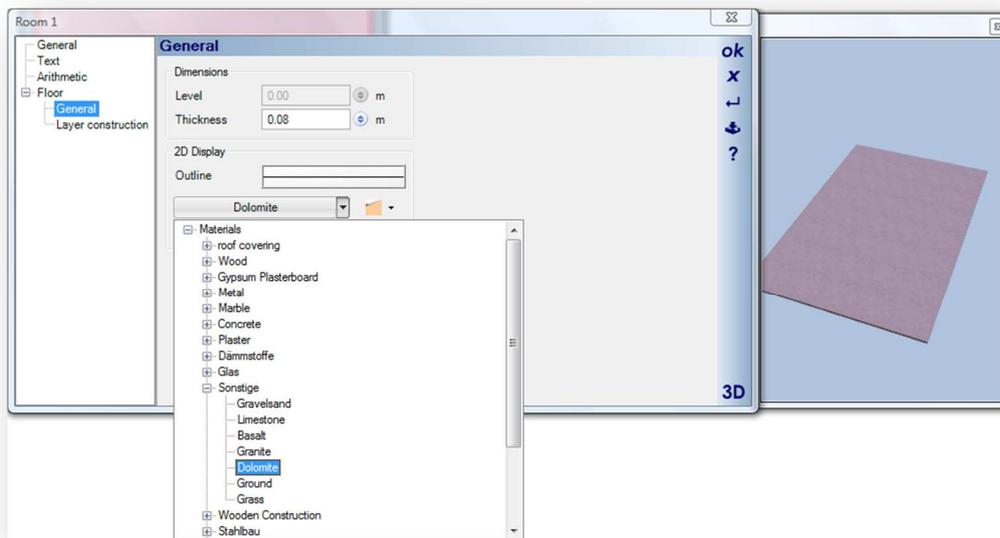
In the ‘Windows’ dialog shown below, we see in the section ‘Window’ next to ‘Selection’ a button, which dependent on the component, opens an associated directory in your software. With a double-click one of the objects or subdirectories shown can now be selected.



2.6.2 Material Selection and Texture Coordinates

The software distinguishes basically between building materials and visualisation materials. Building materials are defined in a XML file, with a hierarchy, numerous additional properties, and a reference to a visualisation material (*.mat). Their properties, irrespective of the material shown in the 3D visualisation, are available to other plug-ins for analysis purposes, e.g. for energy analysis or for other calculations. In the database, building materials are allocated appropriate visualisation materials, so that a wooden material has a ‘wood’ texture. Nevertheless, the fact that building materials are independent of visualisation materials means that you can allocate any material or texture from the standard catalogue to a component in

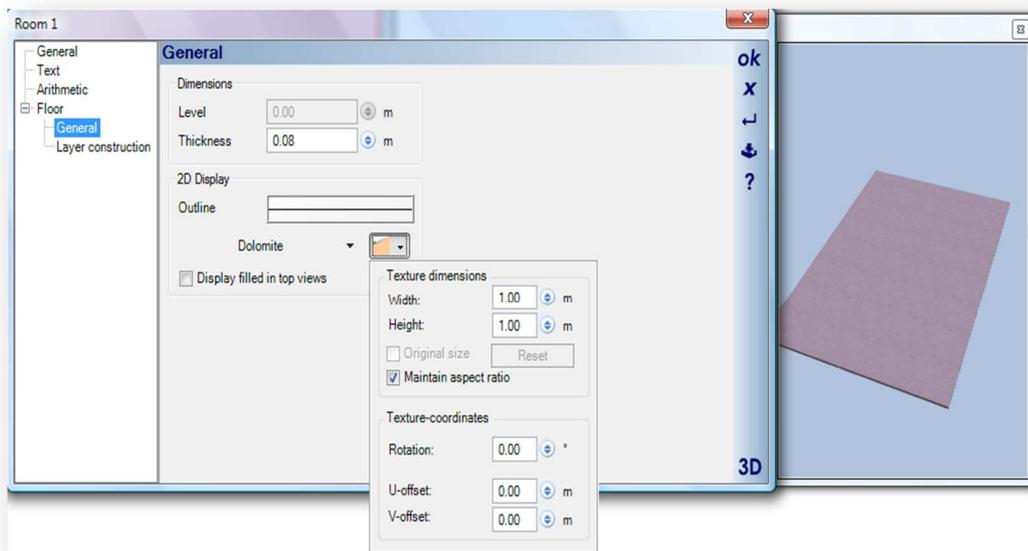
the 3D view. This could result in a component still having the material property of 'wood' but in 3D being shown as tiles if you allocated a 'tile' texture to it by drag and drop. The reason for this distinction is to ensure that reliable material properties are always available for analysis purposes, without restricting the creative possibilities in your software.



The arrow on the right of the box for material selection allows access to the materials defined in the building material database, which are displayed in a tree structure.



The texture coordinates of the visualisation material can be changed if necessary in the dialog which is activated by the arrow button



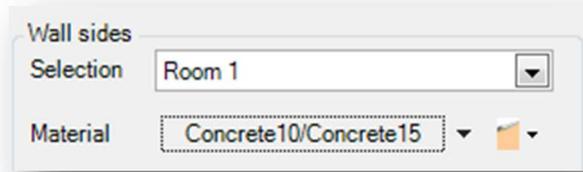
Texture coordinates are set by default to 1 x 1 m. This means that the texture (the image) which covers a surface is shown once for an area of 1 x 1m. If the surface is larger, the texture will be 'tiled', i.e. repeated as often as is necessary to completely cover the surface. Using 'Texture dimensions' you can adjust the area for which the texture is shown once, to match the actual size of the textured surface, and additionally define an angle of rotation or offset.



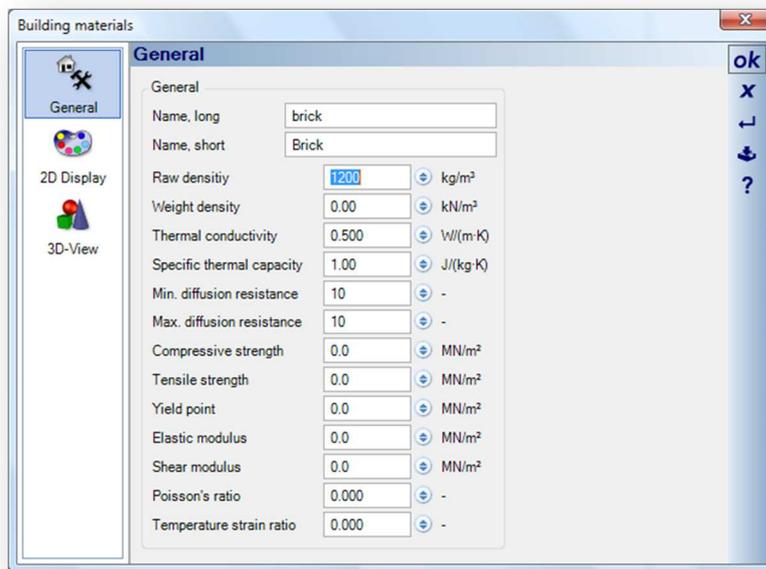
The 'U/V offset' has the effect that the area in which the depiction of the texture begins is offset by the values specified. In the example shown a surface of 1 x 1 m is covered with a texture representing 4 tiles. Without an offset the 4 tiles would fit exactly on the surface. In this case, with a U/ V offset of 10 cm, the tiling starts offset by 10 cm on either side.

2.6.3 Properties and Representation of Building Materials

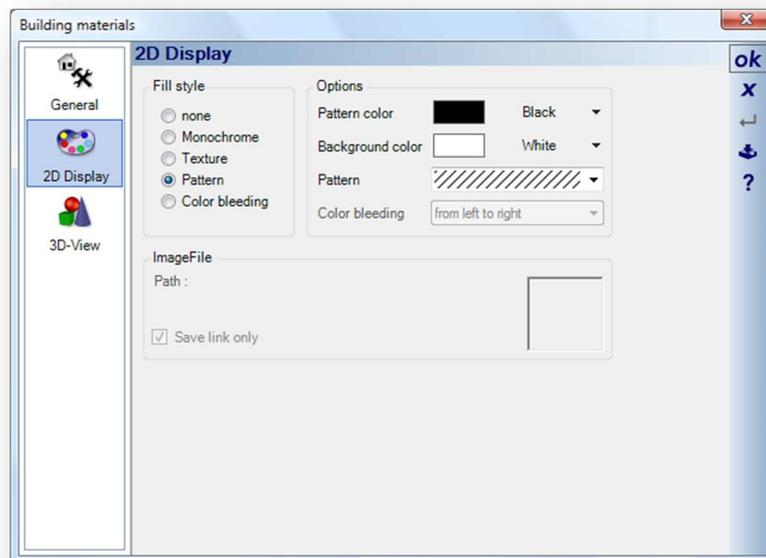
Access to building materials can be found in many dialogs. The following extract taken from the dialog for walls is shown here as an example.



A click on this button opens a dialog for the properties of a building material, instead of the tree structure of the material database.

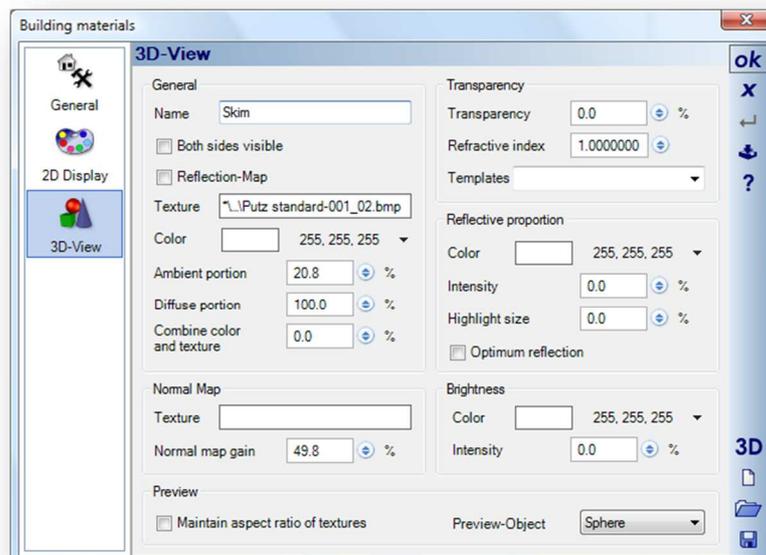


The 'General' section shows the name of the building material together with the physical properties allocated to the building material in the database. Most of these properties are not used are included now for future expansion.



The material used for standard brickwork is defined in the building material database as being shown with a pattern in a 2D representation. The '2D Display' part defines how a component is drawn in 2D plan views and other 2D views. If you wish the wall to be shown filled in with a single colour instead of hatching, then the 2D properties of the building material must be changed.

Visual Building Premium 5.0 and later now has the ability to use user defined 2D patterns.



The '3D View section of the dialog for a building material is the same as in the standard dialog for materials and is explained in the chapter 'Material Properties'.

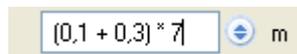
Note: Changes made in dialogs for building materials only affect the element for which the dialog was opened, in this case just the one wall. The settings specified do not change the values in the building material database.

2.6.4 Calculations in Input Fields

Most dialogs include a numeric field where you can add numeric values. These values can be entered as calculations.

All numeric input fields support certain mathematical functions, which can be entered directly in the field as an expression including parentheses.

e.g .



The result is calculated when you leave the field (via Tab key) or press Enter

The functions:

"+", "-", "*", "/", "^", "(", ")", "=", "TAN", "COS", "SIN", "ATAN", "ACOS", "ASIN", "SQRT", "PI".

Examples of input:

100 + 100

100+SQRT(25)

2*(3+2)

ATAN(1)

SIN(60)

COS(60)

3.*((2+5*2/COS(60)))

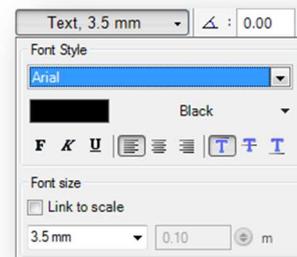
(3.*((2-5*2/COS(60))))

10+2*(5+1/COS(60))

This feature is perhaps one of the hidden gems of Visual Building, so please note it as it can really speed up your work flow.

2.6.5 Text Properties

In dialogs for elements which use text (e.g. room descriptions, dimensions etc.) there is generally a sub-dialog available to set the text properties.

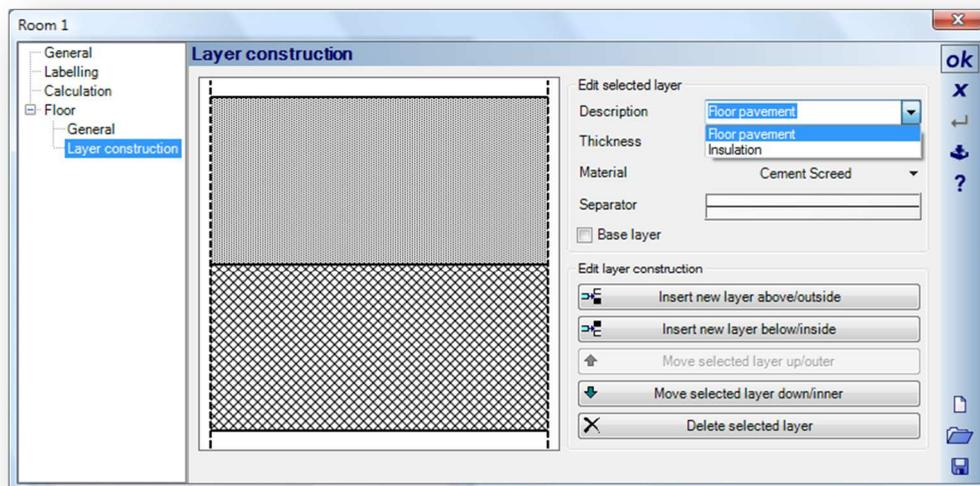


The sub-dialog is activated by clicking directly on the button with the text preview or on the arrow on the right side of it. The usual text properties such as font, colour, format and alignment can then be specified. If there is sufficient space, a preview of the changed text is shown on the button itself.

The settings for alignment have no visible effect in the text properties dialog. They only come into effect when the text is used, at which point the size of the 'frame' surrounding the text is determined. Only when the text is used in planning are the lines aligned left- or right-justified. There are two possibilities for setting font size. Either as an absolute size on printout in mm, or dependant on scale. The field for absolute font size offers several common values from which you can choose. Other settings can be specified by simply overwriting the value in the input field.

2.6.6 Layer construction of Building Components

Some of the building components, such as walls, roofs and floors, are composed of layers with their own defined properties. Each of the components mentioned above always has at least one layer defined by default.



In the 'Layer construction' dialog, further layers can be created and their settings modified. As an aid, the layer being currently modified is highlighted in colour. For each layer you can define a name, thickness, building material and layer separator. The arrows on the right alter the position of the current layer upwards or downwards within the component.

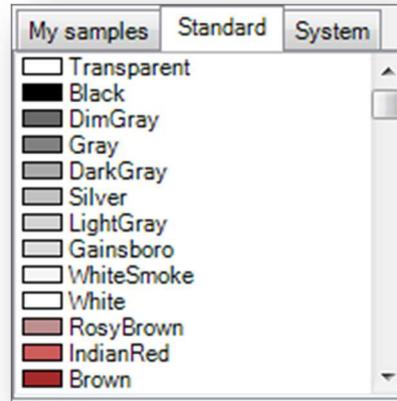
Layer constructions which are frequently used can be saved using the toolbar in the right-hand margin. These layout files are normally found in the directory 'your software-installation\AEC\Layouts', which is automatically referenced in the 'Save' and 'Load' dialogs. You can structure the layouts in the directory yourself by creating subdirectories in the same way as for catalogues.

Note: The thickness of a component is equivalent to the sum of the thicknesses of its individual layers. For multi-layer components the thickness should be modified via the layers in the 'Layer construction' dialog. If the thickness of the component is changed in its normal properties dialog, it is the top layer of the component that will always be modified automatically.

2.6.7 Selecting Colours, Defining your own Colours

In many dialogs you will find a button to select a colour. A click on the button opens the Windows standard dialog for colours, a click on the arrow on the right then gives you three tabs for lists from which you can choose a predefined colour.

The **My Samples** tab allows the user to create their own colours and to save them permanently in the file **userConfig.xml**. You can change an entry in the list of your own colours via the context menu, which is activated with a right mouse click.



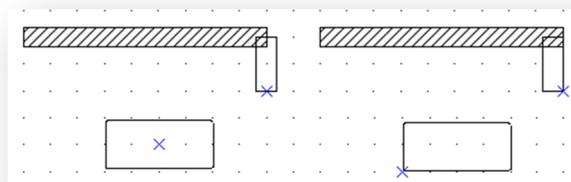
2.7 INPUT AIDS

2.7.1 Insertion using 'Ctrl+ w', Changing Reference Points

When inserting or positioning elements, you can, as long as the particular element allows it and before the process is terminated usually with a mouse click, use an input aid to change the placement reference points. This is achieved by pressing the key combination **Ctrl+w** as often as required.

The following illustration shows two simple examples which demonstrate this feature. The position of the cursor is indicated by the blue cross.

On the left we see the polygonal method used to insert a wall and the positioning of a 3D object, a table, without pressing **Ctrl+w**. The wall is inserted on the cursor relative to its axis and the table is positioned relative to the centre of the object.



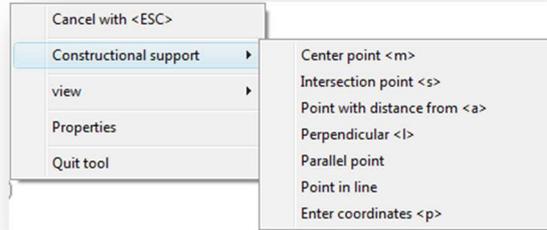
On the right we see the difference after **Ctrl+w** has been pressed once. The wall is now aligned on the cursor relative to its right-hand side and the table relative to its lower left-hand corner.

2.7.2 Construction support

For the precise definition of points at which to insert elements, the software offers during various construction aids which can be activated using the context menu activated with a right mouse click. The resulting construction aid is either a single point, if you like as a replacement for a normal mouse click when planning, or a line along which the next point can be defined, e.g. a perpendicular.

It should be noted that the resulting point is treated exactly like a mouse click. Depending on the input tool being used, elements expect one, two or more clicks during construction. Supports are positioned with one point, walls always expect two points, namely the start point and the end point of the wall. In the case of a tool that expects only one point, e.g. a support, the support is inserted directly at the point defined on termination of the construction aid. To insert a wall therefore, the construction aid can be used twice, to define a start and end point.

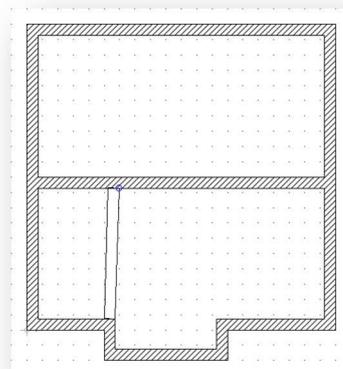
The construction aids which are available are listed in the context menu. The letters in parentheses are the shortcuts with which a construction aid can be activated at any time during input. As opposed to other input aids, these shortcuts are not a combination of keys, for instance 'Ctrl+m, but simply the letter itself, i.e. to call the construction aid 'Center point' simply press 'm' on the keyboard.

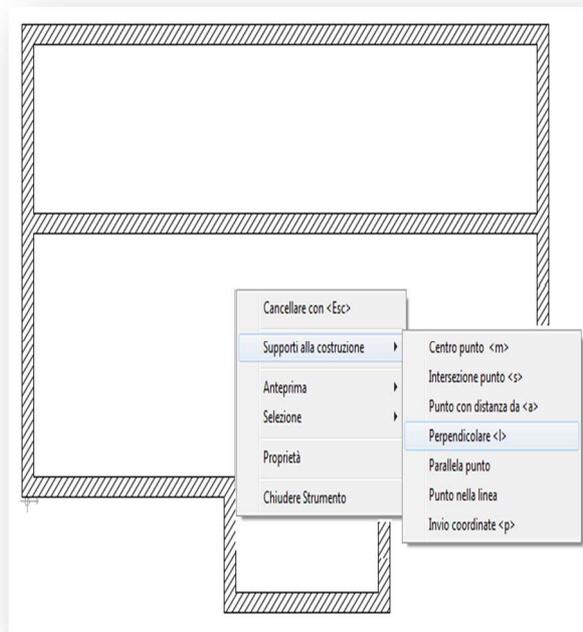


2.7.3 Example of the Use of Construction Aids

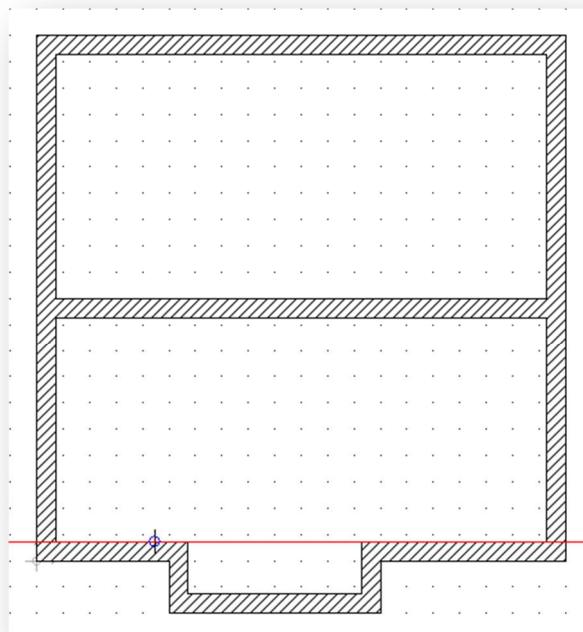
As an example of the use of construction aids, let us go through the steps to insert a perpendicular wall.

To form a new room we want to insert a wall from the left inside edge of the protrusion straight up to the dividing wall between room 1 and room 2. The start point of the wall has already been defined using **Ctrl+w** (change reference point) so that the right corner of the wall corresponds to corner of the protrusion. As long as the preview of the new wall is still attached to the cursor, a right-click opens the context menu for construction aids.

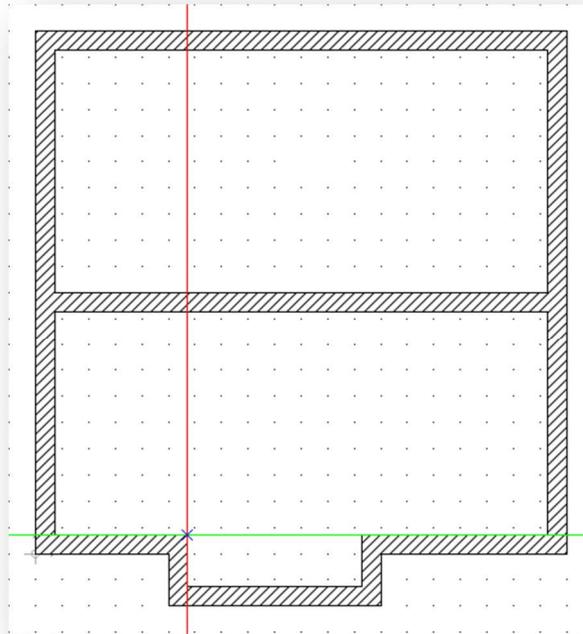




From the list of possible construction aids select 'Perpendicular' to insert the wall at an angle of exactly 90 degrees.

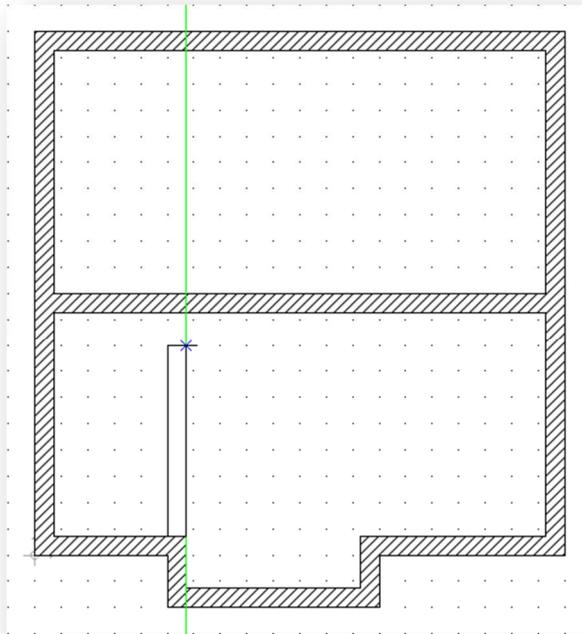


A perpendicular is produced by defining two lines, the first of which is the line to which the perpendicular is subsequently dropped. During input each step is accompanied by information in the status line located at the bottom left of the screen.



After the first line has been defined, the perpendicular is generated automatically and can only be positioned along the line. In the example shown, the perpendicular is positioned exactly on the corner where the wall to be inserted is to start.

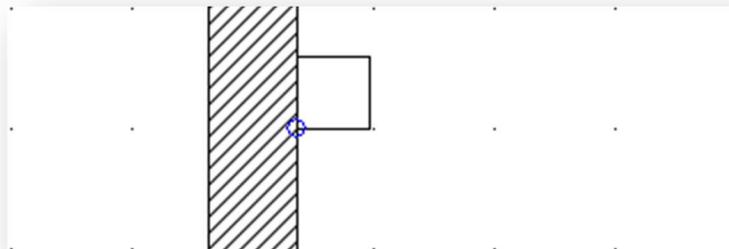
A click on the mouse drops the perpendicular and returns so that the end point of the wall can be entered - the start point of the wall had already been defined before the construction aid was activated.



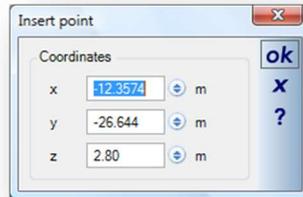
The cursor to insert the wall now snaps to the construction line generated and so enables precise insertion of a perpendicular wall. With a second mouse-click the length of the wall can now be defined. In the example shown, we move the cursor along the perpendicular up to the face of the horizontal wall in the middle, thus creating the new room we wanted.

2.7.4 Example using Coordinates

A further construction aid is 'Coordinates'. It can be used to position elements exactly. For example, if you would like to insert a rectangular support, with its left lower corner at a distance of 1.25 m from the wall shown. First of all, on input change the reference point of the support to be the left lower corner using **Ctrl+w** and position this exactly on the face of the wall.

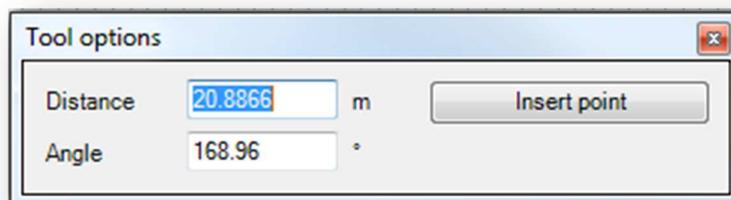


Now click the right mouse button and activate using the context menu the construction aid 'Coordinates'. Alternatively you can press 'p' on the keyboard, as indicated by the p in parentheses in the context menu. This now opens the 'Insert Point' dialog.



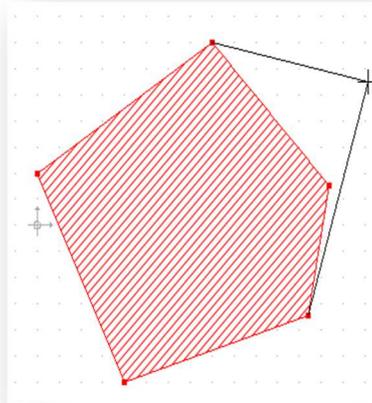
The dialog already provides the absolute coordinates of the left lower corner of the support in relation to the base of the plan, as this was the position of the cursor at the time the construction aid was activated. To position the corner of the support 1.25 m to the right, i.e. positively on the x-axis, you can make use of the possibility in your software of performing calculations in input fields. Simply type $3.18 + 1.25$ in the field for the x-coordinate and press 'OK'.

There is an additional Tool option not available from within the Constructional support context menu. When placing a wall after the first click press the W key. This will activate the Tools options dialog, allowing you to enter the wall length and angle. Press the Insert button in the dialog will place the wall, allowing you to repeat the option. This will continue until you press the Esc key.

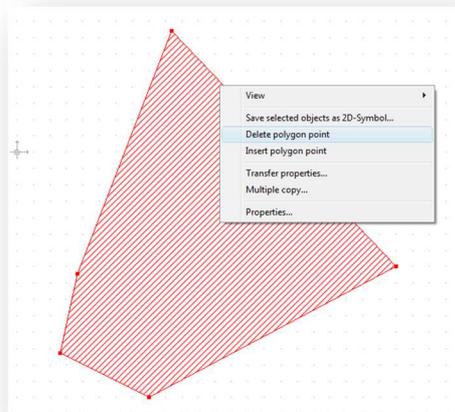


2.7.5 Adjust, Insert and Delete Polygon-points

When selected, various polygonal elements such as ceilings, 2D graphic polygons and even lines show the points specified on insertion.



By clicking on one of the red points, it becomes attached to the cursor and can then be moved and repositioned. In this way the shape of elements can be subsequently modified. If the element allows it, new polygon-points can also be added or deleted with help of the context menu opened with a right mouse-click. For example to add a new point right click on the polygon and select Insert Polygon Point from the context menu and then click on the position where you want the new point. The new polygon point is then added.

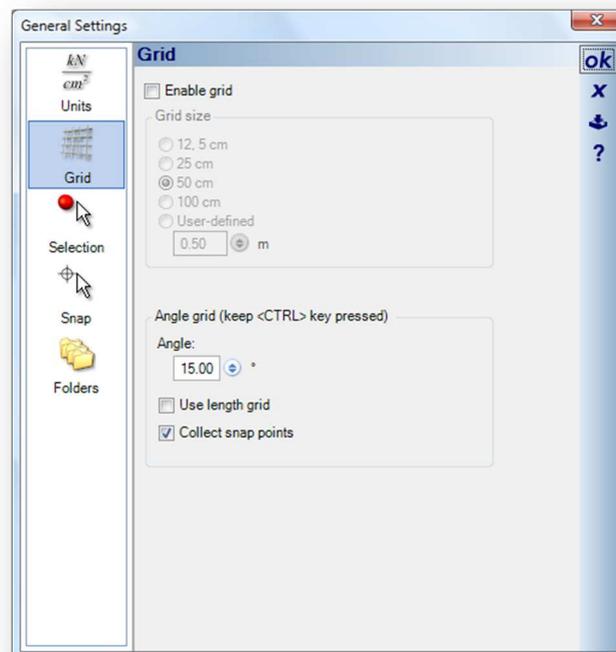


2.7.6 Angle grid

An angle grid can be activated during the input of elements that require a start and an end point (e.g. walls and dimensions), by keeping the **Ctrl** key pressed. With the angle grid activated, movement of the mouse cursor is limited to the angle specified. This construction aid simplifies, amongst other things, horizontal and vertical input, without having to worry about precise movement of the mouse. The angled grid is not visible, but you will notice it because your mouse cursor will snap to it when the **Ctrl** key is pressed.

In addition, the **Use length grid** option not only makes it possible to rotate elements entered in the angle grid, but also ensures that the length entered for an element is adjusted to match to the grid spacing. A wall is automatically extended, e.g. in 50 cm steps, when the grid spacing is set to 50 cm. When this option is activated you can 'work' in a grid, even though the standard grid is deactivated, and even insert diagonal lengths with a fixed spacing.

The basic snap options also apply when the angle grid is activated, so that in certain cases it is possible that input can result in angles that differ from the original angle grid settings. However, this can be prevented with the option **Collect snap points**. If this option is set the snap points of other elements are determined, but are adjusted to conform to the angle grid. This will guarantee that you always work within the specified angle



Note: To best understand how the Angle grid works, deactivate the standard grid so it does not display. When placing a line or wall you will see that it snaps to the invisible angle grid at the angle specified.

2.7.7 Move Selected Element, Move Selected Element with Reference Point



Apart from the usual way of positioning elements using the mouse, additionally, the **Move selected element** and **Move selected element with reference point** tools are

provided. Both tools open the **Tool options** dialog in which values for the distance moved can be specified instead of using the mouse.



The **Tool options** dialog is not active at the start of a move, but shows values which were determined by the movement of the cursor. To input values just click on the dialog box and this changes the values shown as the cursor is moved to the dialog box. When entering values it is important not to move the cursor outside the dialog box, as otherwise the values entered manually will be automatically overwritten by the position of the cursor in the plan. The **Tool options** dialog is terminated automatically as soon as the input tool is terminated with the **Esc** key, or its equivalent **Close** button in the top right-hand corner.

On clicking the **OK** button the element is moved by the current values specified, and then once more for each further click on the **OK** button. Thus if 1.5 m is specified in the x-direction the component is moved by 1.5 m on each **OK**.

Dependent on the component and view, invalid fields are deactivated and shown in grey; for instance a support cannot be moved in the z-direction. The move directions allowed can also be restricted manually. In this case by deactivating the dy-direction the element can now only be moved along the x-axis, and so only this value changes if the mouse is moved. The dz field is normally active when moving an object in the 2D view.

This tool is another hidden gem, especially when construction and moving your own 3D objects where you to restrict movement to a single plane.

2.8 EDITING TOOLS

If you are using the classic toolbars the **Edit toolbar** contain tools of a various nature, and not necessarily only tools which apply to the particular element selected.

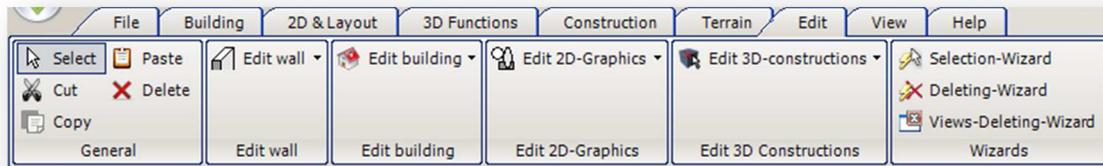
Toolbar:

The tools are assigned to categories. The required category can be chosen from a selection at the left end of the toolbar. Each category contains different tools and buttons which are located on the right of the category after it has been selected.



Ribbon bar:

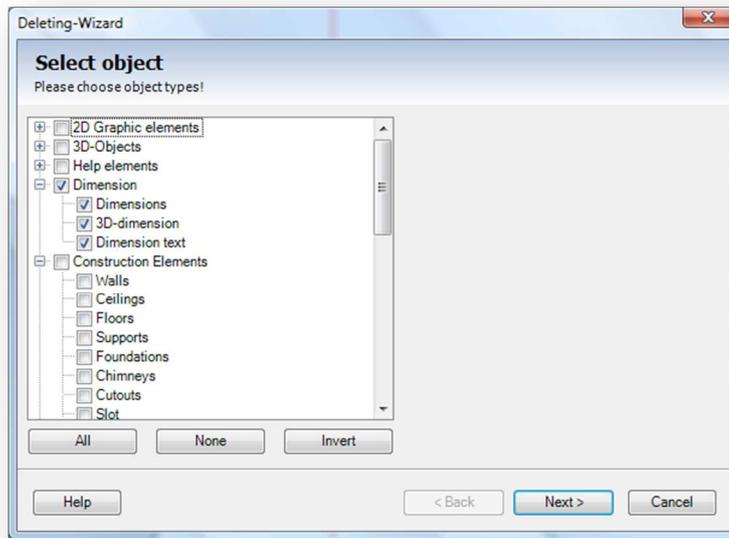
If you are using the Ribbon bar these tools are located in the **Edit tab**.



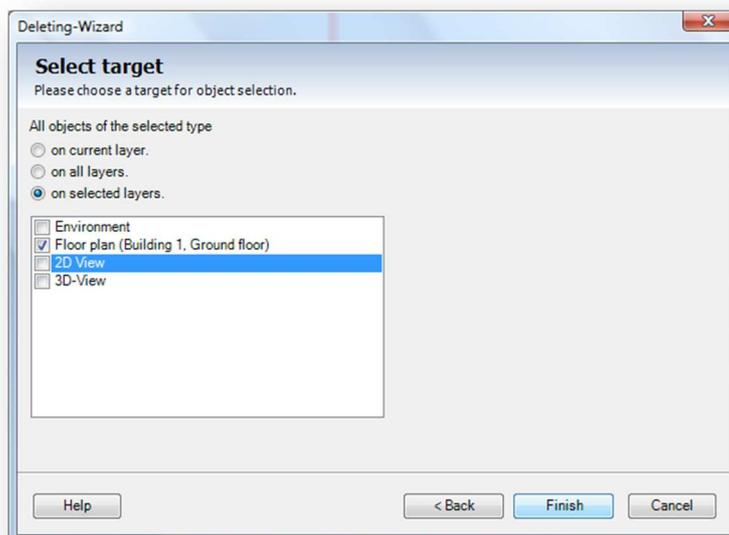
2.8.1 Delete and Select Wizards

 To simplify delete and select operations appropriate wizards are provided in the Classic tool bar.

These same tools are located in the Ribbon bar **Edit** tab, within the **Wizards** group. Both the **Delete Wizard** and the **Select Wizard** work in the same way. First select the types of element to be processed and then specify the area in which the elements are to be detected. Elements can be selected in the 'Select Object' dialog using the tree structure. After selecting the element types, click on the 'Next' button to then specify an area.

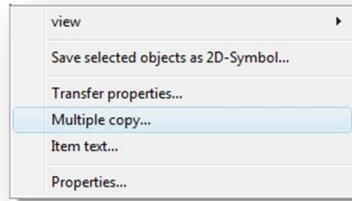


Any layer or view defined in the project can be selected as an area. Selecting a view in this context is only necessary, if you wish to delete elements which are only defined here and cannot be accessed using the normal layer structure. This includes elements such as dimensions, guidelines and 2D symbols in cross-sections, since these only exist in the cross-section view in which they were entered. Therefore, they can only be removed by selecting the appropriate cross-section in the delete assistant.

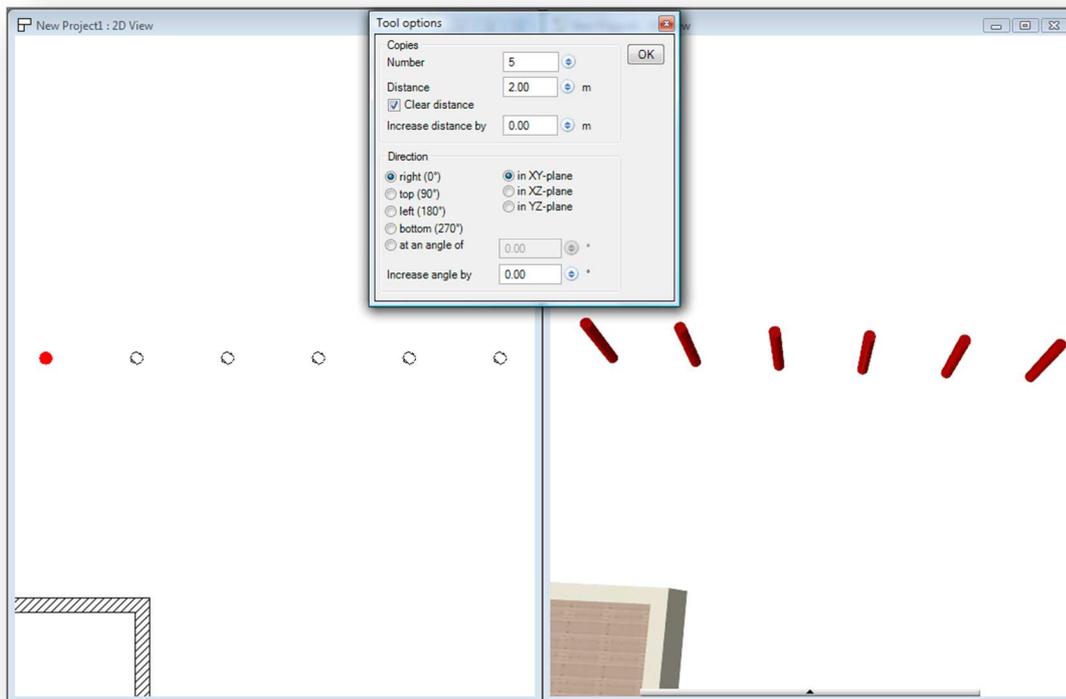


2.9 MULTIPLE COPIES OF OBJECTS

When an object is selected, you can use the **Multiple copy** tool to create additional copies of that object. This tool is located in the **Selection tab Copy group** in the Ribbon bar. The multiple copy function for a selected object can also be found in the context menu activated with a right mouse-click.



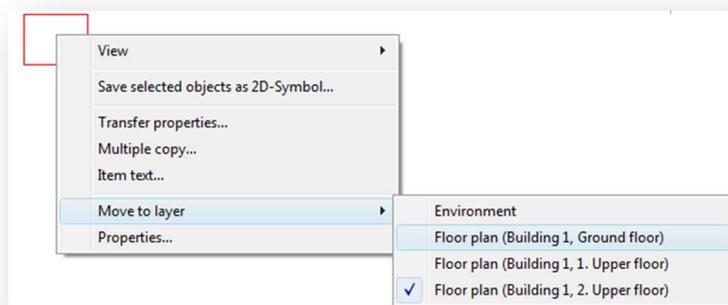
After selecting the multiple copy function, the 'Tool options' dialog appears, in which the number of copies, the spacing between them and the direction of copy can be specified. All settings are shown in the plan as a preview of the objects to be created. However, the new elements are only finally created when the dialog is terminated with a click on the OK button. Up to this point all settings can be modified to meet your planning requirements. To terminate the dialog without creating any copies, click on the cross in the upper right corner or press **Esc**.



2.10 MOVING OBJECTS TO OTHER LAYERS

During planning you may realize that it would be better for the overall structure of the project, if objects already allocated to certain layers were placed in a new layer e.g 'Furnishings'. In this case, you can subsequently move objects for selected elements, using the context menu. A list of the available layers is also shown.

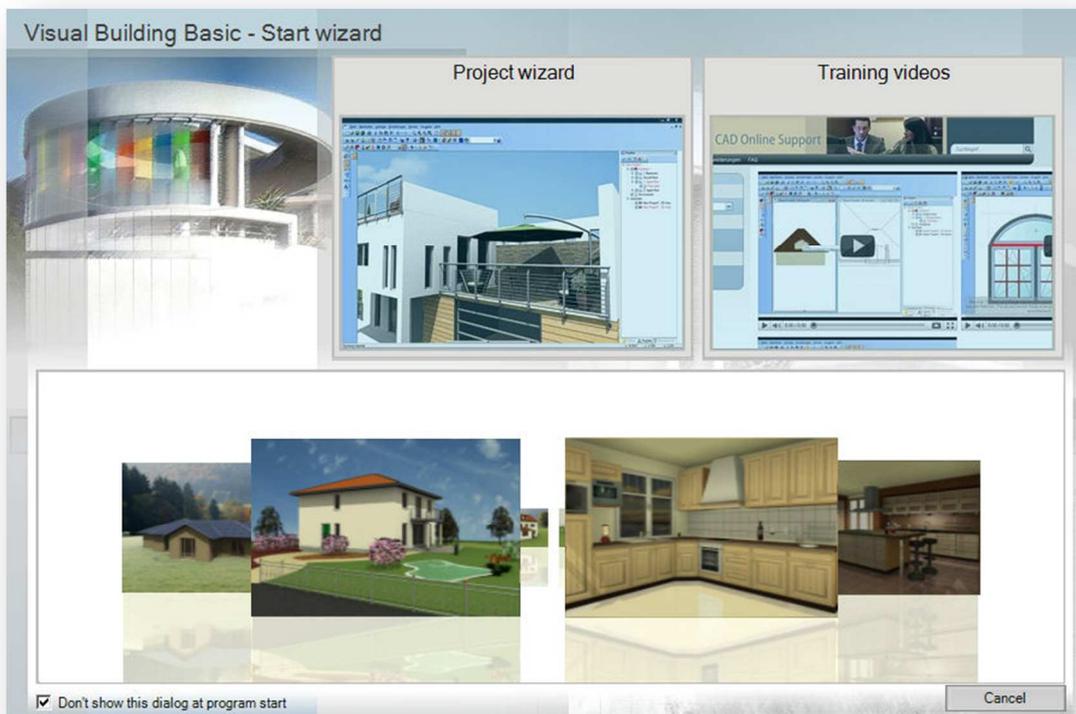
Note: Moving construction elements, e.g. walls, or windows out of walls, can of course affect various automatic functions and should be considered carefully beforehand. For instance, if you move a wall belonging to a room to another layer, that room is then lost.



3 START WIZARD

When you start Visual Building for the first time the Start Wizard will display. You can disable the Start Wizard by selecting **Don't show this dialog at program start**. You can enable the Start Wizard again from the menu **Settings – Program – Messages & Dialogs – Start Wizard**

The Start Wizard was upgraded with Visual Building v4 release, and available in all versions.



This wizard comprises of the Project Wizard, Training Videos and Project Selection.

3.1 THE BUILDING / PROJECT WIZARD

The Project Wizard helps you to quickly generate a basic project. Such a project will contain exterior walls, and a roof.

In 5 steps and a few minutes you will have a building in which you can then simply add windows, doors and interior walls.

3.2 STEP 1: EDIT PROJECT DATA

The project data is for example used in the reports, or in text fields using the AutoText feature.

The screenshot shows a 'Wizard' dialog box titled 'Step 1 of 5: Edit Project Data'. It is divided into three main sections: 'Owner', 'Project', and 'Planner'. Each section contains several text input fields and a dropdown menu for titles. The 'Owner' section includes fields for 'Customer No', 'Title' (set to 'Mr'), 'Name', 'Street', 'Notes', and 'ZIP, City'. The 'Project' section includes fields for 'Description', 'Street', 'Notes', and 'ZIP, City'. The 'Planner' section includes fields for 'Title' (set to 'Mr'), 'Name', 'Street', 'Notes', and 'ZIP, City'. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

These fields are optional, and you can continue planning without entering this data.

Click **Next** to proceed to the next step or **Cancel** to exit the wizard.

3.3 STEP 2: BASIC SETTINGS AND SHAPE SELECTION

In the left pane you will see some of the preferences for your new project:

Units

The unit of measurement in which you want to work. This can also be set at any time via the menu **Settings-General-Units**. You can select either metric or imperial measurements. The fraction tick box is enabled only if Feet or Inch measurements are selected.

Grid

Enable grid in the 2D views, and sets the grid spacing to either a default value or to a user defined value.

Scale

The scale of the 2D view is always required, and if not set a default value is used. You can adjust the scale at any time by right clicking within the 2D view, selecting **Properties** from the activated context menu, and then setting the **Scale** in the **General** tab.

3D View

Click the **Create a 3D view** tick box to automatically create a 3D view.

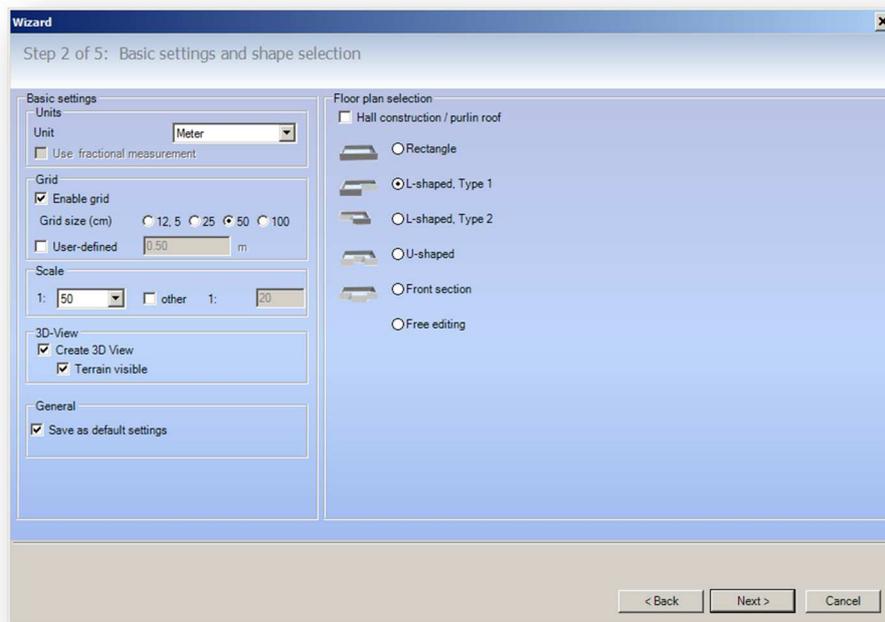
General

By setting the **Save as default settings** checkbox, the values used within this wizard are used as the default values in all future projects.

Floor plan selection

In the right pane you will find a selection of predefined building shapes. This choice determines the contour of the building and the other entries in the wizard. In the next step, depending on the building shape you will see a series of matching sketches with input fields. Should your plan not correspond to the basic building shapes shown, stop the wizard with the "free editing" and draw its outline using the conventional manner.

There is also an option to select a **Hall construction** using a roof purlin construction.

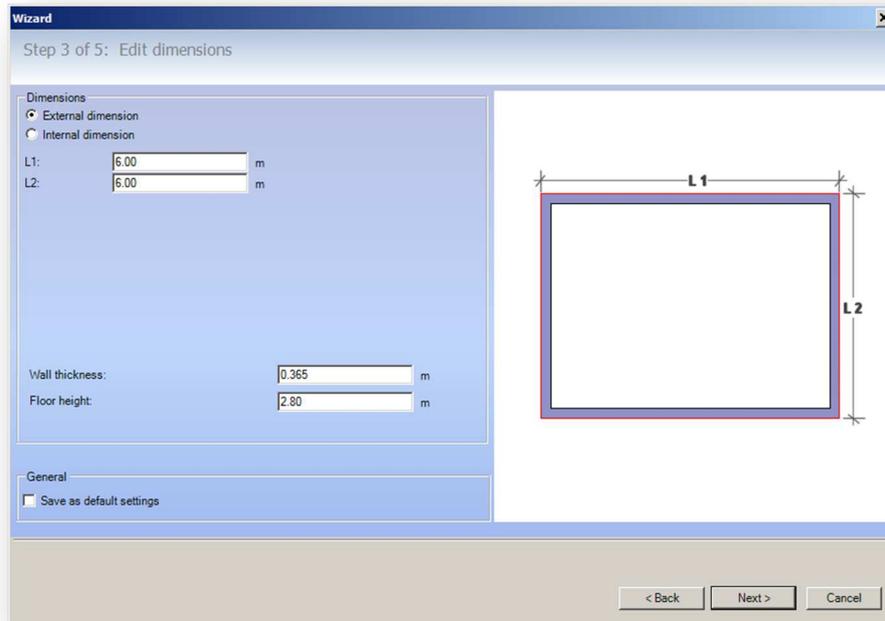


Click **Next** to proceed to the next step or **Back** to return to the previous step, or **Cancel** to exit the wizard.

3.4 STEP 3: EDIT DIMENSIONS

First determine if the measurements are either External or Internal dimensions, or then fill in the fields for each wall length. Select the wall thickness for the external walls. The floor height can be set to a value and can be adjusted in the next step.

By setting the **Save as default settings** checkbox, the values used within this wizard step are

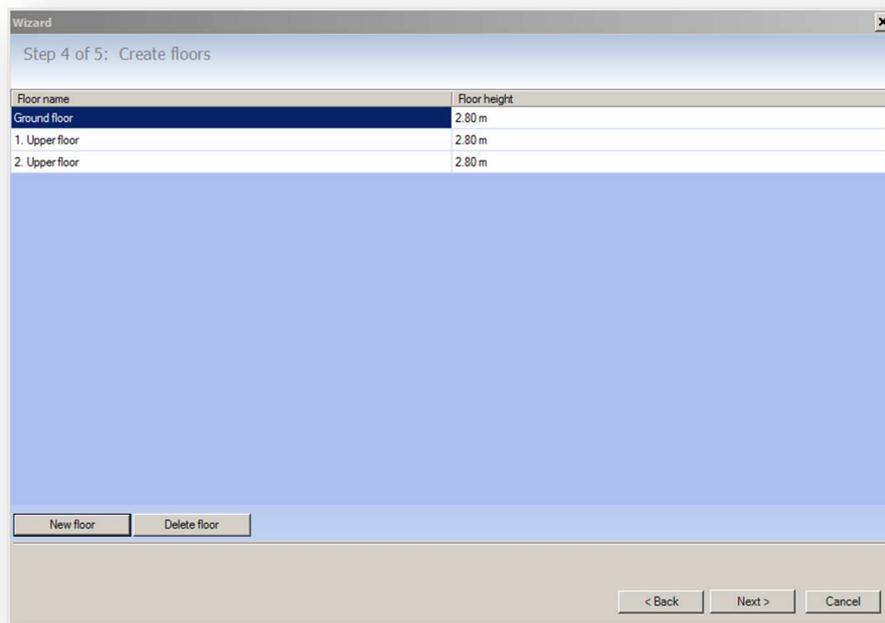


used as the default values in all future projects.

Click **Next** to proceed to the next step or **Back** to return to the previous step, or **Cancel** to exit the wizard.

3.5 STEP 4: CREATE FLOORS

Here you can define the floor structure of your project. An attic can be defined here or in the next step. In the table you can change both the default floor names and the floor height of each floor. To create a new floor, click the **New Floor** Button. Click the **Delete Floor** button to delete the current selected floor in the dialog table



Click **Next** to proceed to the next step or **Back** to return to the previous step, or **Cancel** to exit the wizard.

3.6 STEP 5: ROOF

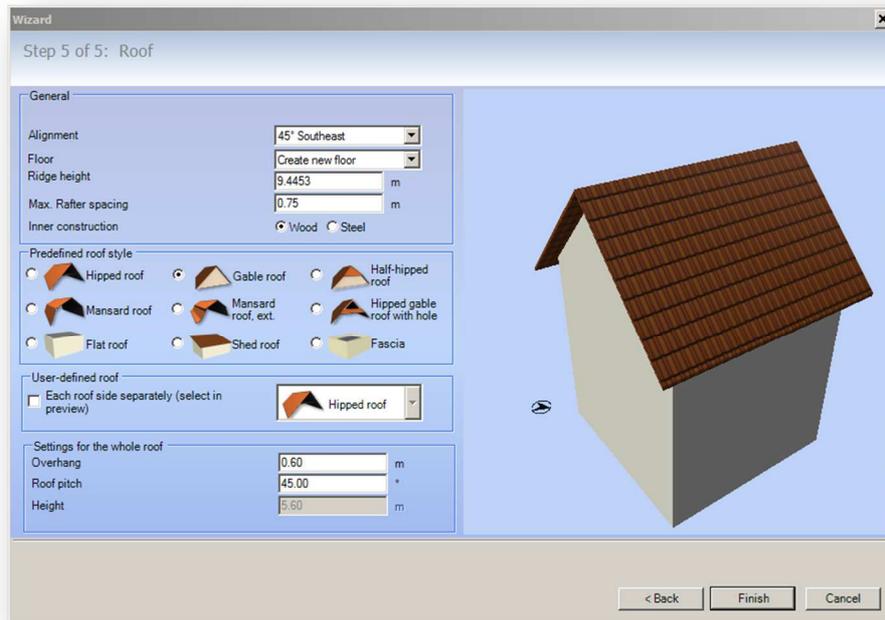
With Step 5, the building is completed.

General

The **Alignment** setting will orientate the compass in the 3D view, and defines the orientation of the building.

The **Floor** drop down list allows you to define where the roof is to be inserted. You can insert the roof on an existing floor or choose to create a new floor for the roof.

Ultimately, it is only an organizational setting for your project, because the height of the roof and its position can be adjusted independently from the floor.



Max Rafter

This spacing determines the maximum spacing between the roof rafters and defaults to 0.75m

Inner Construction

This allows you to specify either wood or steel construction.

Predefined roof style

Some of the most common roof styles are listed.

With each choice, the roof will be recalculated and updated in the 3D preview. The automatic process will make some assumptions regarding the properties of the roof sides for the roof. For example, with the pitched roof the shorter sides of the building are defined as the gable ends.

User-defined roof

If you choose the **Each roof side separately** option, the basic pre-defined roof types are automatically disabled. In the 3D View you can now click on each roof side and then select the roof style from the drop down list.

Settings for whole roof / Roof side settings

If the User defined roof option is not selected then the following parameters are used for all roof sides.

If the User defined roof option is selected then the following parameters are used only for the selected roof side.

Overhang

This determines the overhang of the eaves.

Roof Pitch

This determines the angle of the roof pitch.

Height

This determines the height of the roof from the floor upon which it is placed.

Click **Finish** to complete the wizard or **Back** to return to the previous step, or **Cancel** to exit the wizard.

When completed you then have the opportunity to place your new building within your 2D plan with a single click.

3.7 TRAINING VIDEOS

To access the training videos you must have an internet connection. Selecting training Videos will take direct to Visual Building's online training videos, where you can quickly learn about all the most important features.

3.8 PROJECT SELECTION

This displays a carousel of project examples that you may select and open by clicking on the project image.

4 FIRST STEPS

Visual Building supports both a Classic toolbar user interface and a new Ribbon bar user interface. This chapter will introduce both user interfaces to you.

4.1 USING THE CLASSIC TOOLBAR USER INTERFACE

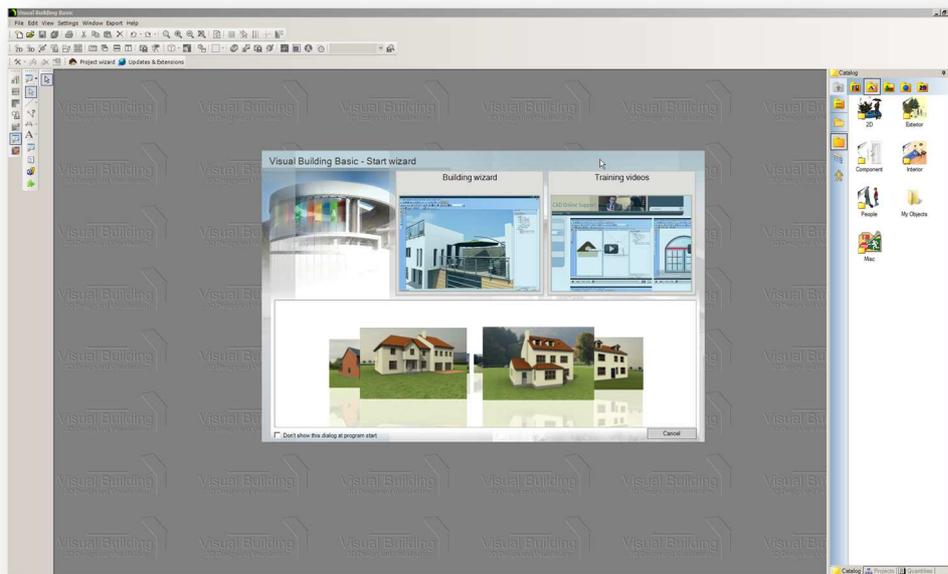
These instructions use the standard Toolbar user interface. This is the original user interface. If you prefer to use the new Ribbon bar interface then skip to the next section **Chapter 4.2 Using the Ribbon Bar User Interface.**

Please note that the following screen shots may vary to your own screen depending upon which Visual Building version you are using, and if you are using Windows XP, Windows Vista, Windows 7 or Windows 8. The screen resolution will also make a difference in appearance.

In our example we are using Visual Building Basic v4 on Windows 7 at a resolution of 1900 x 1200

4.1.1 Creating a project

Start the program using **Start>Program>Visual Building** or using the shortcut on your

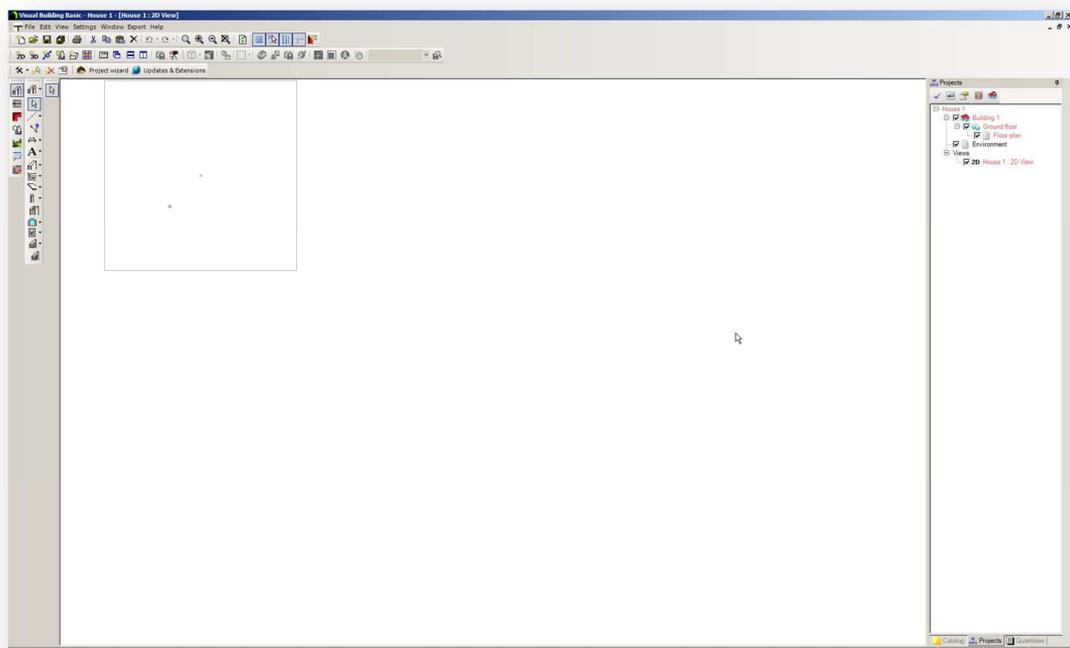


desktop.

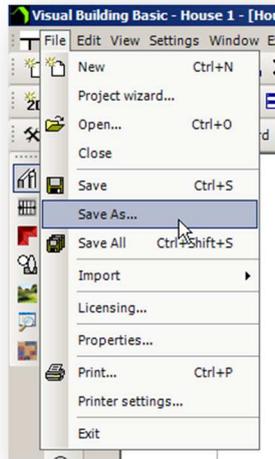
The software logo appears on your screen. Next the program window opens with a grey background and the catalogue on the right-hand side, and the Start Wizard in the centre. We will not use the Start Wizard now so close it by clicking Cancel in the bottom right of the Start Wizard panel.

Select with the mouse the **File** menu in the taskbar, and then click on **New** to create a new project.

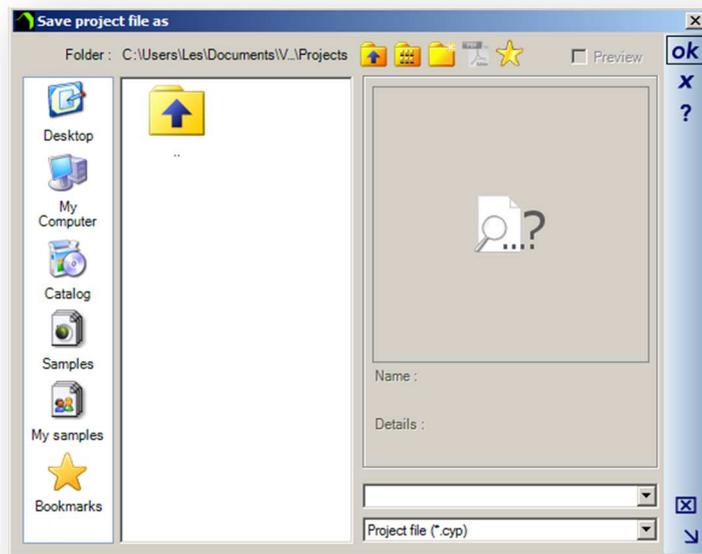
A 2D view with the title 'New Project 1' is now opened. This can be enlarged to a full screen with the standard window maximise button in the top right-hand corner of the window. On the right-hand side you can see the project viewer, which shows the structure of the project. Select the title 'New Project 1' with a right mouse-click and choose 'Rename' in the context menu. Now enter a suitable name for your project, e.g. 'House 1'. Confirm your input with 'Enter'. You can now see that the name to identify the window has also changed.



Before you start work on a new project you should first save it. To do this, use the **File>Save as ...** menu.



The software automatically suggests a directory in which to save your project under 'C:\Documents and Settings\...'. It also makes sense to enter the project name as the file name in the second-last field on the bottom right of the dialog box i.e house 1

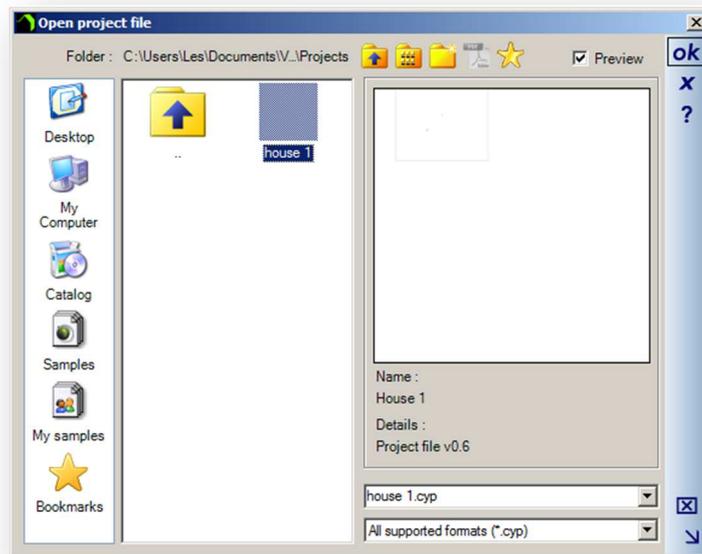


The directory that is provided by your software to save your projects is found on the left-hand side of the dialog box with the title 'Own'. You can of course use any other directory to save your projects. The quickest way to achieve this is with a click on the icon 'My computer'. Then enter the file name and confirm it with 'OK'.



Your project is now saved under a new name and you can save your work at any further stage using the **File>Save** menu or with a click on the Save tool icon in the first horizontal task bar.

If at some later date you select the **File>Open** menu to open your project again then a list of the logical project names, and not the file names, is displayed. Therefore in our example 'House 1' would be shown. However, if a project has been selected, the name of the file is shown in the second-last field on the bottom right of the dialog box. The project can also be found under this file name in the Windows Explorer.

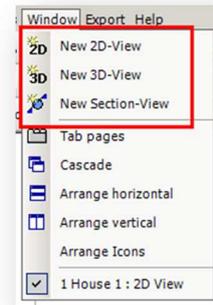


4.1.2 Creating Views

When working on a project the software provides three different kinds of views; the 2D view, the 3D view and the cross-section view. Any number of views of a given kind can be created in the project.

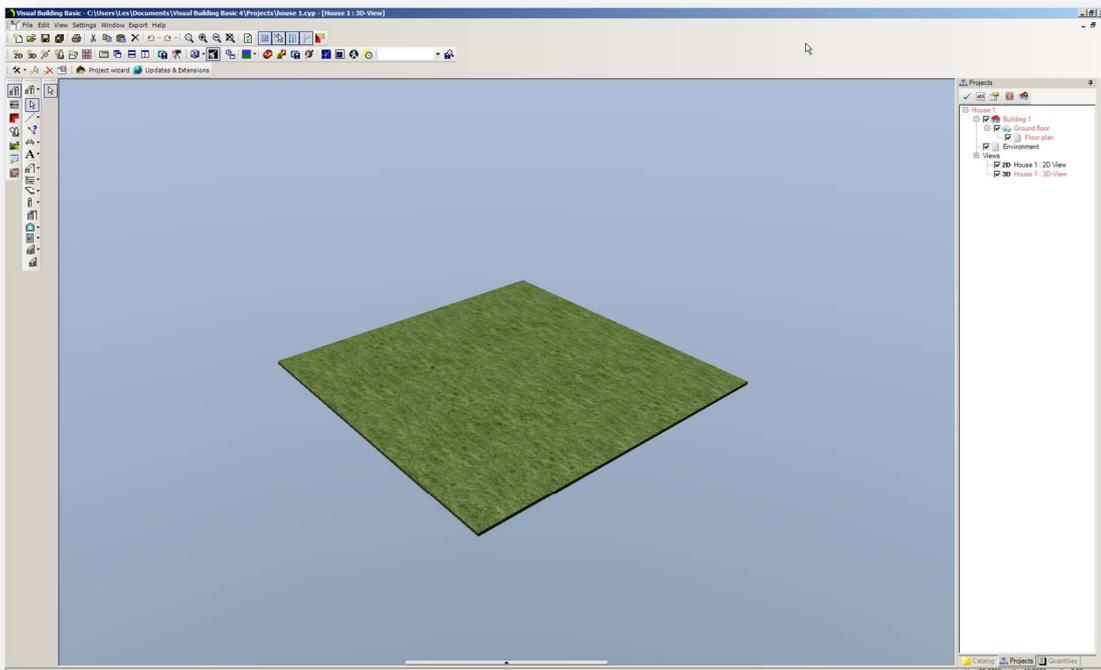
Version Note: The cross-section views are only available in Visual Building Basic upwards.

The 2D view serves primarily to define precisely the structure of the building with its components, e.g. walls, windows, doors etc, to scale in a floor plan, while the 3D view provides a visualisation of the project and serves to insert furniture and fittings and to landscape the grounds. The cross-section view creates scaled sections through the building and scaled elevations, according to where the cutting line is located.

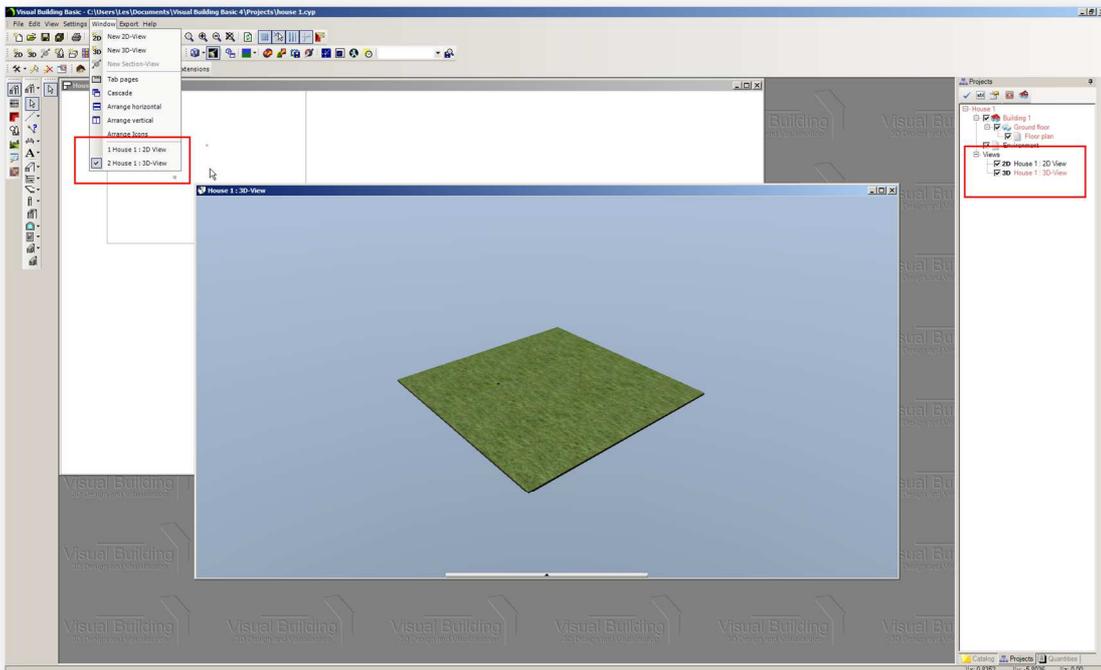


A new view can be created either using one of the first three buttons in the second horizontal taskbar or using the **Windows** menu in which we find the three items **New 2D view**, **New 3D view**, and **New Section View**.

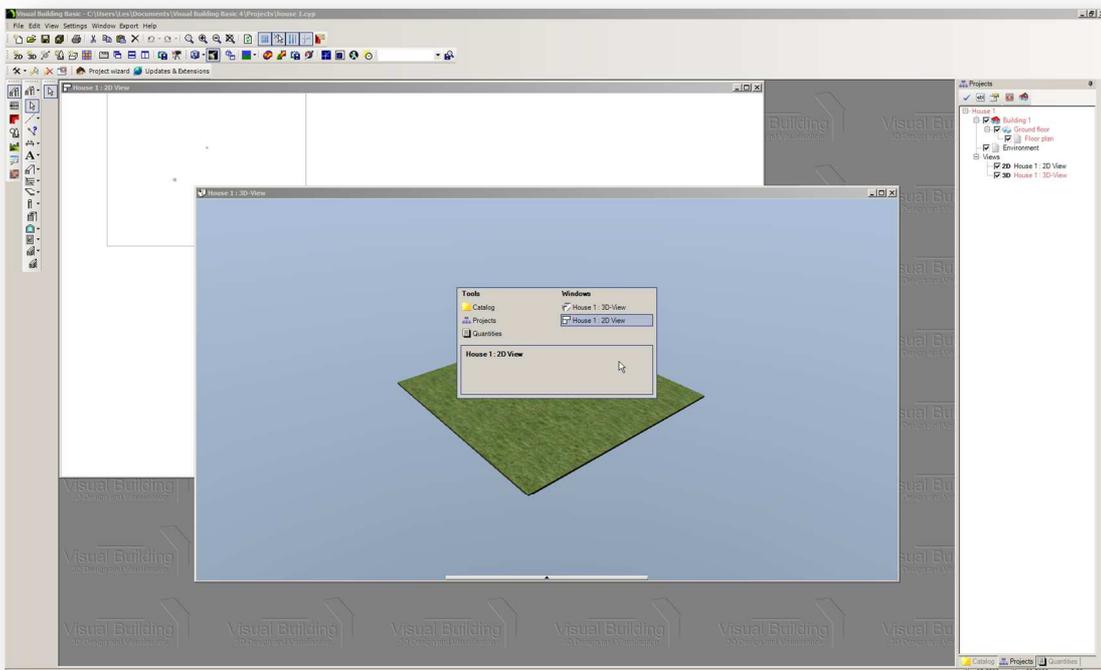
Create a new 3D View by selecting **New 3D View**



Views can be accessed in three different ways in the program; either by using the **Windows** menu, or by using the **Project viewer**,

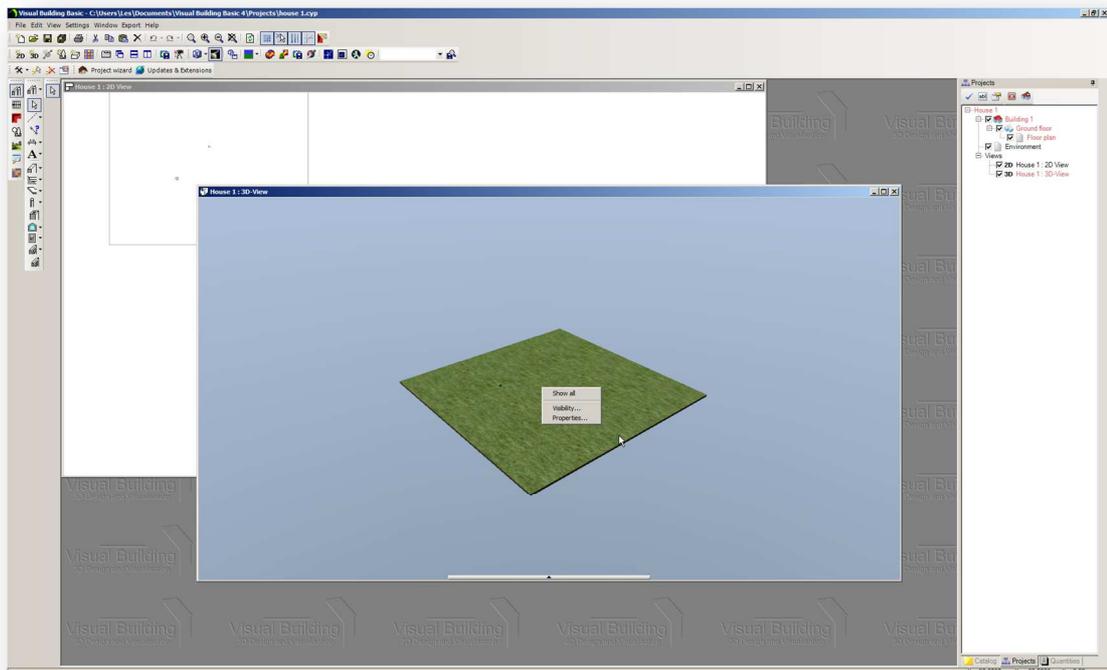


or finally using a context menu which is opened by pressing 'Ctrl+Tab' simultaneously.



Views are closed by simply clicking on the cross in the top right-hand corner. When the last view is closed the project is also closed, but beforehand a dialog box is opened which allows the current state of the project to be saved.

In a view the visibility of each element can be set individually – for instance whether or not the roof, the windows or the furnishings are to be seen. The settings for visibility can be specified for the currently active view using a context menu which is opened with a right mouse-click

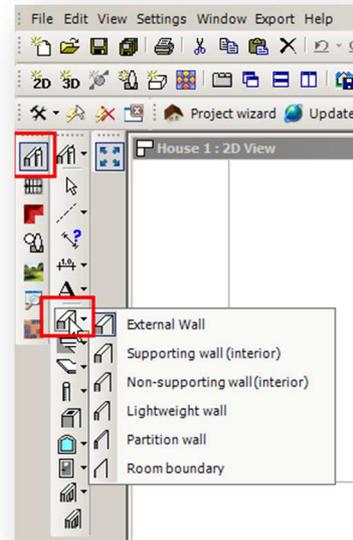


4.1.3 Inserting Walls

Walls are the basic element in planning any building. They form rooms, which themselves create ceilings and floors. Walls are a prerequisite for including windows and doors in the structure. As a rule the first step is to create the exterior contours of the building with exterior walls and then to insert the interior walls into the structure.

Exterior Walls

Select from the 'Plug-in toolbar' with the button for Building components the corresponding plug-in. The functions for building components are then shown in the left-hand vertical toolbar (the plug-in functions are situated below the general functions – these are functions that are always available, e.g Guidelines, Text etc.). The top button of the building components is for the function 'Walls'.



Then activate 'external wall' with a left mouse click on the button. Buttons offering various insert options are displayed in the second vertical toolbar.

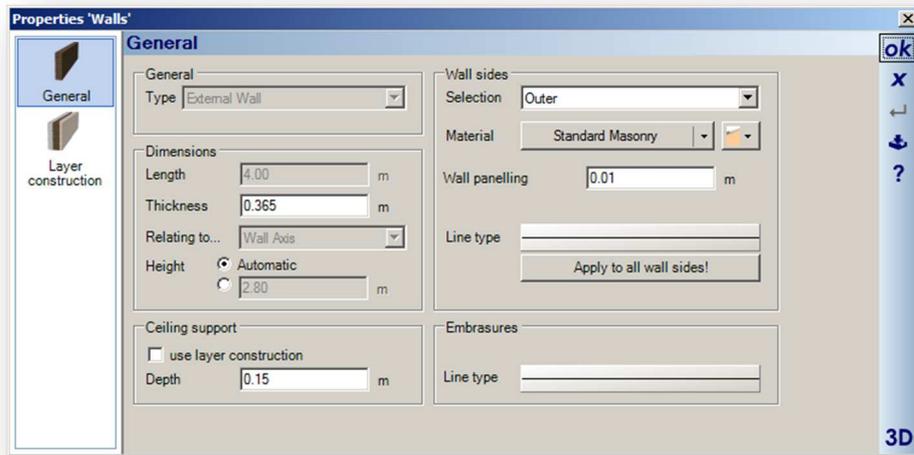
Now select the Multiple Tool **Between two points**, the first tool entry in the toolbar.



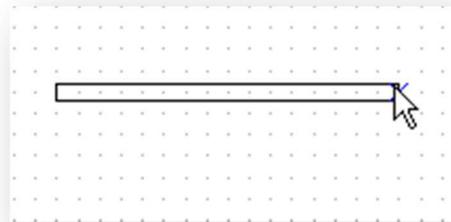
A right click in the planning area opens the following context menu.



Now click on the **Properties** menu item, which opens the **Wall properties** dialog.

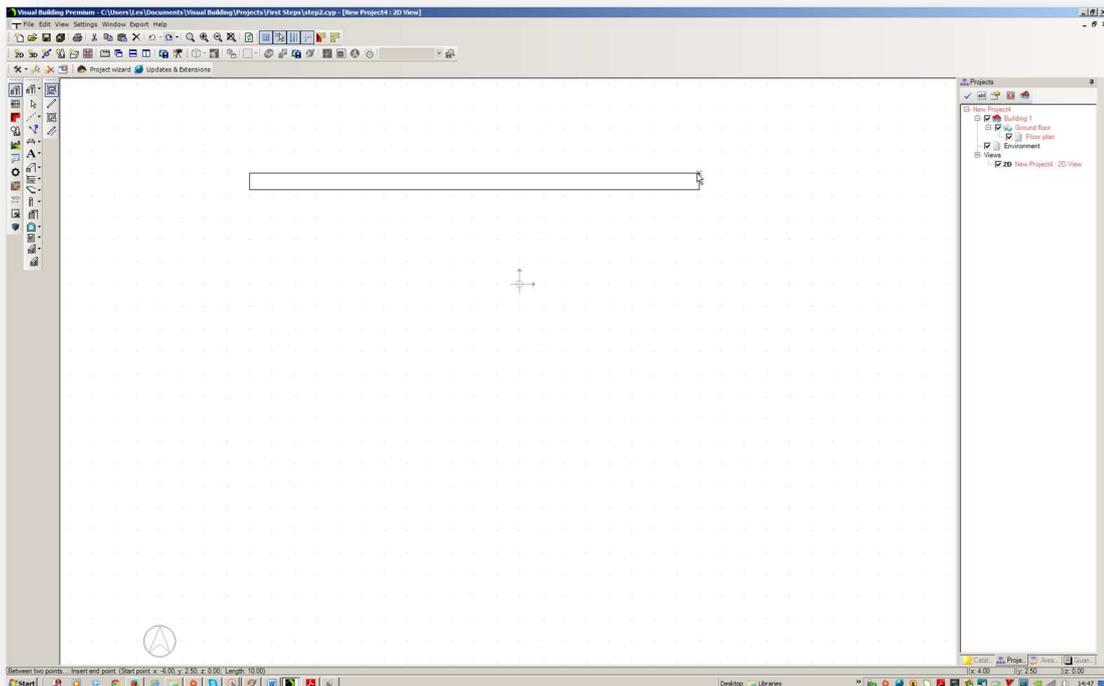


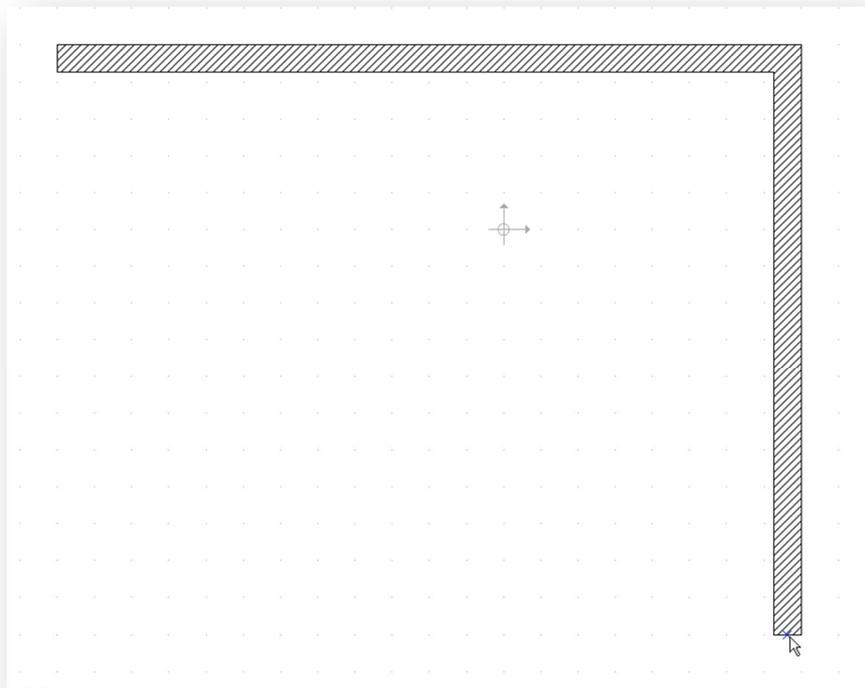
For now we leave the settings as shown in the illustration and close the dialog with **OK**. Now set the start point of the first wall to snap to a point on the grid. The wall snaps to the start point along its axis and is attached to the cursor so that it can be positioned. With the key combination **Ctrl+W** the reference point of the wall at the start point can be changed – from axis to inside edge, to outside edge, to axis.



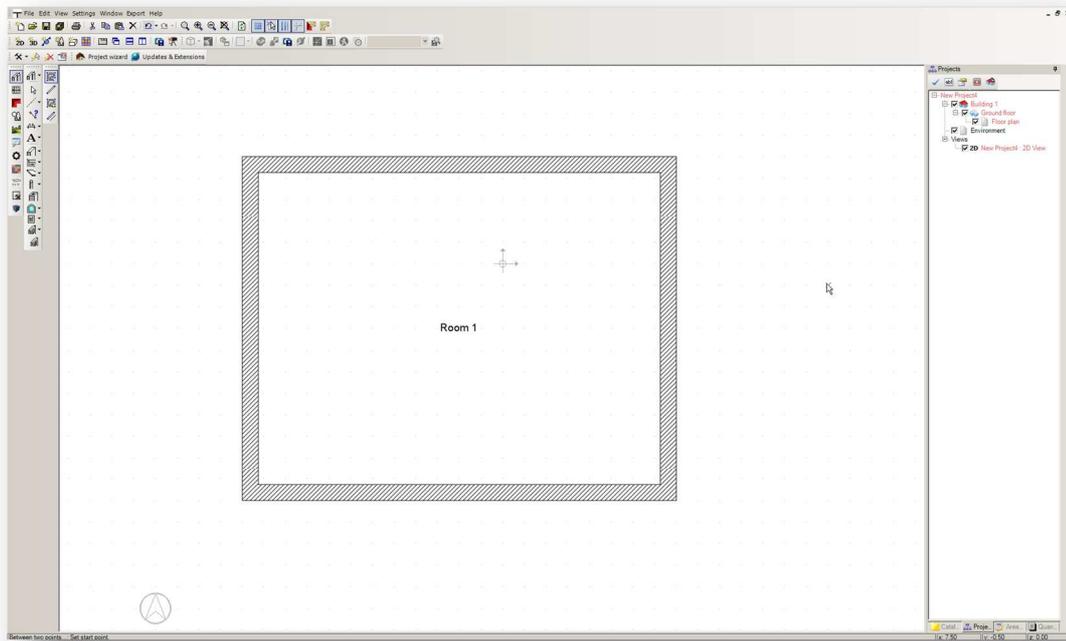
We will select the outside edge as the reference point. Drag out the wall horizontally to the right with the mouse and notice how the value for its length changes in the status bar. Drop the wall at 10 m with a left mouse-click. This will mean the outside edge length of our wall is 10m

Now drag out the next wall vertically downwards to a length of 8.00 m.

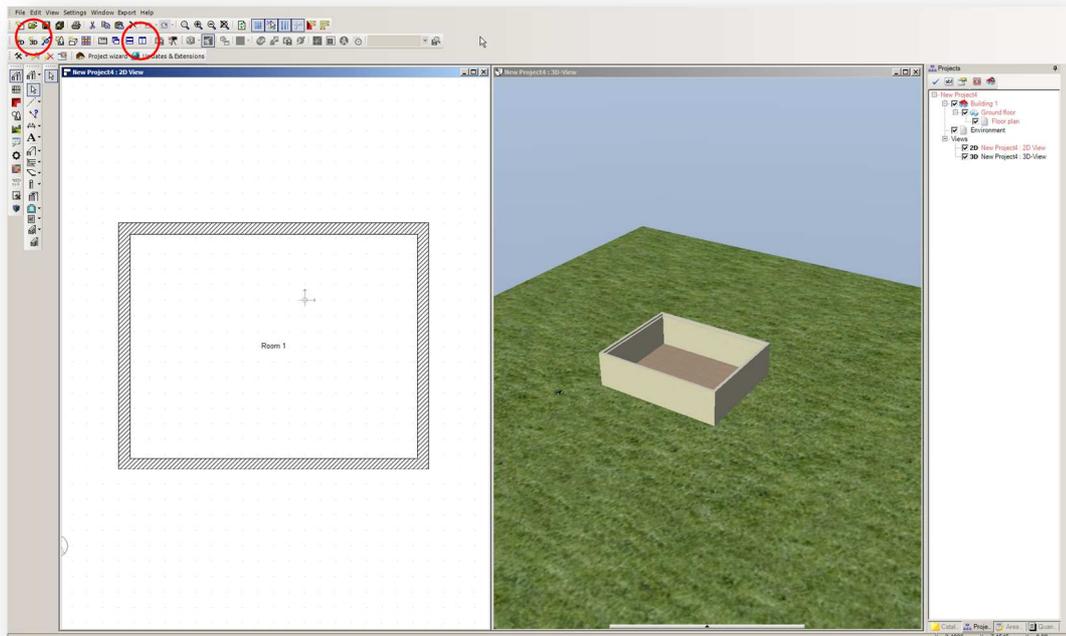




Extend the next wall horizontally 10.00 m to the left and then back to the start point. When the final click is made, and the polygon that forms the contour of the walls is closed, a name for the room appears in the plan. The insert wall function is terminated by pressing the **Esc** key. This should now result in the following picture.

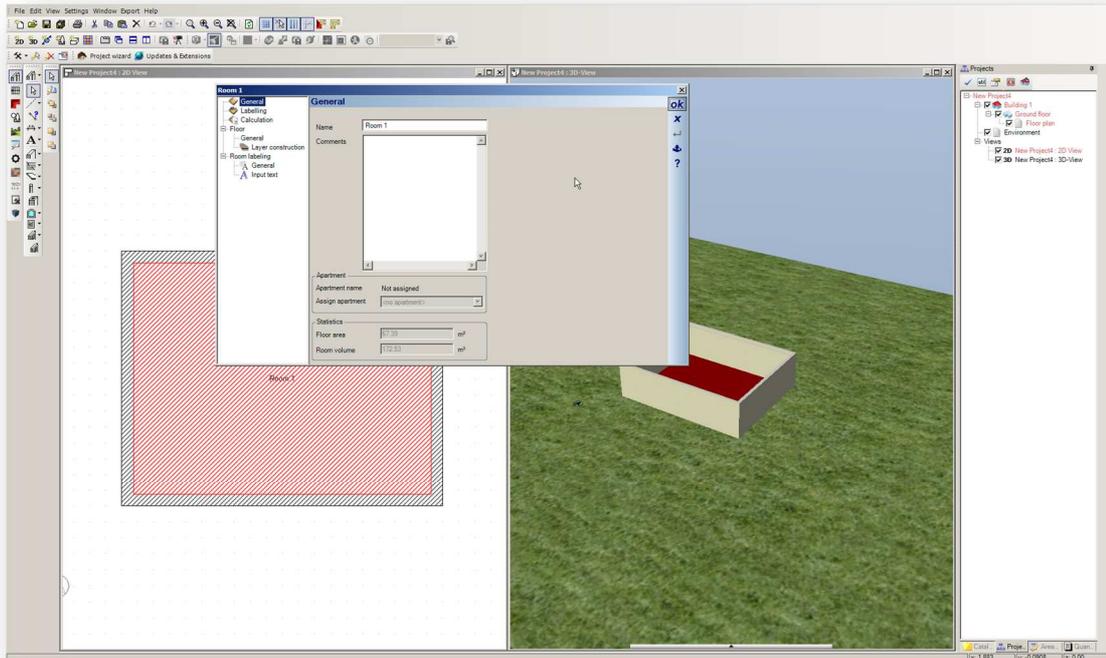


You can check the progress of your work once more in a 3D view, by for example clicking on **New 3D view** tool. Then click on the **Arrange Vertical** tool to see both the 2D and 3D window. See these tools indicated below.



As you can see the room is already provided with a floor, and the recess to support the ceiling is also visible. However ceilings are automatically removed using the visibility settings so that you can see into the structure.

Switch back to the 2D view. If you left click in the room it is highlighted in red to show that it has been selected. Right click in the 2D view to activate the context menu and select **Properties** and the the 'Room' dialog appears.



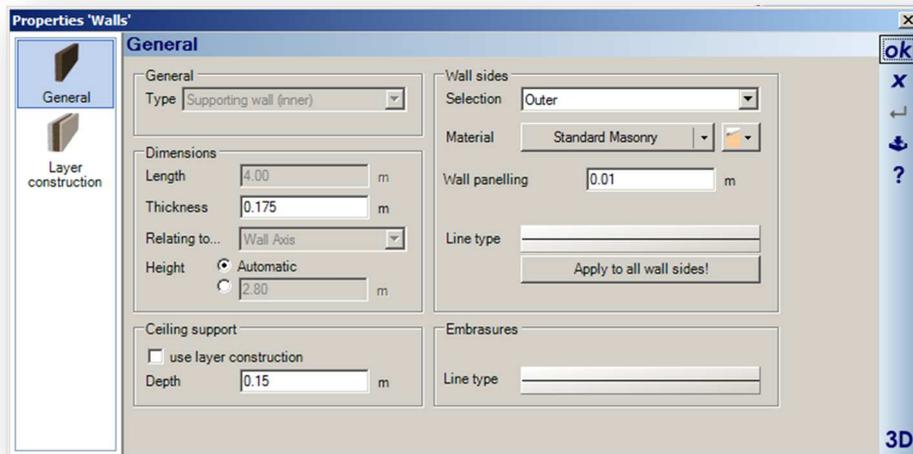
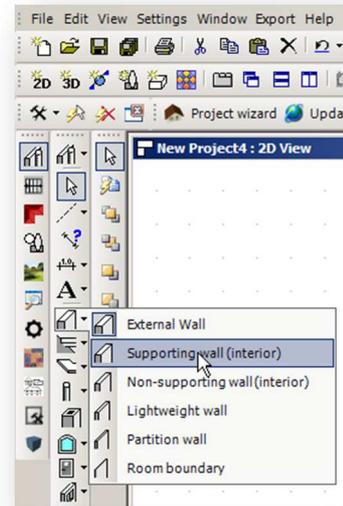
In the 'Room' dialog you can edit the room as regards text, calculation of area, and floor structure.

Interior Walls

Now we want to draw two load-bearing interior walls in the plan. Select the **Supporting Wall (interior)** wall type for this.

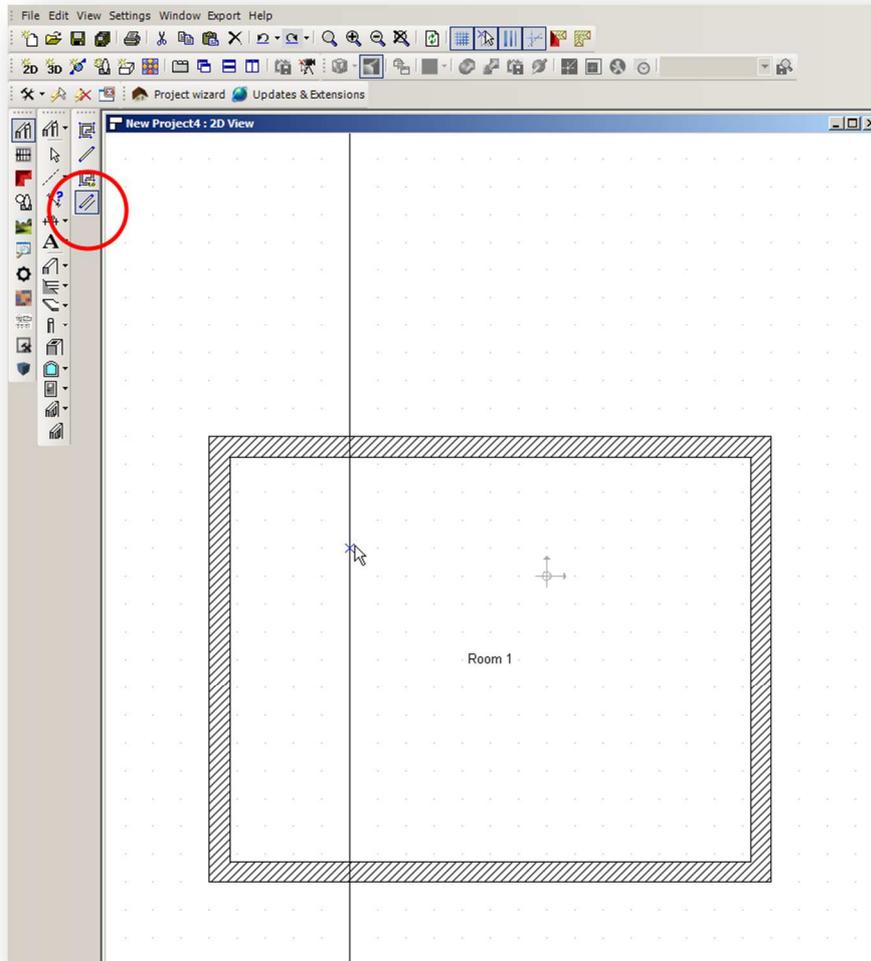
A click on the menu item for **Supporting wall (interior)** makes the wall available as a tool in the left-hand vertical toolbar. If the cursor is positioned over the button a tool tip indicates that it is for the Supporting wall.

A right mouse-click on the **Supporting wall (interior)** tool opens the properties dialog for 'Walls'. Here we can specify the construction details for this wall type.

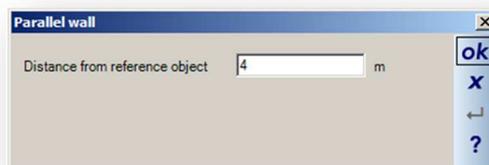


We will accept the default settings and close the dialog with **OK**.

The first interior wall is to be inserted in the plan parallel to the left-hand exterior wall and at a distance of 4.00 m from it. To do this, click on the fourth button in the second vertical toolbar, **Insert parallel wall** (indicated below).



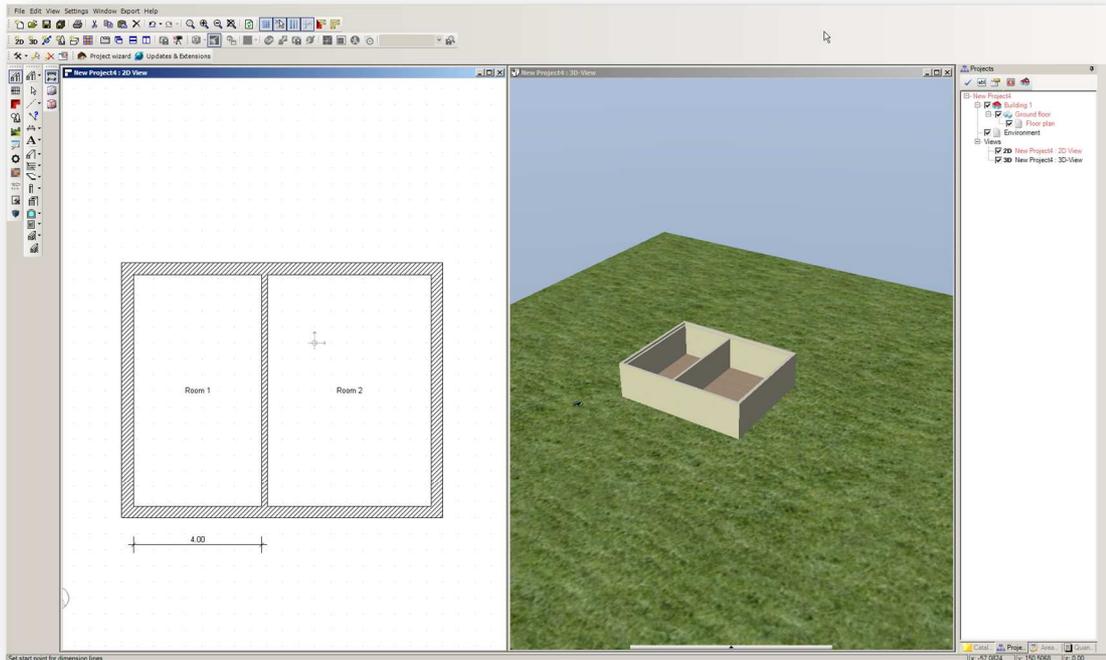
Next the program expects, as you can see in the status bar at the bottom of the window, a reference line to be selected. Click on the inside edge of the left-hand exterior wall to specify this wall edge as the reference line. Now click anywhere to the right of the reference line and the Parallel wall dialog will appear allowing you to specify the distance of the new wall from the reference line.



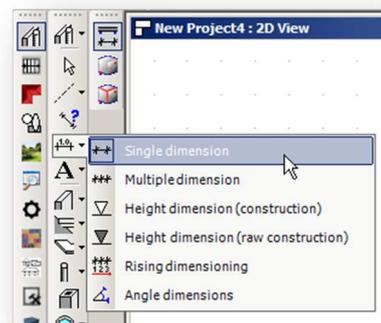
This opens the **Parallel wall** dialog, into which you can insert the distance of 4m.

You can perform calculations in the input fields of the dialog. Enter 2+2 and confirm it with 'OK'.

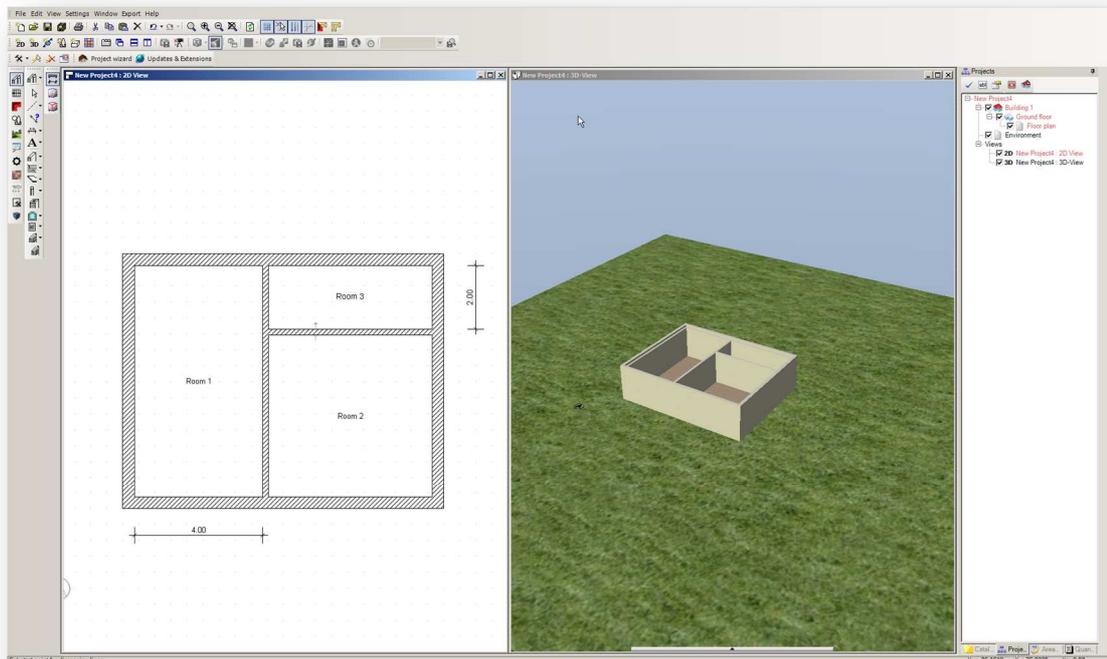
The interior wall is now attached to the cursor. Using the key combination **Ctrl+w** select the left-hand side of the wall as the reference side and drag it out to the opposite exterior wall and place it there with a left mouse-click.



You can check the position of the wall with a dimension line. To do this, click on the **Dimensions** tool. In the second vertical toolbar click on the topmost button **Single dimension**. With the first and second mouse-click we set the start and end point of the dimension line, with the third mouse-click its position.



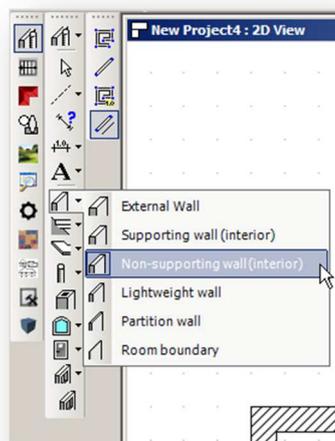
We will now insert a second supporting interior wall, as shown in the illustration.



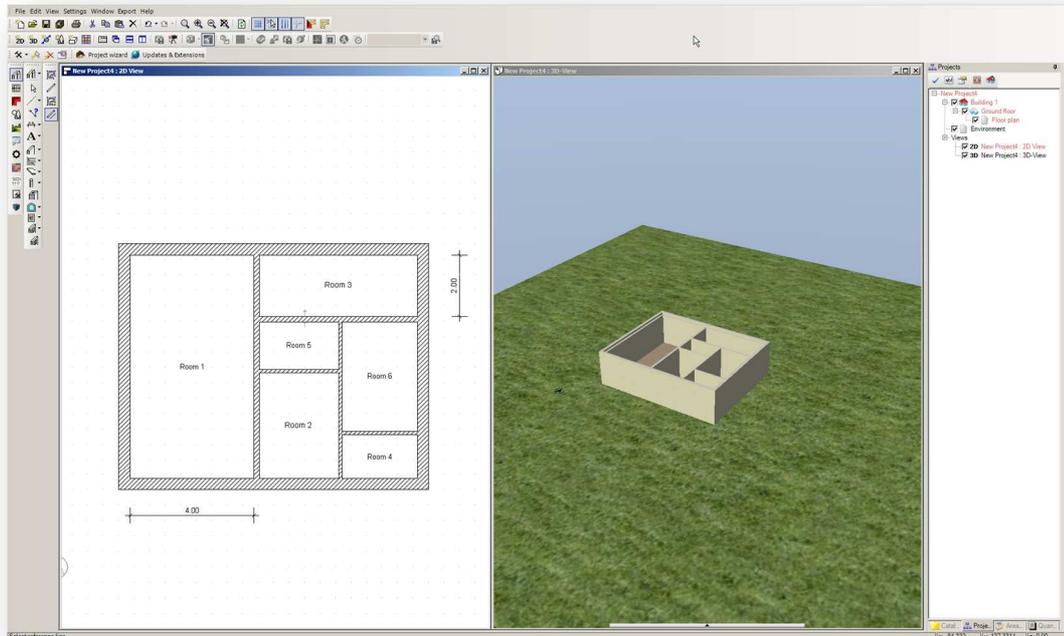
For this you can use the same construction aids as for the first interior wall. Do not forget to select the reference side of the wall with **Ctrl+w**.

Notice how everything you do in the 2D view is automatically replicated in the 3D view. You can also work in the 3D view and the 2D is also updated. You will however find it so much easier to work in the 2D view and not have to worry about the 3rd dimension.

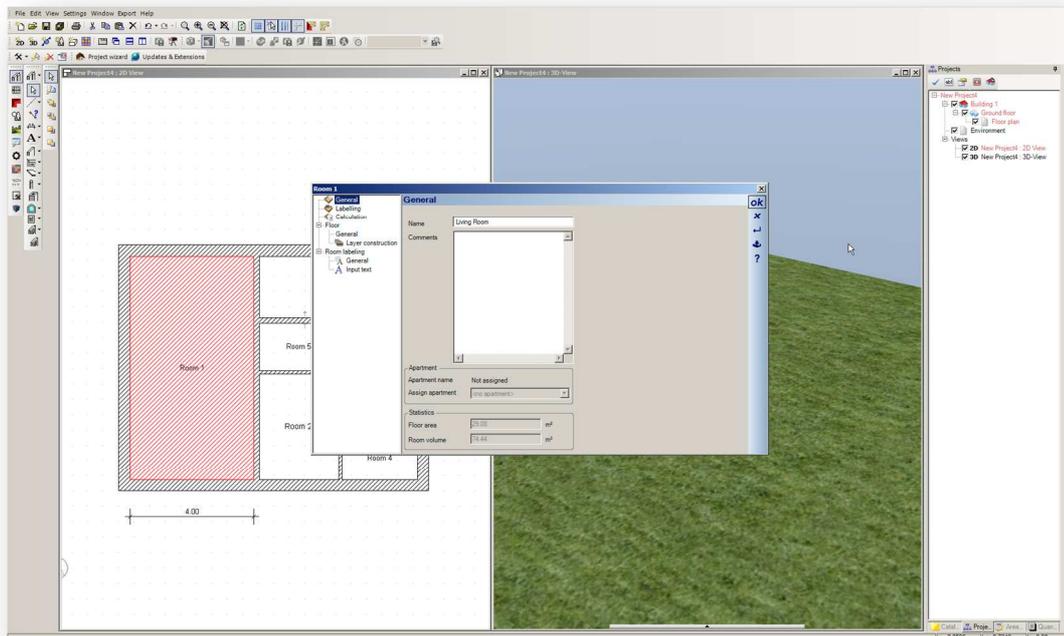
Now select **Non-supporting wall (interior)** from the Wall tools.



Insert in the plan a non-load-bearing interior wall as a parallel wall using the Parallel wall tool as before. Repeat for two more internal walls as shown.

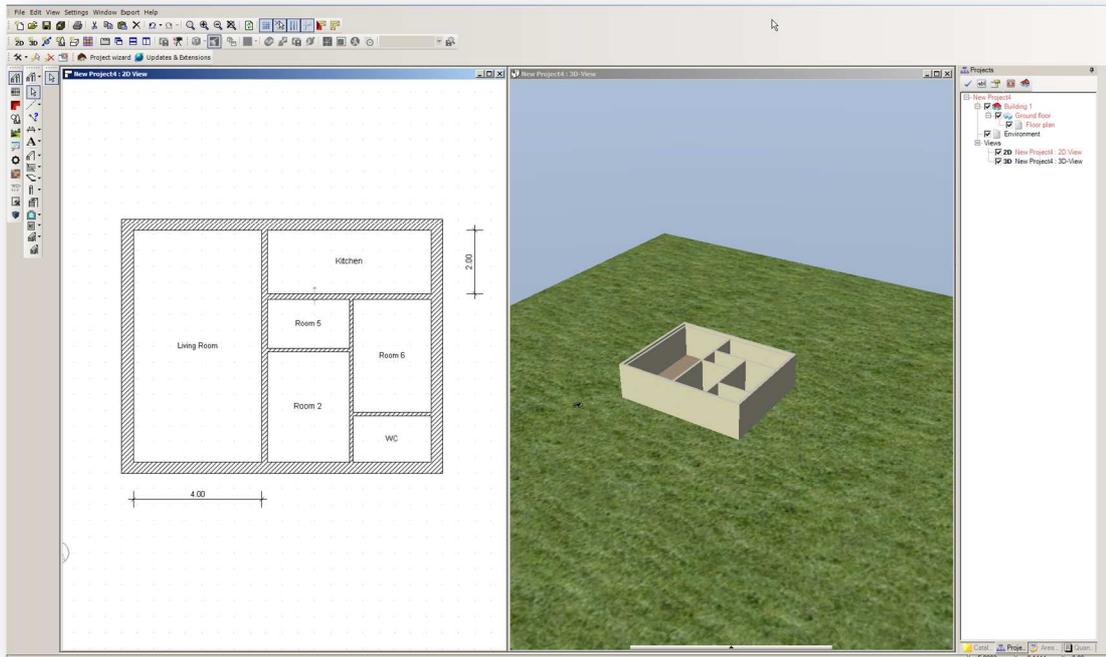


Now select the large Room 1 so that it is highlighted in red. Activate the Room dialog with a click on **Properties** in the context menu, which is opened with a right mouse-click, or alternatively double click on the selected room.



Change the name of the room to **Living Room**. In the same way change the names of the other rooms appropriately.

Note that each time you add a new wall if it dissects an existing room then a new room is created. You can determine that a new room is created because it is automatically labelled Room n. This happens for all wall types- except for the **Partition wall** type. The placement of the **Partition wall** type will not create a new room or form a connection to existing walls.



4.1.4 Inserting Windows

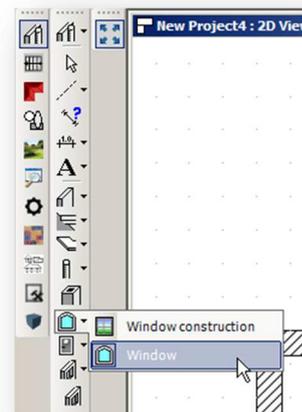
The software offers a selection of different windows and doors. We will begin by inserting a standard window.

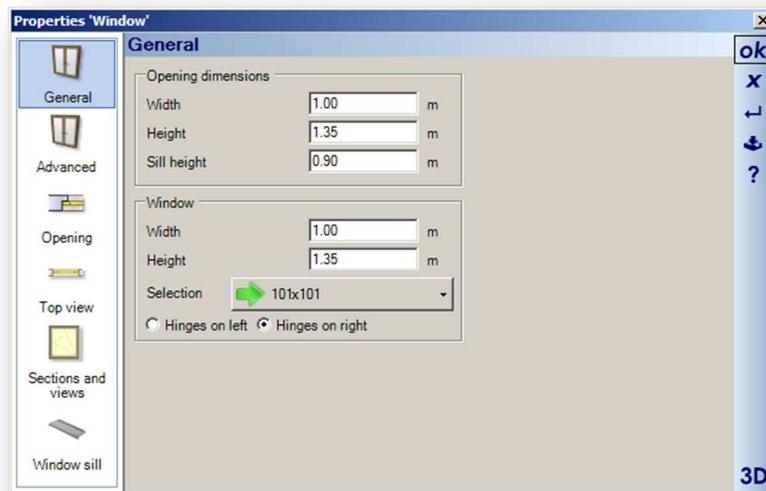
Locate the tool for a standard Window in the left-hand vertical toolbar and activate it with a left mouse click.

Note that there are two window tools. For now use the **Window** tool.

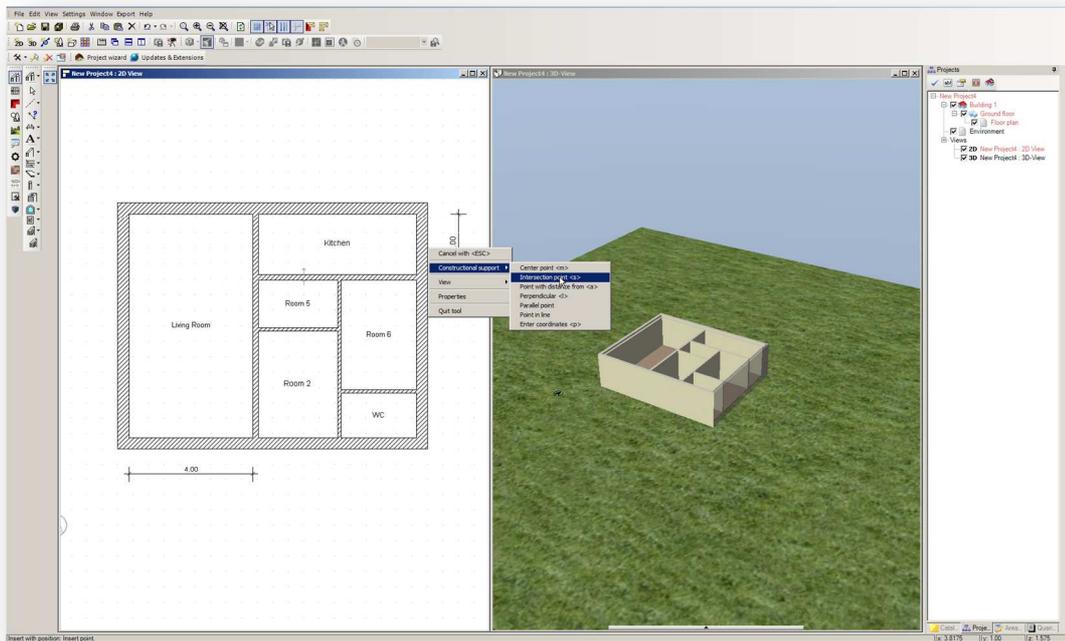
A right mouse click on the button now opens the properties dialog for Windows.

Change the height to 135 cm. and confirm it with **OK**

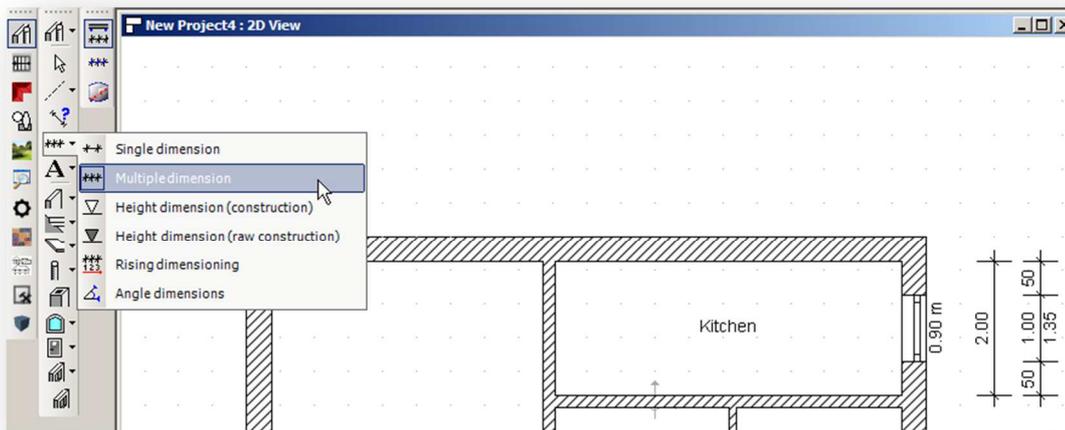




If you move the cursor over the plan, and in the vicinity of walls a preview of the window you are inserting is shown. You can see an arrow which symbolises the direction of opening of the window depending on which side of the wall the cursor is positioned. You can now position the window freely in the wall. However we want to position the window in the middle of the exterior wall of the room marked Kitchen. To do this, we will use the construction aids. Move the window over the right-hand exterior wall of the 'Kitchen' until the arrow for the direction of opening points inwards. With a right mouse-click open the context menu and select **Constructional support>Centre point**



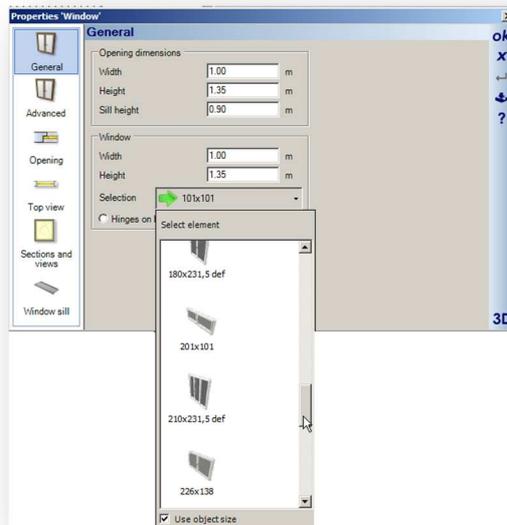
You are now requested in the status bar to enter the start point of the length to be centred. Choose as the start point the inside corner of the exterior walls on the top right. As the end point select the inside corner adjacent to the Utility room. The window is now inserted in the middle of the wall. You can check this by activating 'Multiple dimensions' in the left-hand vertical toolbar.



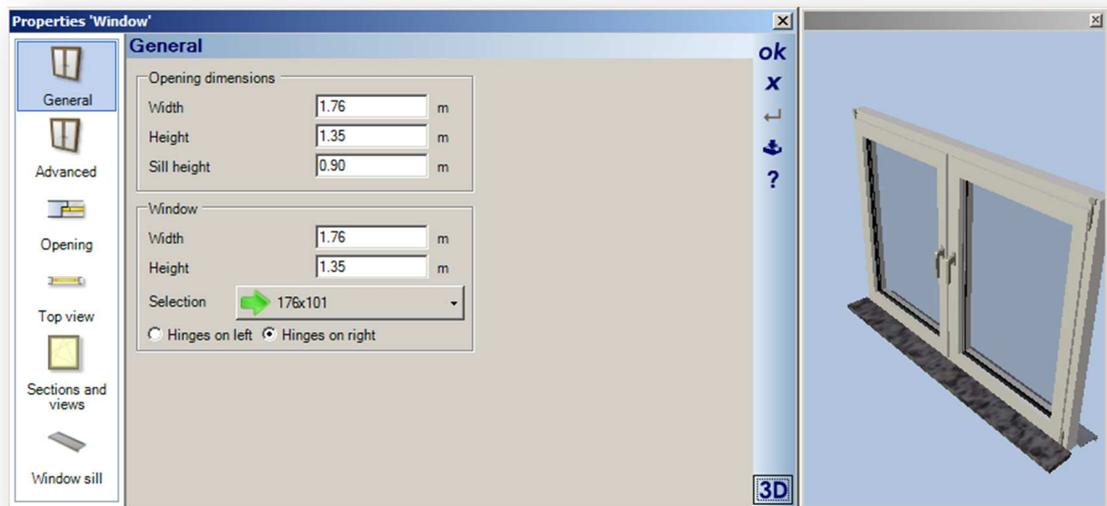
The chained dimensions are entered using the same two points as were used to construct the midpoint of the wall. Note also the sill height 0.90m is also automatically added.

Using the same process, insert further windows in the Utility room and the WC. The centre point insertion can also be activated by pressing 'm' on the keyboard instead of using the context menu item for **Construction aids**.

We will now place a different window to that we just inserted. With a right mouse-click on the **Window** tool in the left-hand vertical toolbar open the properties dialog for 'Window' and click on the button to open a selection of windows.

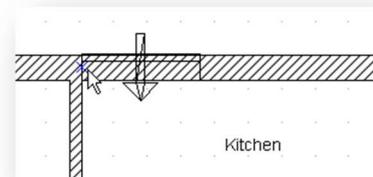


Check the box **Use object size**. at the bottom of the selection window. With a double-click, open the **2 Sash** folder and with a further double-click select the window '176 x 101.cyg'. Set the height of the window to 135 cm.



You can click on the 3D button to see a 3D preview of the window.

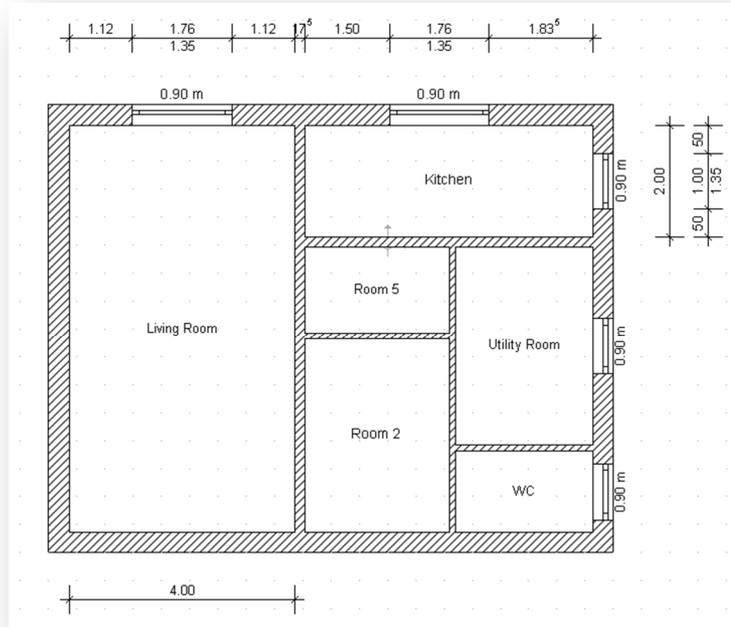
Position this window in the middle of the wall at the narrow end of the living room. In the kitchen we want to position the window at a distance of 1.50 m from the living room wall. To do this, press the key combination **Ctrl+w** until the left edge of the window is selected as the reference point. Move the cursor up to the interior wall so that the blue cross snaps to it.



Now Right click to activate the Constructional support menu and select **Point with distance from.** (or alternatively use the shortcut key **a**).

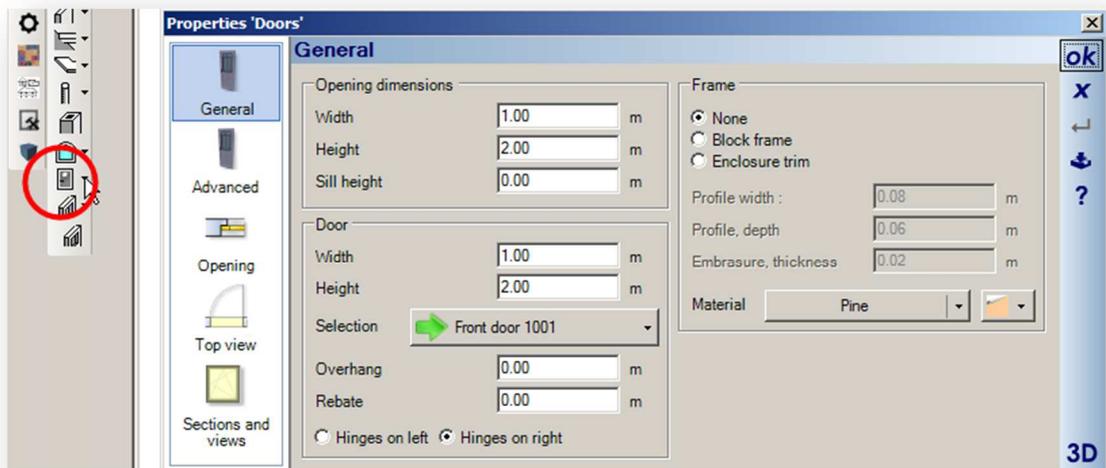
This tool now requires a start point and a direction. Start point is the left corner. Enter now the direction and place the window with another mouse click on the inner side of the wall. Enter 1.50 m in the appearing dialog.

Place a similar window in the top Living Room wall, and then add som chain dimensions as before.

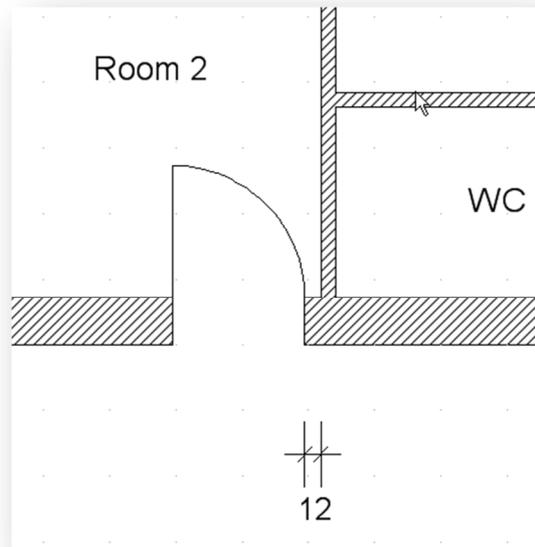


4.1.5 Inserting Doors

Doors are inserted in basically the same way as windows. The Door tool is located under the Window tool in the left-hand vertical toolbar. A right mouse click on the door tool opens the properties dialog for 'Door' with the **Selection** button located in the middle.

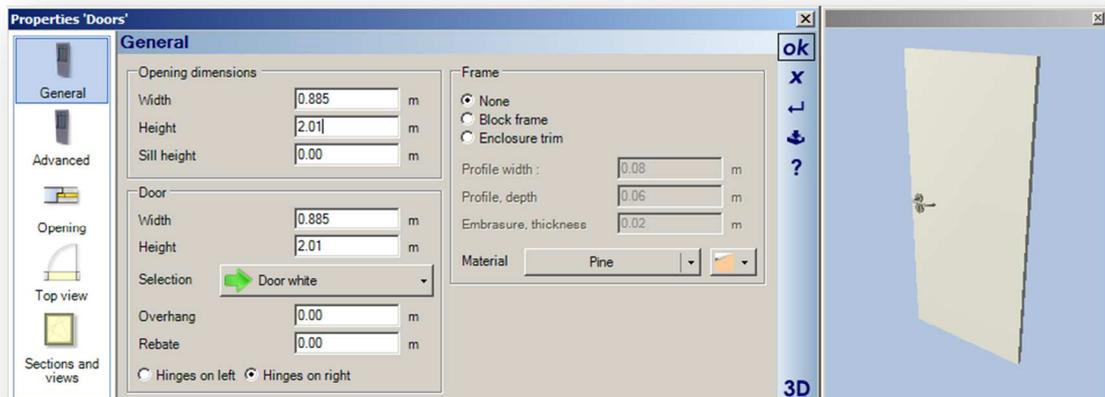


Check the **Use object size** box at the bottom of the selection window and with a double-click select a door from the list. Accept the settings with **OK** and insert the door in the exterior wall of the hall at a distance of 12 cm from the wall of the WC. To do this, select the right side of the door as the reference side with the key combination **Ctrl+w** and move the cursor to the edge of the interior wall adjacent to the WC.

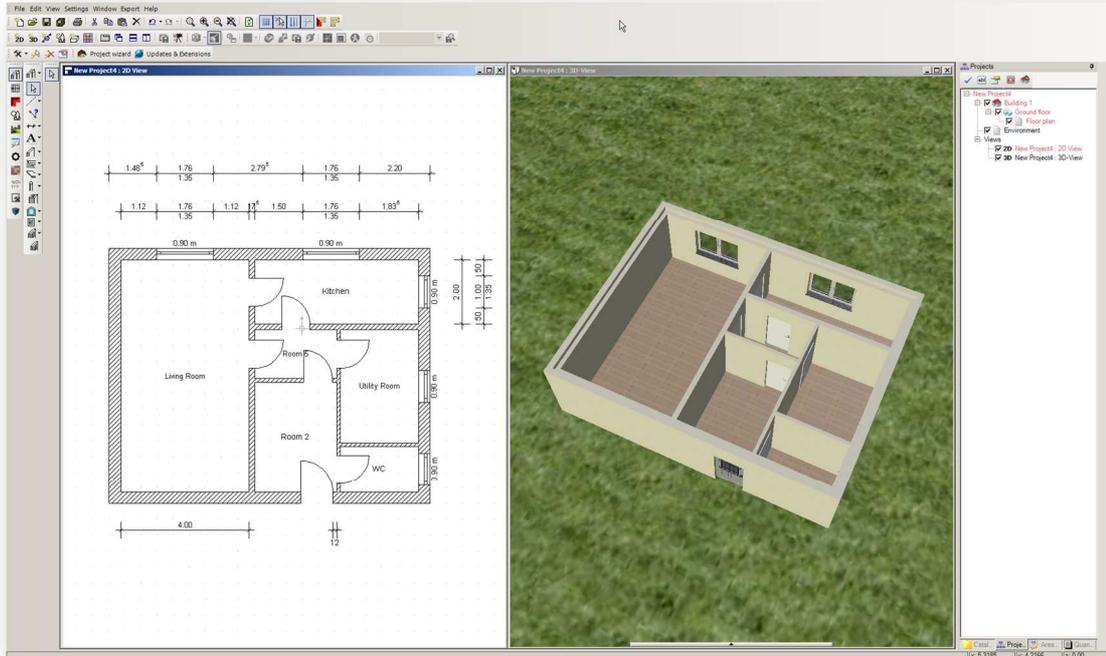


Press 'a' on the keyboard and enter 0.12 after having selected the reference corner point and the direction. Click on **OK** to position the door.

To insert the interior doors right-click on the **Door** tool in the vertical toolbar and then select the Interior Doors folder and then an interior door. Enter 88.5 cm for the width and 2.01 m for the height.



After inserting the interior doors in the plan, some at a specified distance from other walls, some in the middle of walls, the plan appears as follows:



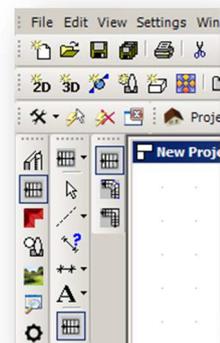
4.1.6 Inserting Stairs

The Stairs tool is located in the third horizontal toolbar, the plug-in toolbar. After the Stairs tool has been activated the **What** toolbar is updated and you start by clicking on the button for **Stair construction**. You can choose from three types of staircase:

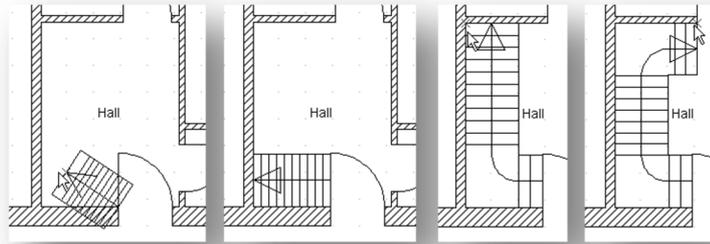
Straight stairs, Geometrical stairs, Stairs with landings

Select the **Geometrical stair**. Set the start point in the hall on the inside edge of the front door. The stairs are now attached to the cursor.

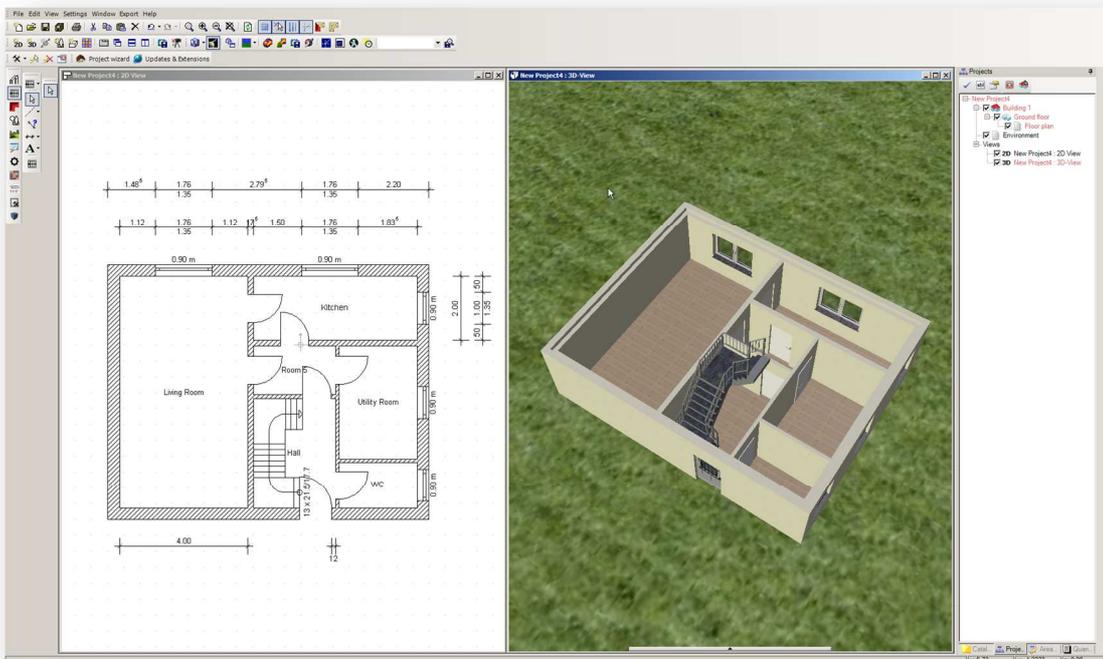
Change the reference point of the stairs with the key combination **Ctrl+w** (select the bottom lower reference point).



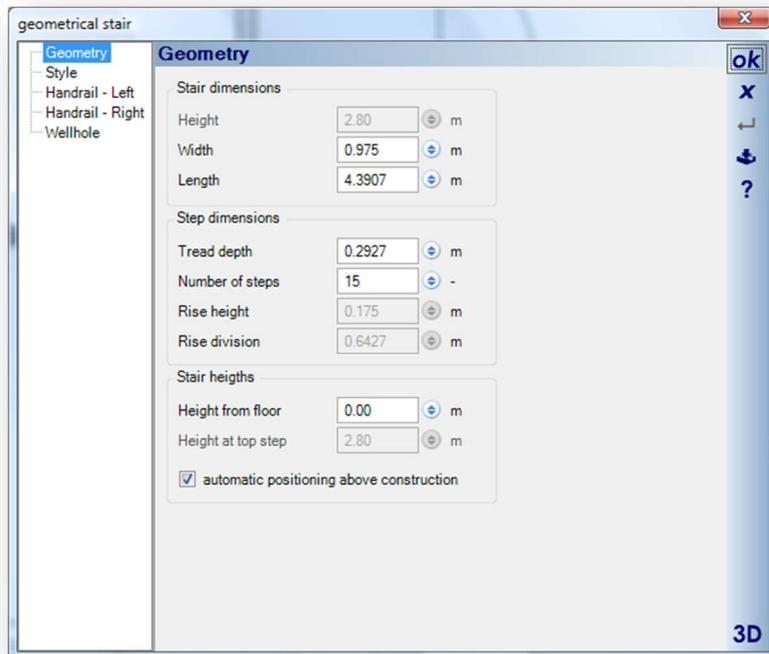
Click a second time in the bottom left-hand corner of the hall, a third time in the top left-hand corner of the hall and finally on the left edge of the door in the hall. Now press 'Enter' and the 'stair' dialog appears.



Simply click on **OK**. The plan of the stairs should now appear as shown in the following illustration.



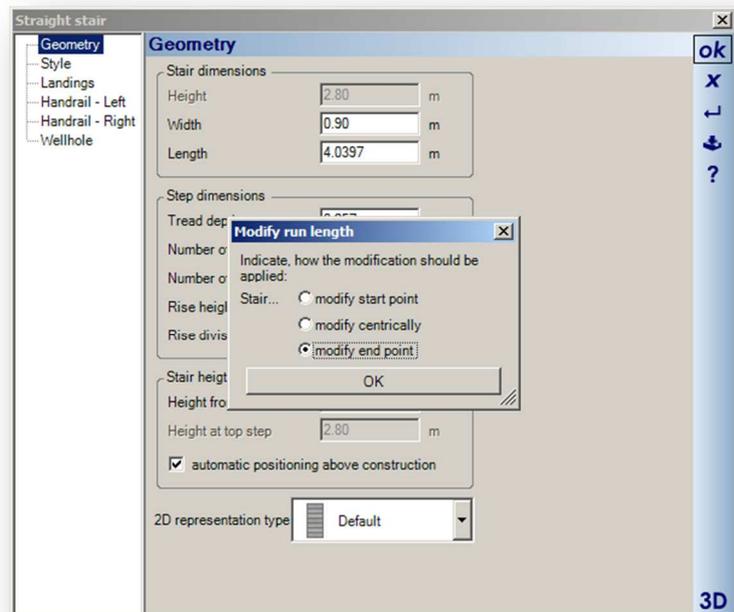
To edit the stairs select them with a left mouse click so that they are highlighted in red. With a right mouse click open the context menu and select properties. The 'stair' dialog appears. Be careful to select the stairs and not the stair well cutout.

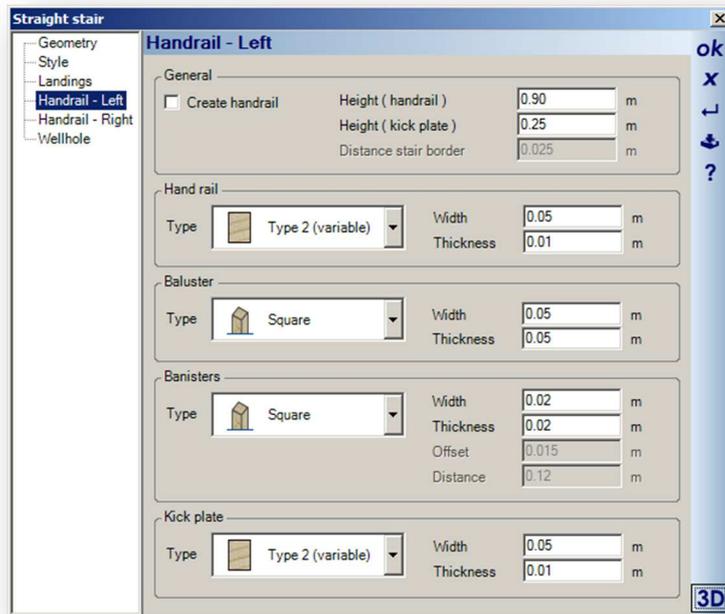


The dialog provides settings for the type of staircase construction (solid stairs or wooden stairs), for the type of banisters and the size of the stair well cut out. Under the **Geometry** tab of the stair dialog, set the **Width** in **Stair dimensions** to 90 cm and the tread depth to 25.7 cm. If you click on one of the other input fields the message **Modify run length** dialog appears.

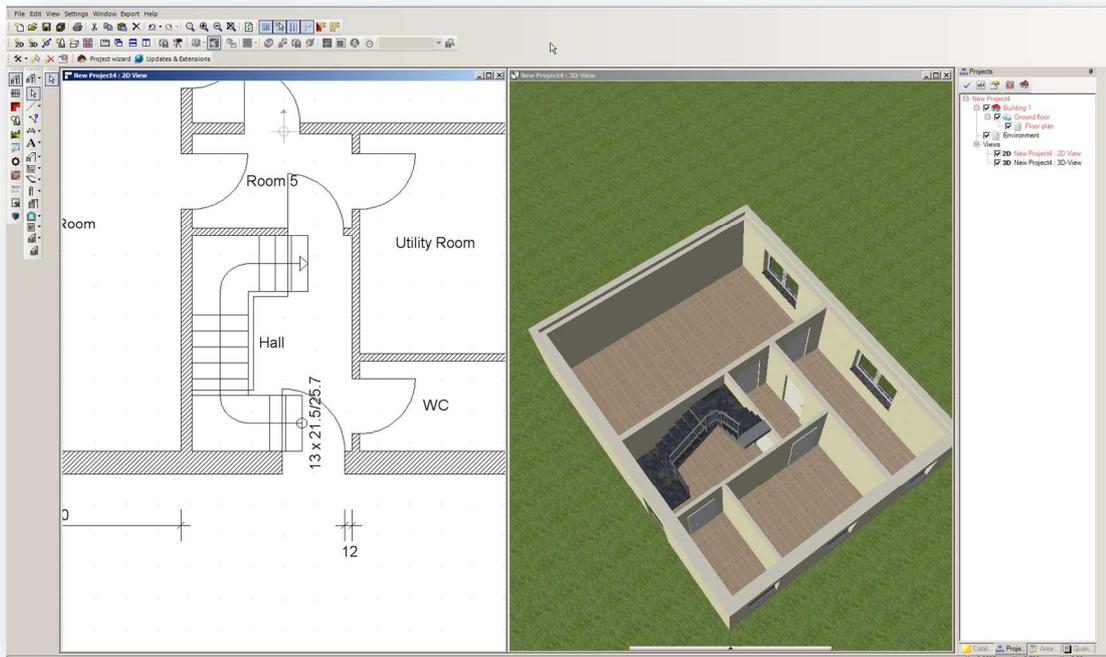
Select **modify centrally** and close the dialog with **OK**.

From the menu on the left select the properties dialog **Handrail left** and deactivate the option for **Create handrail**.



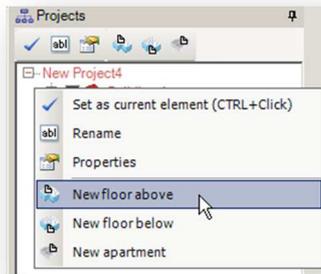


Close the dialog with **OK**. The stairs should now appear in the plan as shown in the following illustration:

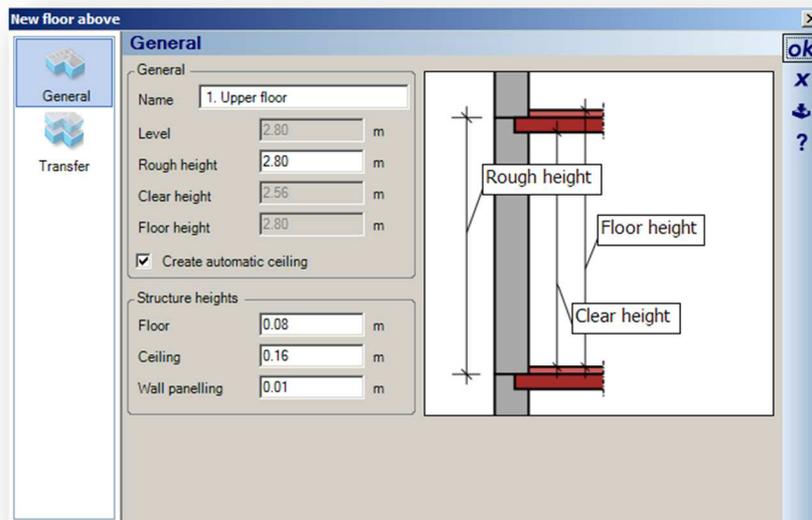


4.1.7 Copying a Floor

To create a new floor above the current one, go to the project viewer, highlight Building 1 and open the following context menu with a right mouse click:



A click on **New floor above** entry in the context opens the following dialog:

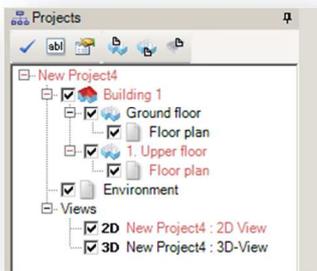


You can also open this Floor dialog by clicking on the **New floor above** tool in the toolbar of the project viewer.

In the Floor dialog select the **Transfer** tab in the left-hand column. Select under Objects **none** to cancel the current selection, followed by **Selected**. Then in the menu tree activate under 'Construction elements' only Walls, Floors and Ceilings.

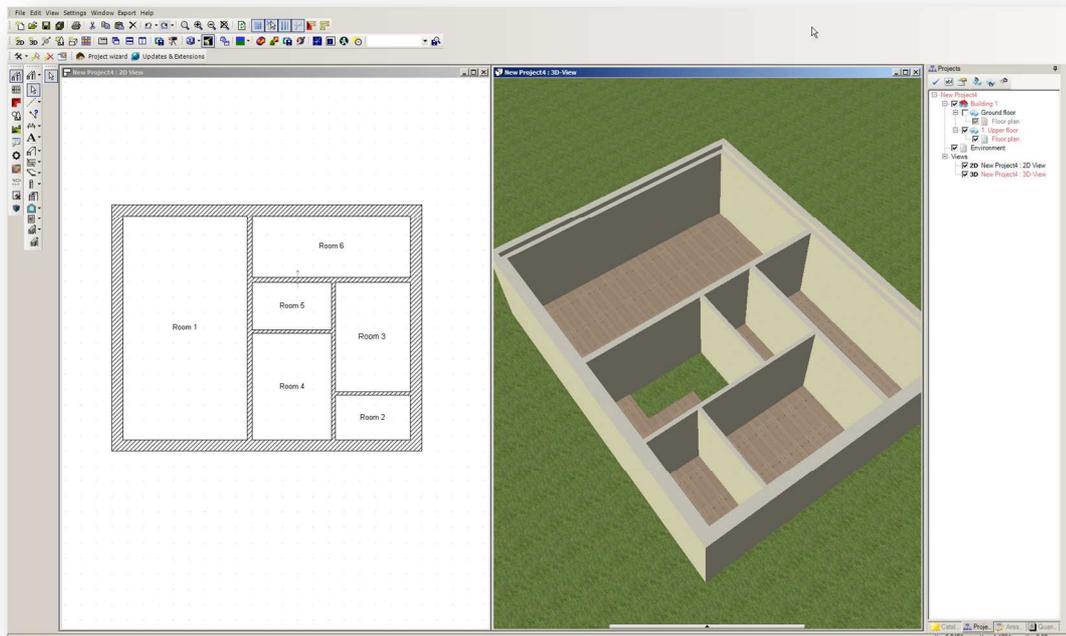


Confirm the settings with **OK**.

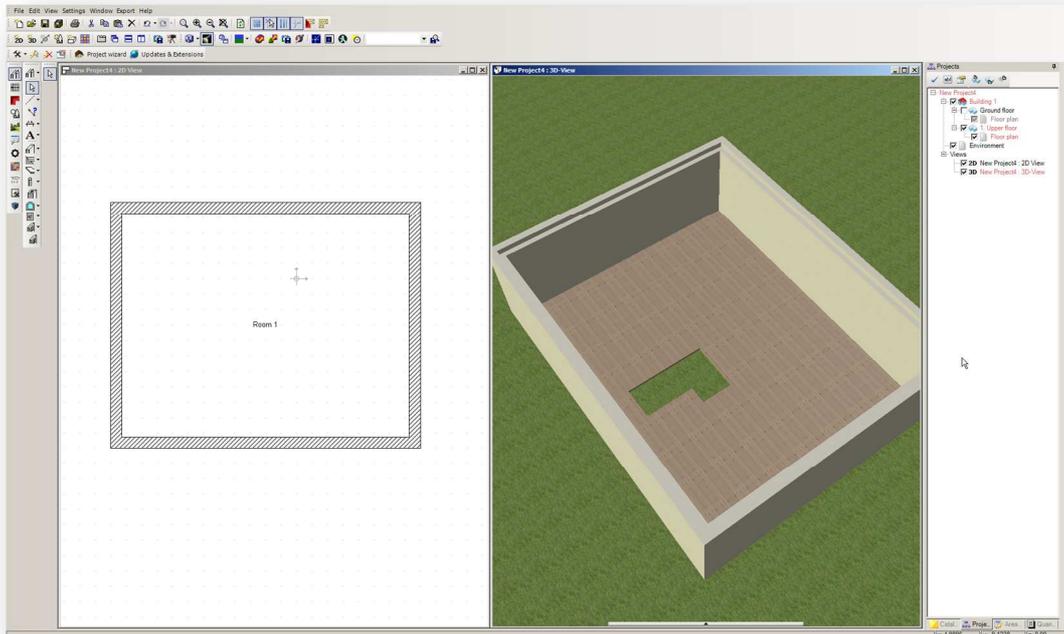


You now see the ground floor and the upper floor on top of each other.

To show just the upper floor deactivate the ground floor in the project viewer.



Now with only the upper floor showing, delete the interior walls by selecting a wall and then pressing **Del** on the keyboard. This can be achieved in either the 2D or 3D view.



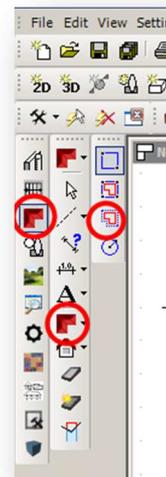
4.1.8 Inserting a Roof

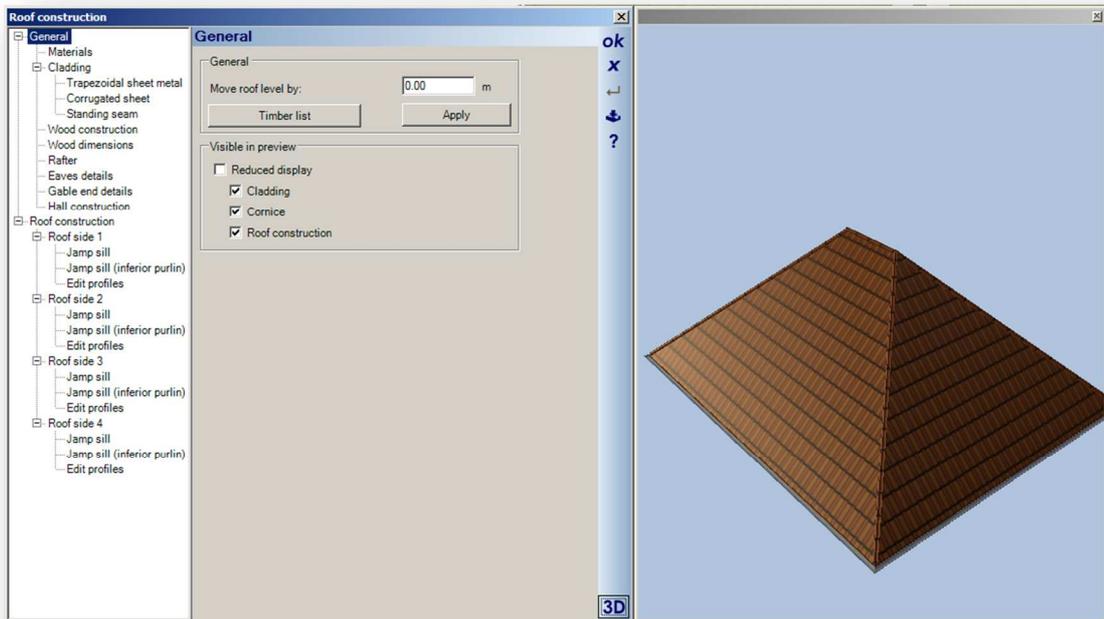
To insert a roof on the top floor, select the **Roof construction** tool in the toolbar.

Now click again on the **Roof construction** tool in the Plug-in functions. Select **Insert roof on selected contour**.

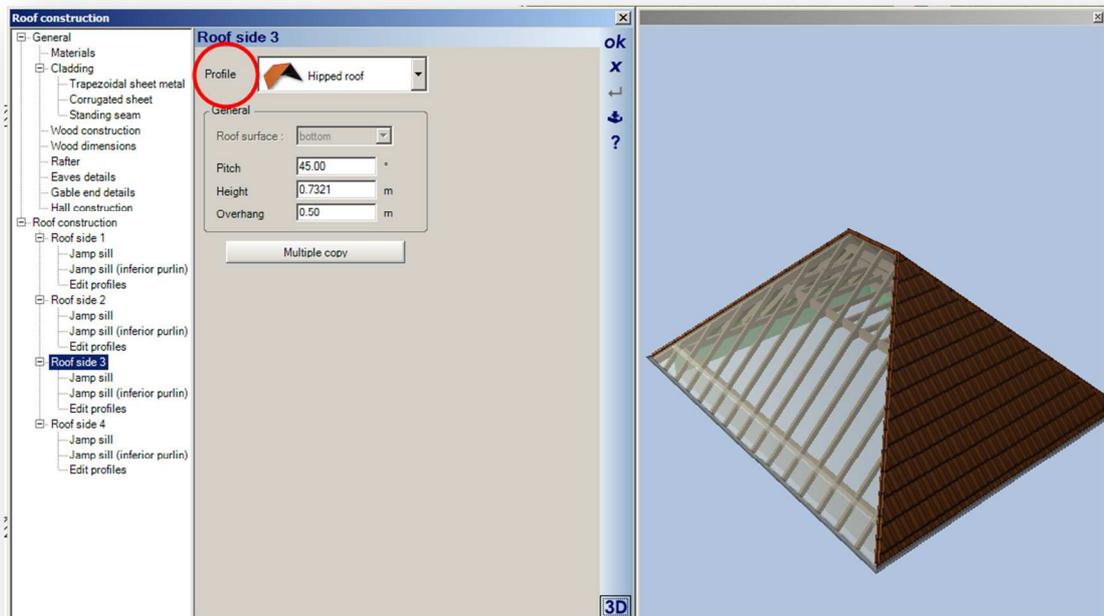
Move the cursor over the plan. As soon as the contour of the building is recognised it is outlined in green. With a left mouse-click, open the **Roof construction** dialog.

Click on the '3D' button in the bottom right-hand corner to obtain a 3D view of the roof.

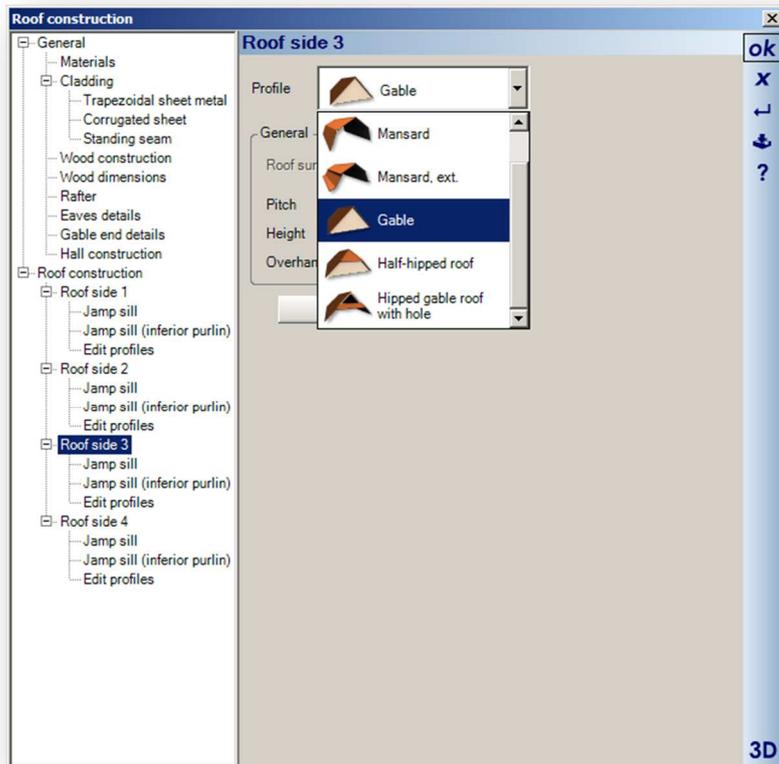




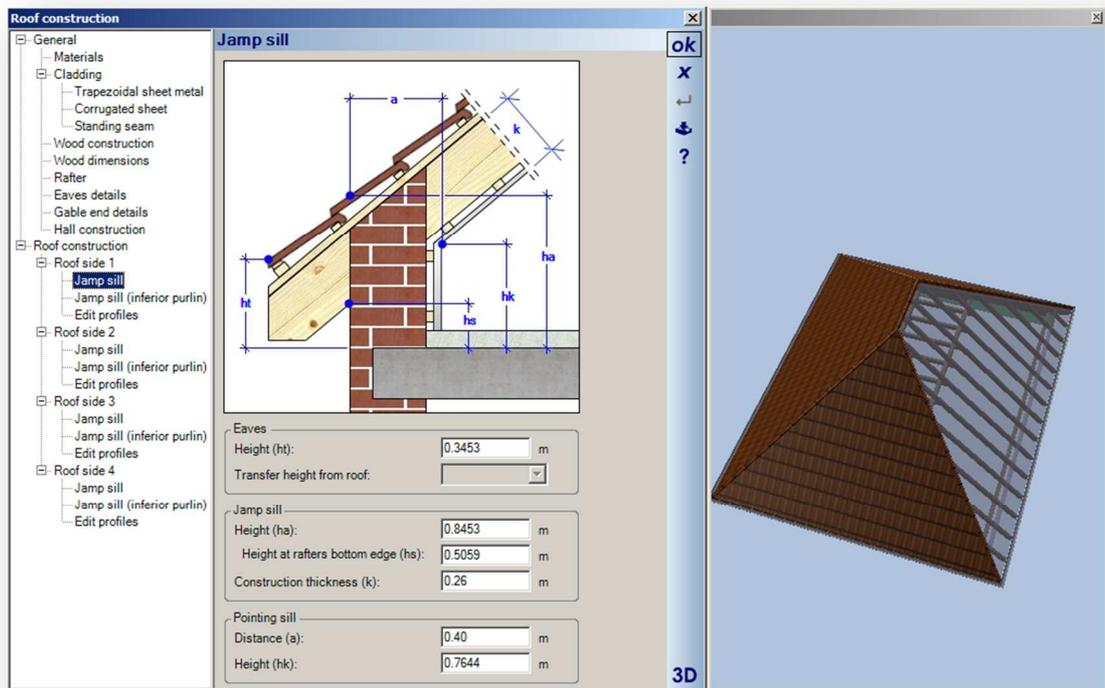
In the 3D view you can select a roof plane directly with a mouse-click and specify settings for profile, pitch, height and overhang.



Under Profile you can choose from the most common types of roof profile.

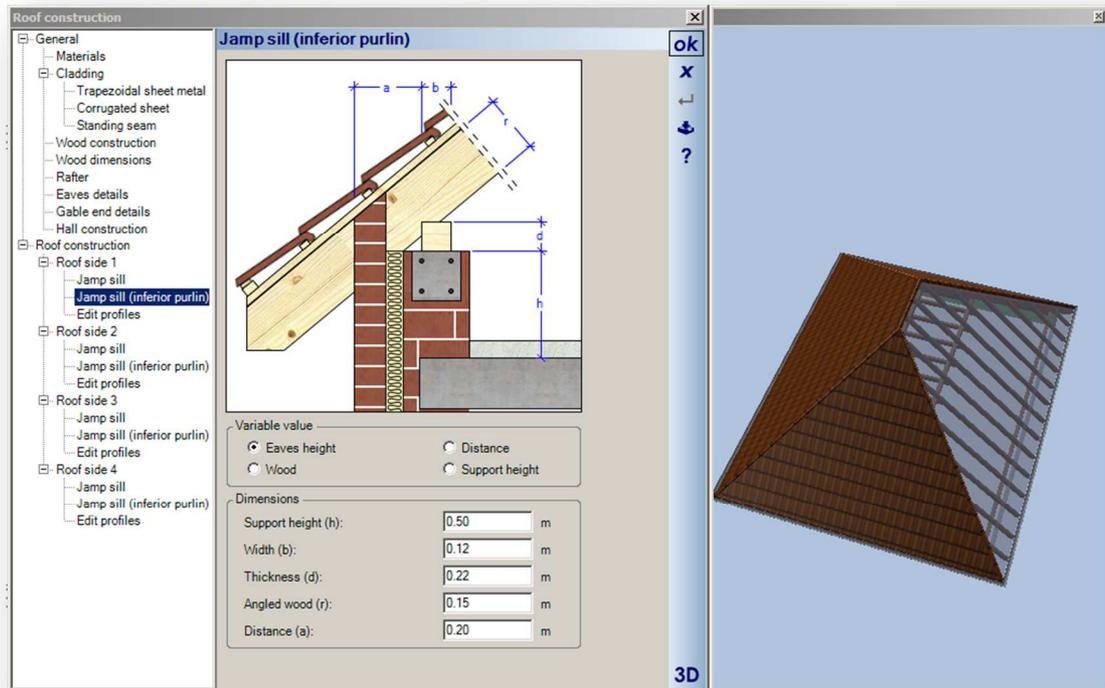


Click on Roof side 1 Jamp sill, noting that that side 1 of the 3D roof becomes transparent indicating that it is selected.



Here you can specify the parameters for the architectural aspects of the roof, e.g. height of the intersection: outside edge of brickwork / top edge of roof, or height of the eaves above the finished floor level, or height of the pointing sill etc.

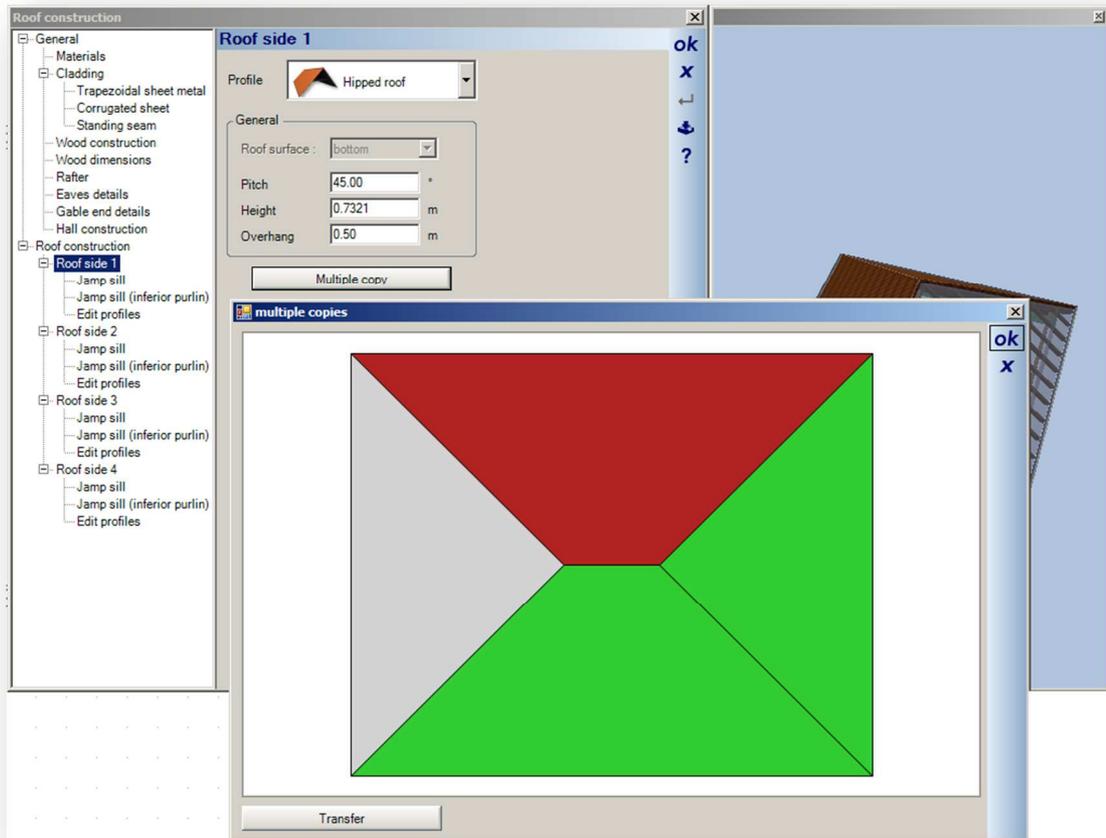
If on the other hand, you click on 'Jamp sill (inferior purlin)' for Roof side 1...



Here you can specify the roof heights for the structural aspects, e.g. support height of the eaves, width and thickness of the purlin etc

You can specify individual settings for each roof plane, or alternatively you can copy the settings from one roof plane to other roof planes. If for example you are in roof side 1, you can copy the settings for profile, pitch/, height and overhang, to other roof sides.

To achieve this select the source roof side, then click on the **Multiple copy** button. A new roof diagram will then appear, showing you selected source roof in red. Selected destination roof sides will appear green.

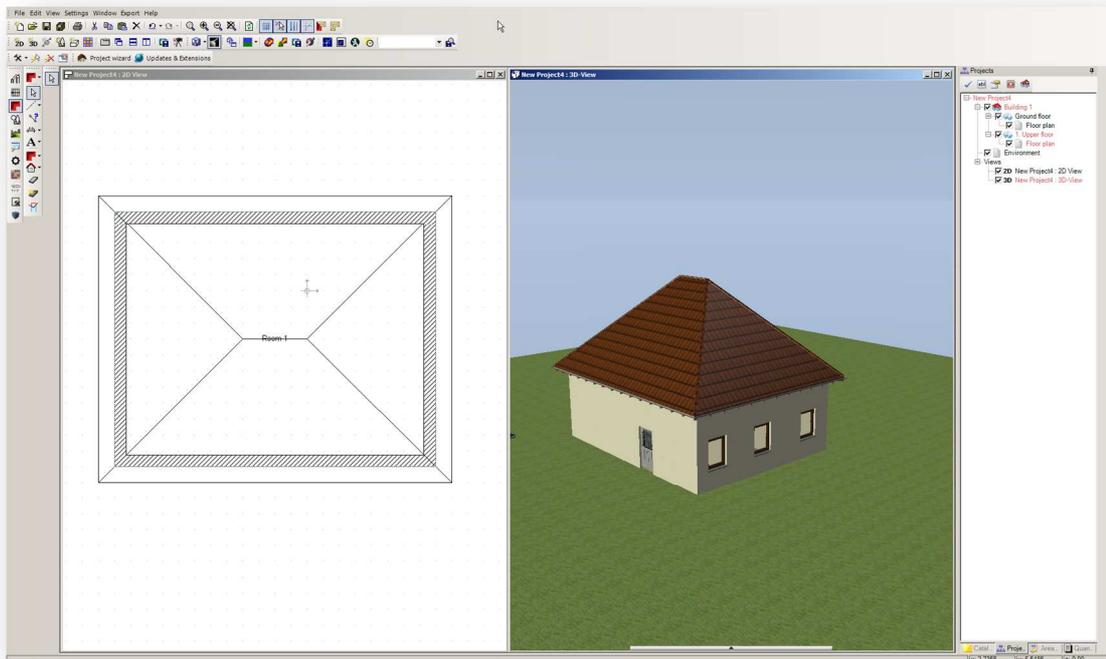


Accept the default settings by clicking on 'OK'.

In the plan the top view of a hipped roof is shown.

You can change the height that a roof sits on a wall using the Move roof level by feature, found in the **General** section of the roof dialog.

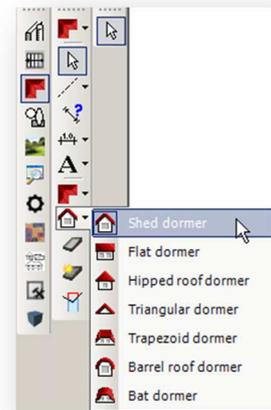
To raise the roof 50cm, enter 50 cm here and click on **Apply**. A negative value would lower the roof. Click on **OK** to exit the dialog, resulting in the following view:

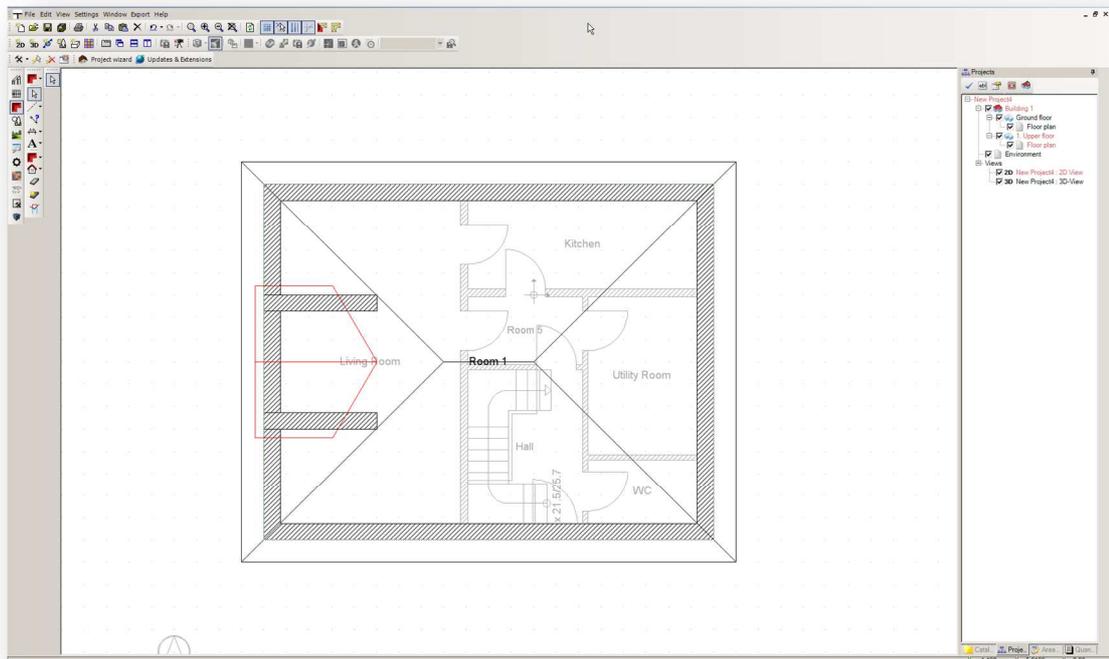


4.1.9 Inserting Dormers

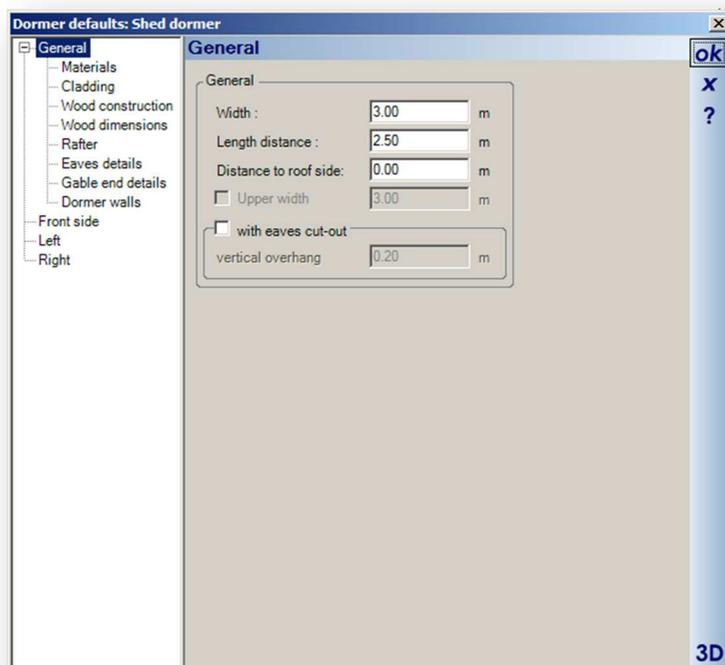
The Dormer tool is also located in the same toolbar as the roof tool. Clicking the Dormer tool will expand the tool showing 7 dormer types available.

Select the Shed dormer. The dormer is now attached to the cursor and can be dropped onto the roof. Move the cursor to the outside edge of the left exterior wall and drop the dormer on the roof with a left mouse click.

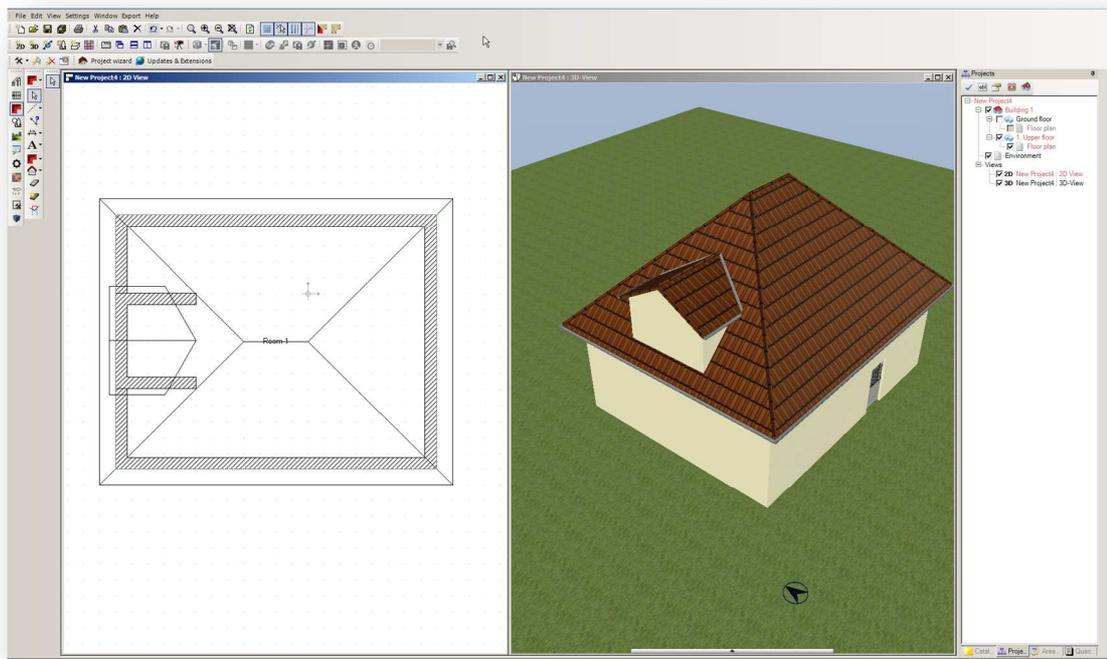




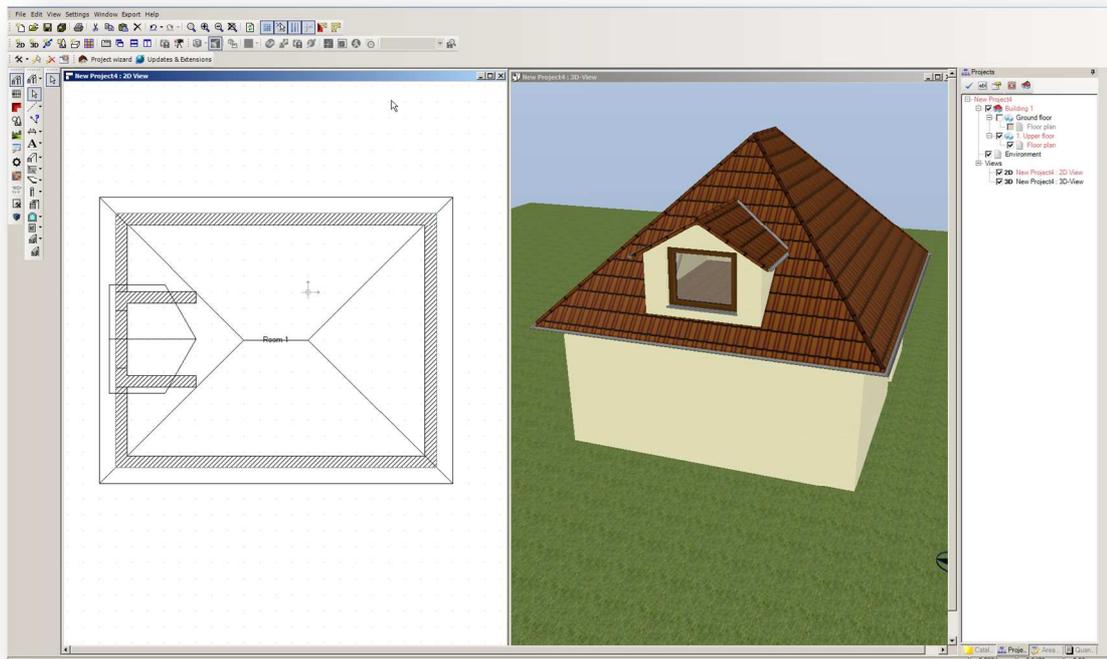
The 'Dormer' dialog is now opened.



Click on **OK** to accept the settings shown under 'General'. Using the sub-items of 'General' we can specify the settings for 'Materials', 'Cladding', 'Timber construction', 'Timber dimensions etc., which we are familiar with from the 'Roof construction' dialog.



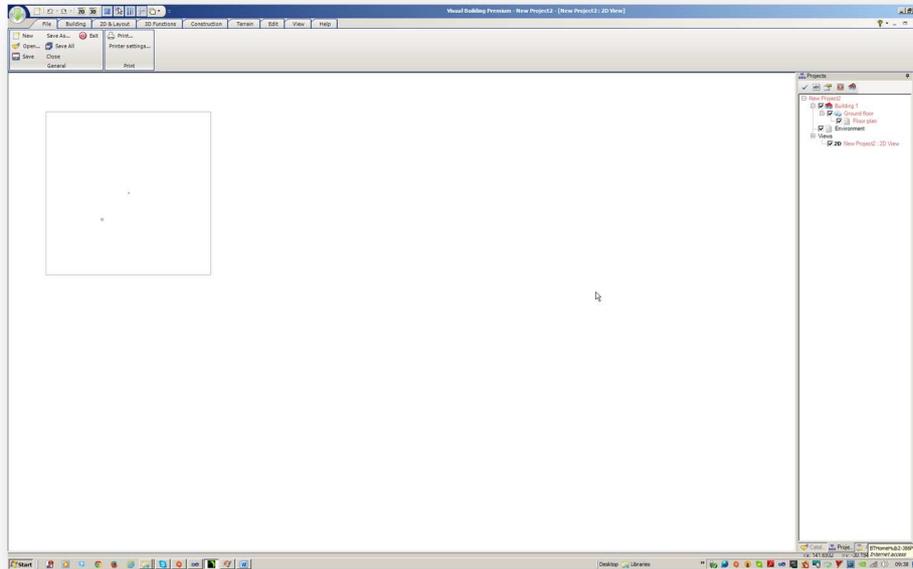
Now you can insert a window in the front wall of the dormer.



4.2 USING THE RIBBON BAR USER INTERFACE

These instructions use the new Ribbon bar interface. If you prefer to use the older classic toolbar interface you can ignore this section.

Please note that the following screen shots may vary to your own screen depending upon which Visual Building version you are using, and if you are using Windows XP, Windows Vista,



Windows 7 or Windows 8. The screen resolution will also make a difference in appearance.

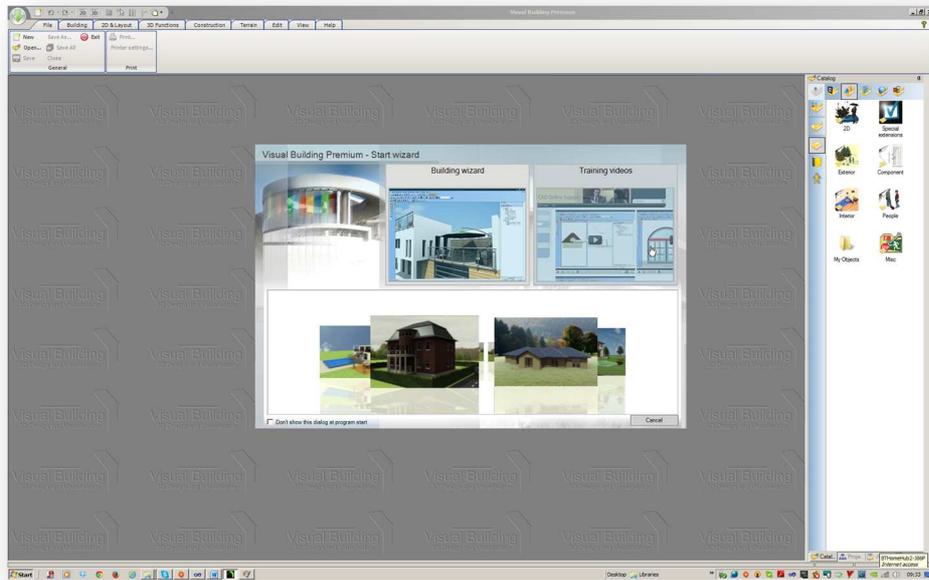
In our example we are using Visual Building Basic v4 on Windows 7 at a resolution of 1900 x 1200

4.2.1 Creating a project

Start the program using **Start>Program>Visual Building** or using the shortcut on your desktop.

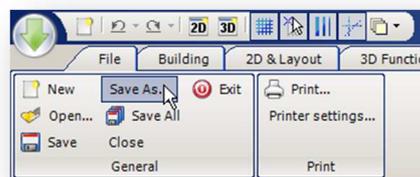
The software logo appears on your screen. Next the program window opens with a grey background and the catalogue on the right-hand side, and the Start Wizard in the centre. We will not use the Start Wizard now so close it by clicking Cancel in the bottom right of the Start Wizard panel.

Select with the mouse the **File** tab in the Ribbon bar, and then click on **New** to create a new project.

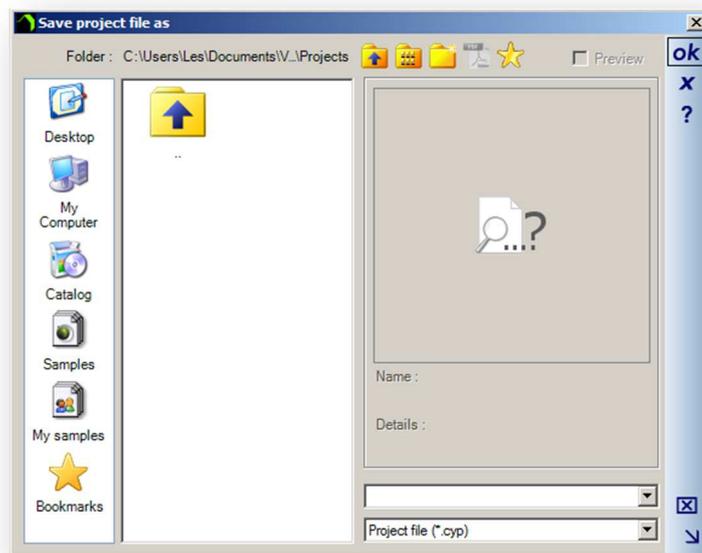


A 2D view with the title 'New Project 1' is now opened. This can be enlarged to a full screen with the standard window maximise button in the top right-hand corner of the window. On the right-hand side you can see the project viewer, which shows the structure of the project. Select the title 'New Project 1' with a right mouse-click and choose 'Rename' in the context menu. Now enter a suitable name for your project, e.g. 'House 1'. Confirm your input with 'Enter'. You can now see that the name to identify the window has also changed.

Before you start work on a new project you should first save it. To do this, use the **File>Save as ...** menu.

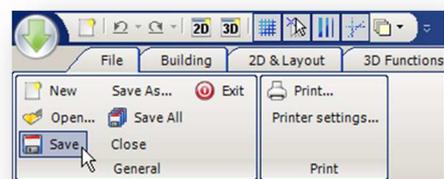


The software automatically suggests a directory in which to save your project under 'C:\Documents and Settings\...'. It is also makes sense to enter the project name as the file name in the second-last field on the bottom right of the dialog box i.e. house 1

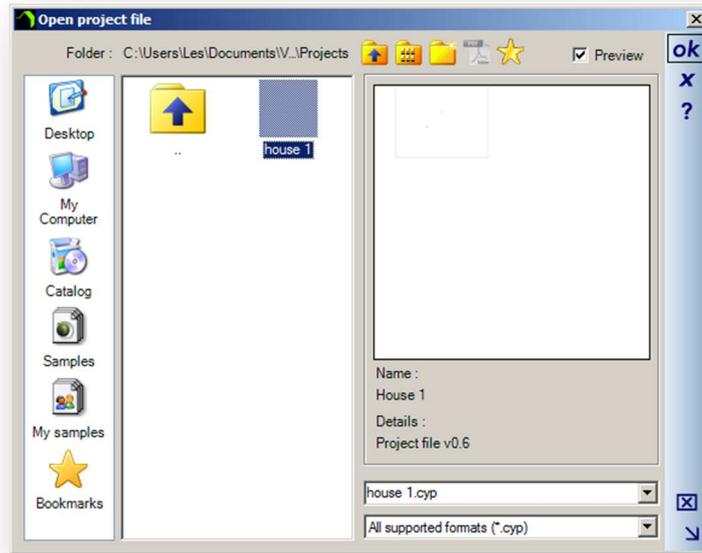


The directory that is provided by your software to save your projects is found on the left-hand side of the dialog box with the title 'Own'. You can of course use any other directory to save your projects. The quickest way to achieve this is with a click on the icon 'My computer'. Then enter the file name and confirm it with 'OK'.

Your project is now saved under a new name and you can save your work at any further stage using the **File tab - General group - Save** tool.



If at some later date you select the **File - General - Open** tool to open your project again then a list of the logical project names, and not the file names, is displayed. Therefore in our example 'House 1' would be shown. However, if a project has been selected, the name of the file is shown in the second-last field on the bottom right of the dialog box. The project can also be found under this file name in the Windows Explorer.

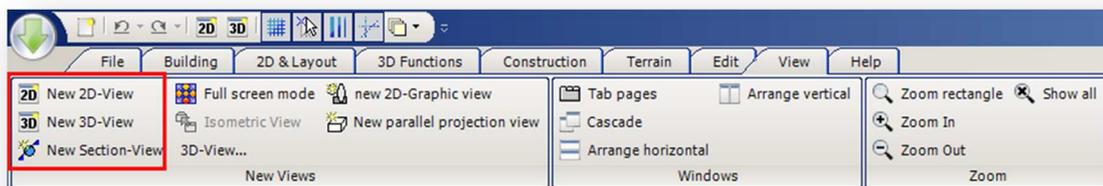


4.2.2 Creating Views

When working on a project the software provides three different kinds of views; the 2D view, the 3D view and the cross-section view. Any number of views of a given kind can be created in the project.

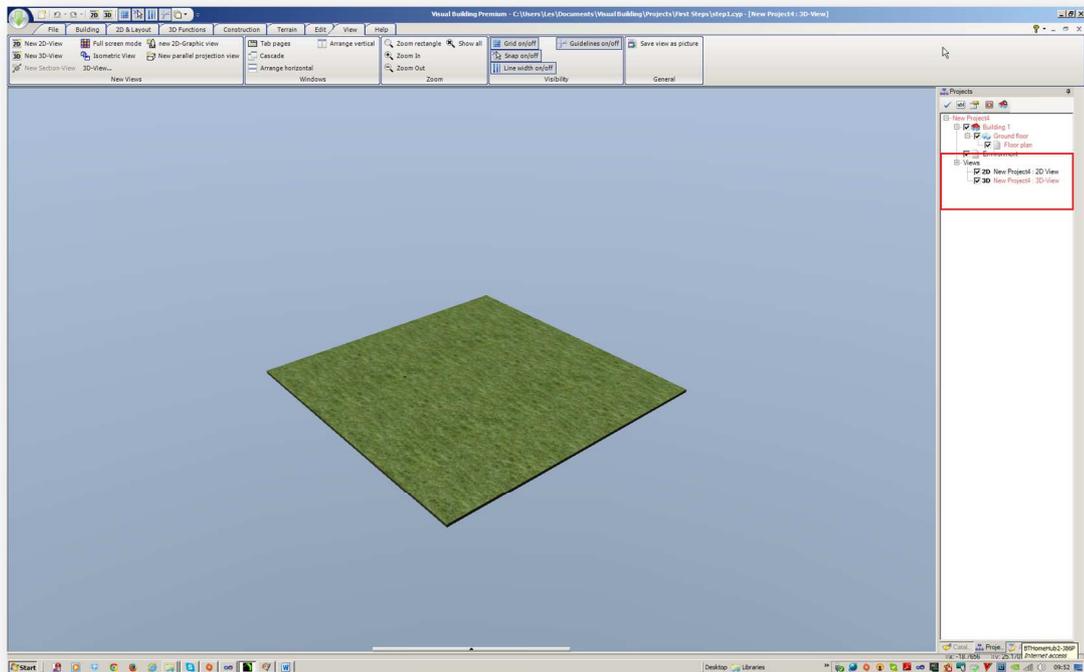
Version Note: The cross-section views are only available in Visual Building Basic upwards.

The 2D view serves primarily to define precisely the structure of the building with its components, e.g. walls, windows, doors etc., to scale in a floor plan, while the 3D view provides a visualisation of the project and serves to insert furniture and fittings and to landscape the grounds. The cross-section view creates scaled sections through the building and scaled elevations, according to where the cutting line is located.

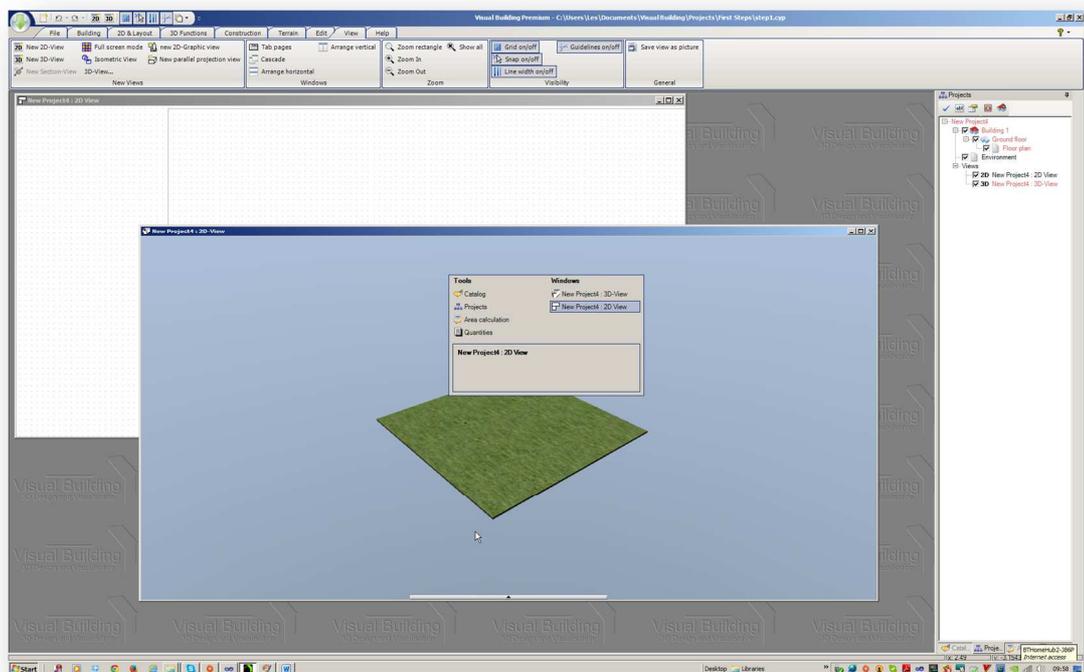


A new view can be created either using one of the tools in the **View tab – New Views group**.

Create a new 3D View by selecting **New 3D View** tool.

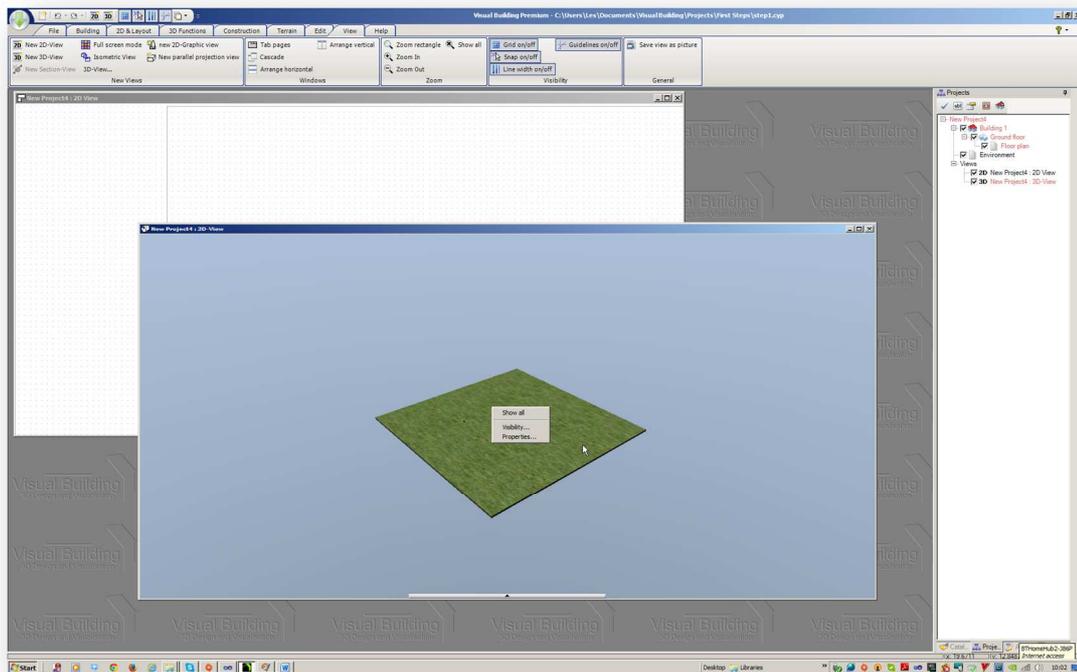


Views can be accessed by select the views in the project tree in the **Project viewer**, or using a context menu which is opened by pressing 'Ctrl+Tab' simultaneously.



Views are closed by simply clicking on the cross in the top right-hand corner. When the last view is closed the project is also closed, but beforehand a dialog box is opened which allows the current state of the project to be saved.

In a view the visibility of each element can be set individually – for instance whether or not the roof, the windows or the furnishings are to be seen. The settings for visibility can be specified for the currently active view using a context menu which is opened with a right mouse-click



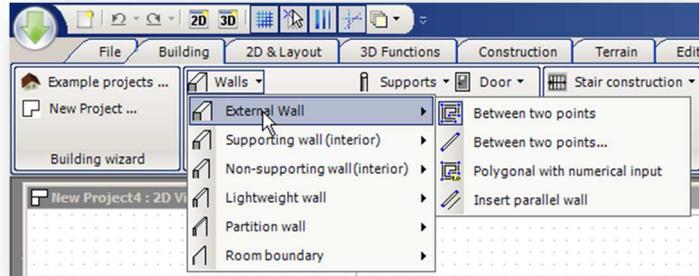
4.2.3 Inserting Walls

Walls are the basic element in planning any building. They form rooms, which themselves create ceilings and floors. Walls are a prerequisite for including windows and doors in the structure.

As a rule the first step is to create the exterior contours of the building with exterior walls and then to insert the interior walls into the structure.

Exterior Walls

Select the **Building** tab - **Constructional elements group – Walls tool**. A drop down menu of available walls will appear.



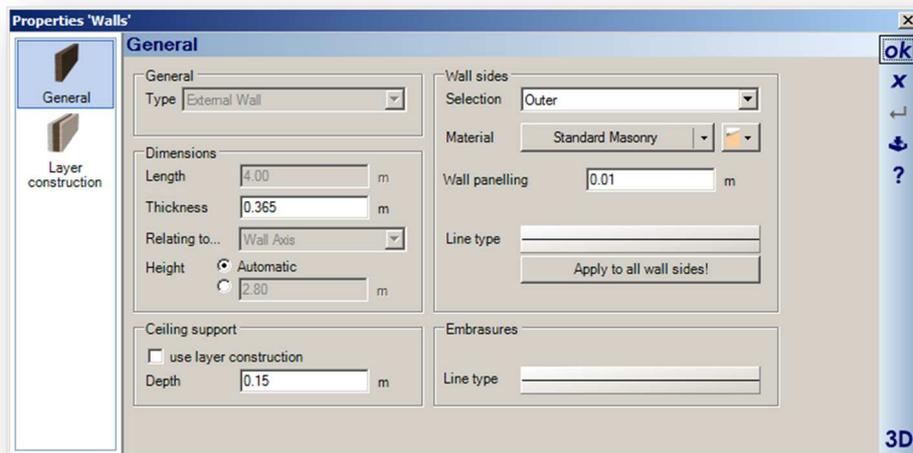
Then select **External wall** with a left mouse click on the tool. Tools offering various insert options are displayed in the second fly out menu.

Now select the Multiple Tool **Between two points**, the first tool entry in the menu.

A right click in the planning area opens the following context menu.

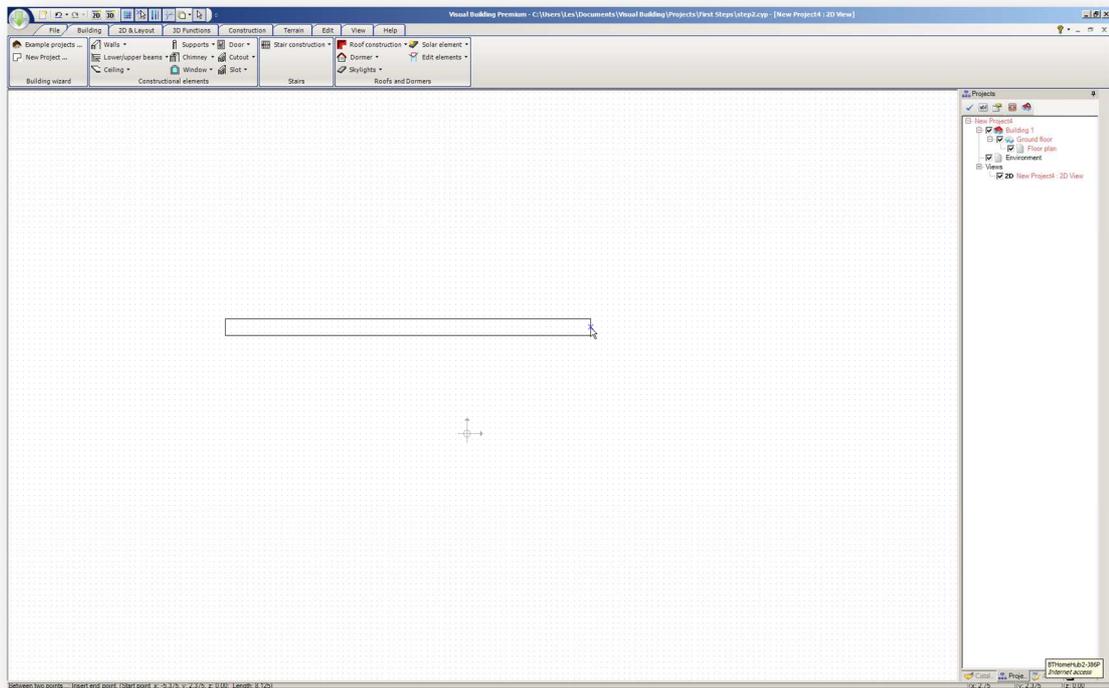
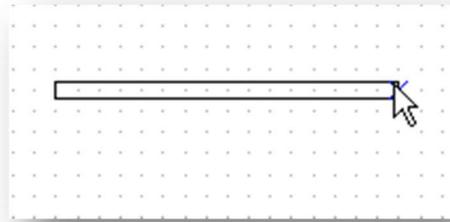


Now click on the **Properties** menu item, which opens the **Wall properties** dialog.

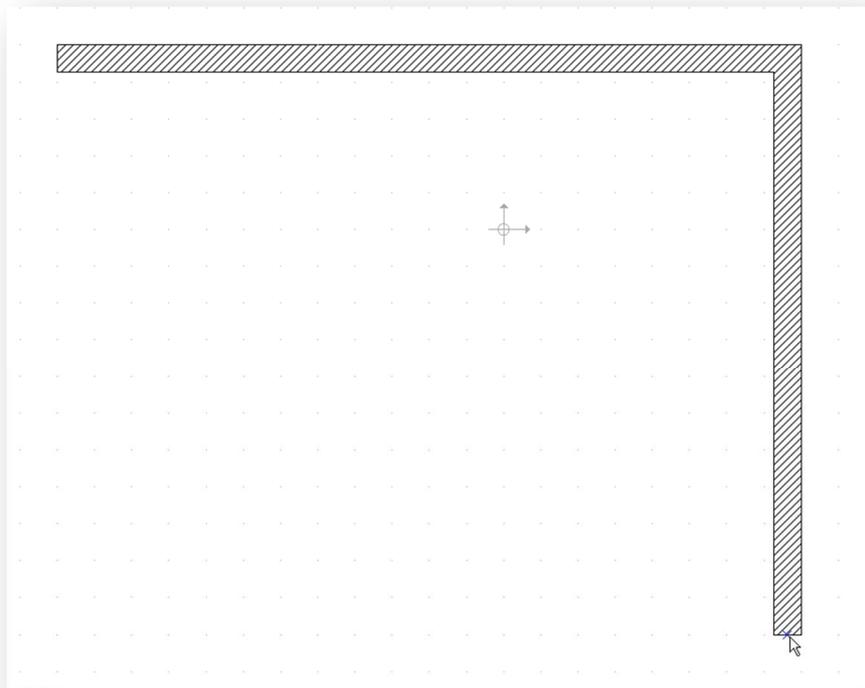


For now we will leave the settings as shown in the illustration and close the dialog with **OK**. Now set the start point of the first wall to snap to a point on the grid. The wall snaps to the start point along its axis and is attached to the cursor so that it can be positioned. With the key combination **Ctrl+W** the reference point of the wall at the start point can be changed – from axis to inside edge, to outside edge, to axis.

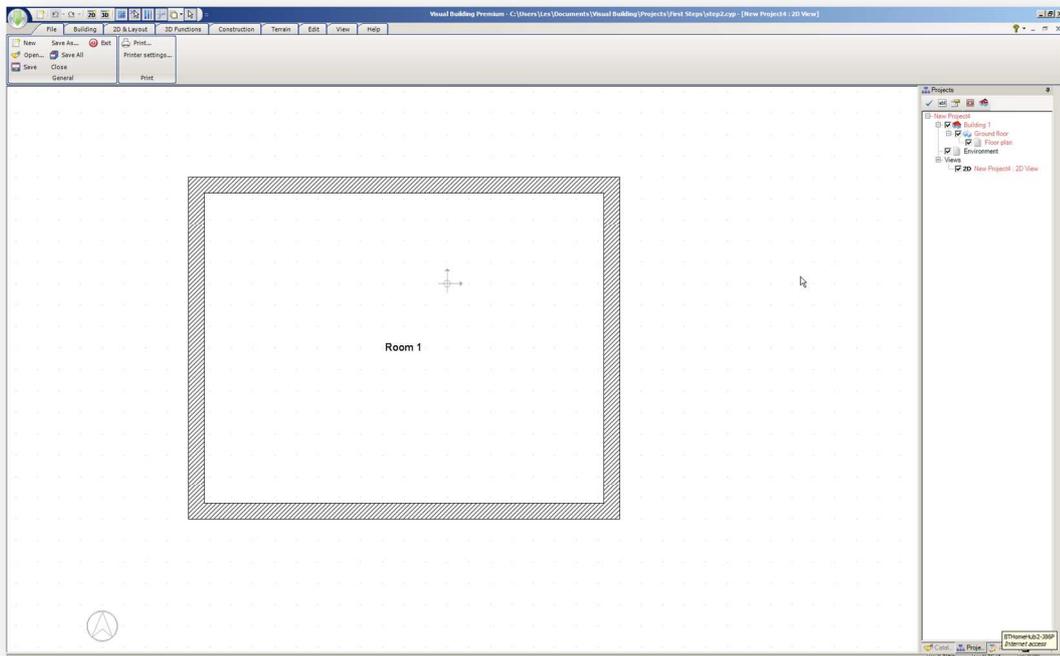
We will select the outside edge as the reference point. Drag out the wall horizontally to the right with the mouse and notice how the value for its length changes in the status bar. Drop the wall at 10 m with a left mouse-click. This will mean the outside edge length of our wall is 10m



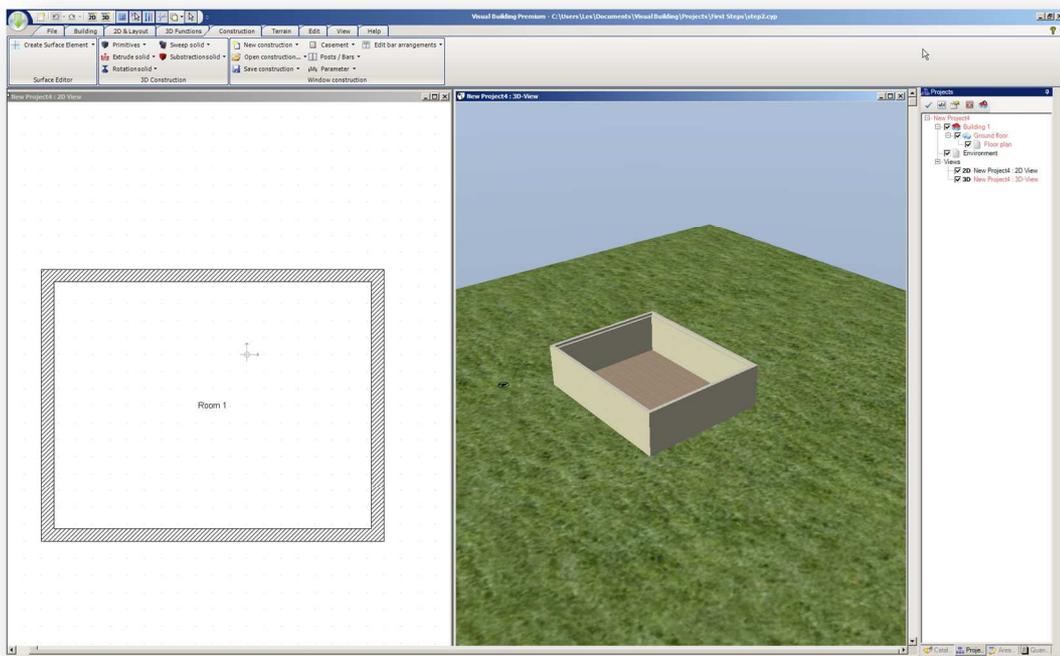
Now drag out the next wall vertically downwards to a length of 8.00 m.



Extend the next wall horizontally 10.00 m to the left and then back to the start point. When the final click is made, and the polygon that forms the contour of the walls is closed, a name for the room appears in the plan. The insert wall function is terminated by pressing the **Esc** key. This should now result in the following picture.

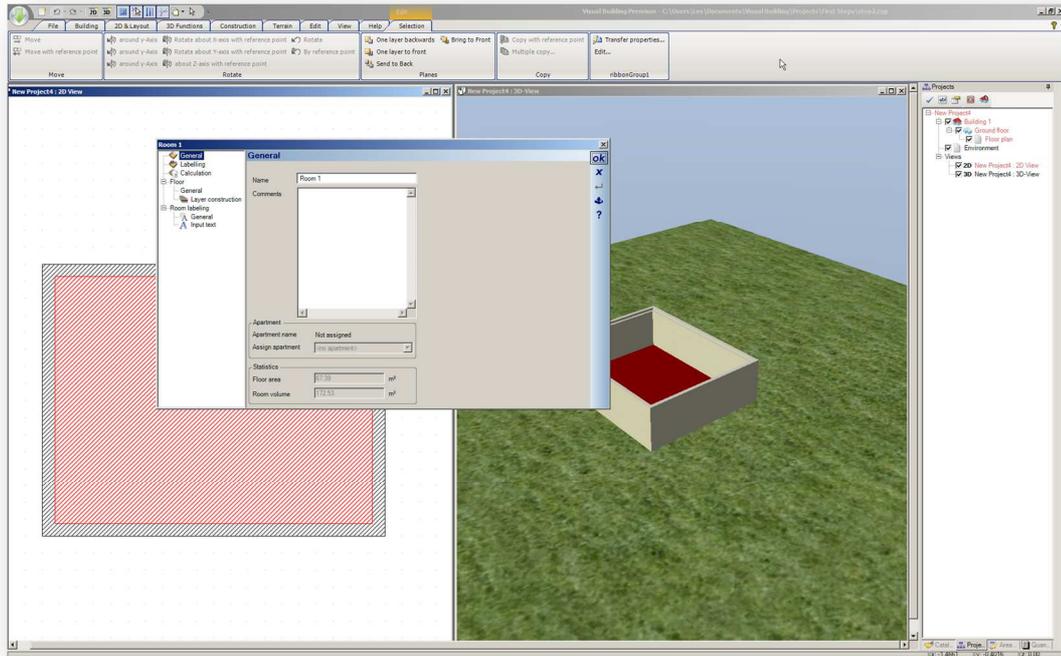


You can check the progress of your work once more in a 3D view, by for example clicking on **New 3D view** tool. Then click on the **Arrange Vertical** tool to see both the 2D and 3D window. See tools are located in the **View** tab .



As you can see the room is already provided with a floor, and the recess to support the ceiling is also visible. However ceilings are automatically removed using the visibility settings so that you can see into the structure.

Switch back to the 2D view. If you left click in the room it is highlighted in red to show that it has been selected. Right click in the 2D view to activate the context menu and select **Properties** and the 'Room' dialog appears.



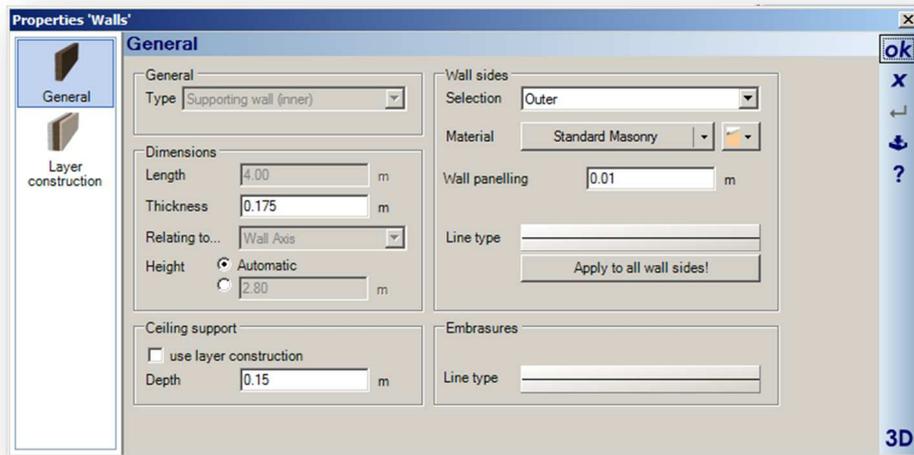
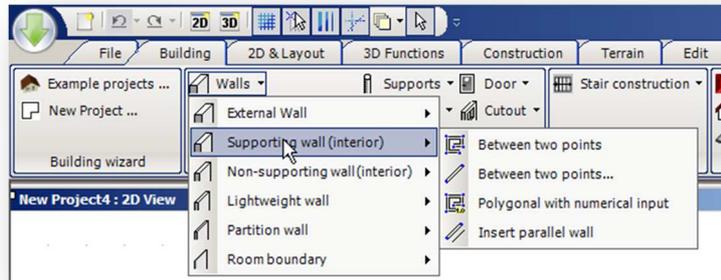
In the 'Room' dialog you can edit the room as regards text, calculation of area, and floor structure.

Interior Walls

Now we want to draw two load-bearing interior walls in the plan. Select the **Supporting Wall (interior)** wall type for this.

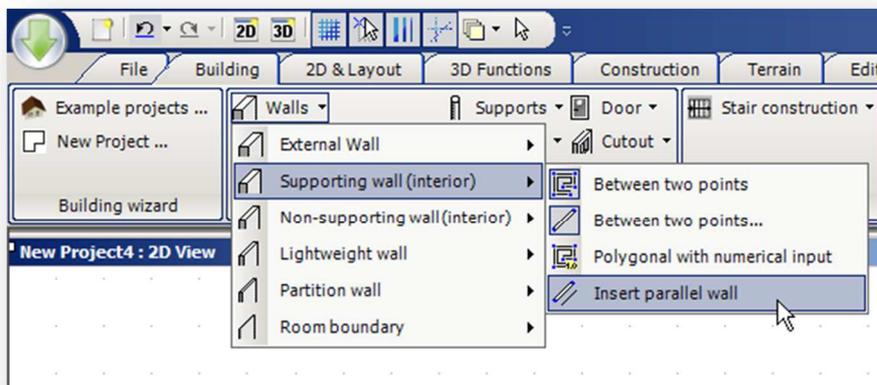
Select the **Supporting wall (interior)** tool located in the Building tab

A right mouse-click on the **Supporting wall (interior)** tool opens the properties dialog for 'Walls'. Here we can specify the construction details for this wall type.



We will accept the default settings and close the dialog with **OK**.

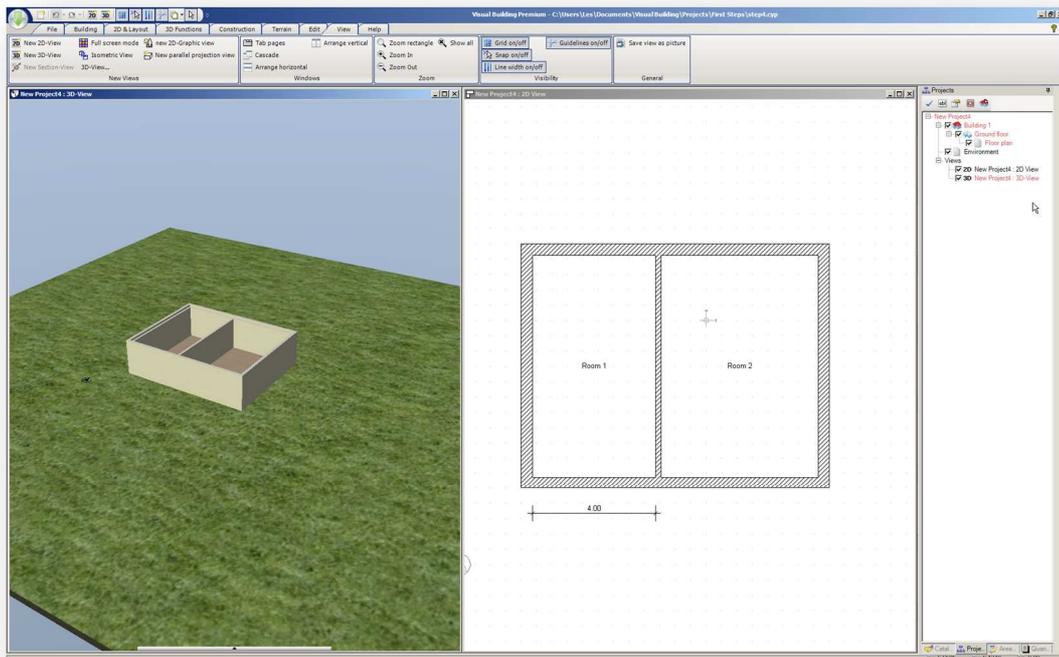
The first interior wall is to be inserted in the plan parallel to the left-hand exterior wall and at a distance of 4.00 m from it. To do this, click on the **Insert parallel wall** tool (indicated below).



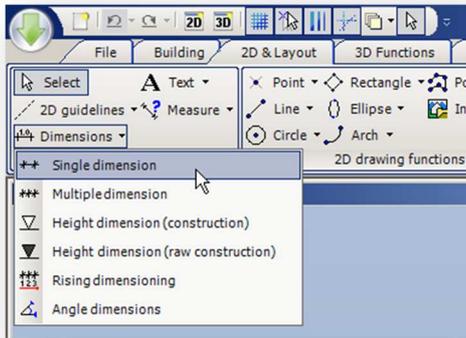
Next the program expects, as you can see in the status bar at the bottom of the window, a reference line to be selected. Click on the inside edge of the left-hand exterior wall to specify this wall edge as the reference line. Now click anywhere to the right of the reference line and the Parallel wall dialog will appear allowing you to specify the distance of the new wall from the reference line.



This opens the **Parallel wall** dialog, into which you can insert the distance of 4m. You can perform calculations in the input fields of the dialog. Enter 2+2 and confirm it with 'OK'.

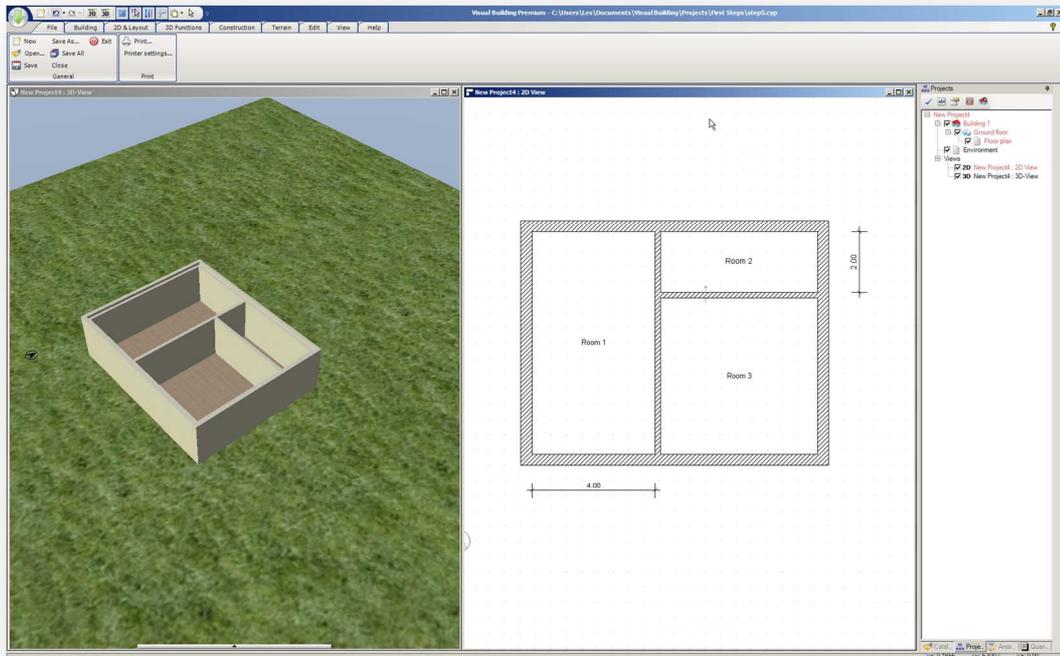


The interior wall is now attached to the cursor. Using the key combination **Ctrl+w** select the left-hand side of the wall as the reference side and drag it out to the opposite exterior wall and place it there with a left mouse-click.



You can check the position of the wall with a dimension line. To do this, click on the **Dimensions** tool in the 2D & layout tab. Then click on the topmost button **Single dimension**. With the first and second mouse-click we set the start and end point of the dimension line, with the third mouse-click its position.

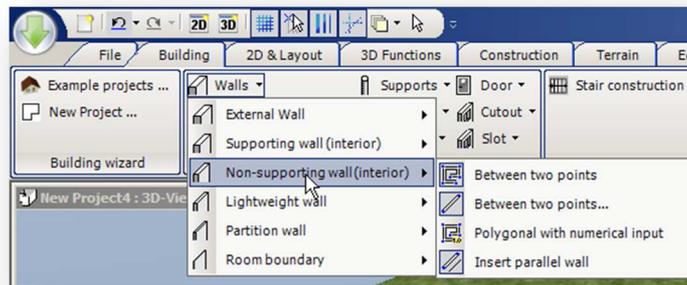
We will now insert a second supporting interior wall, as shown in the illustration.



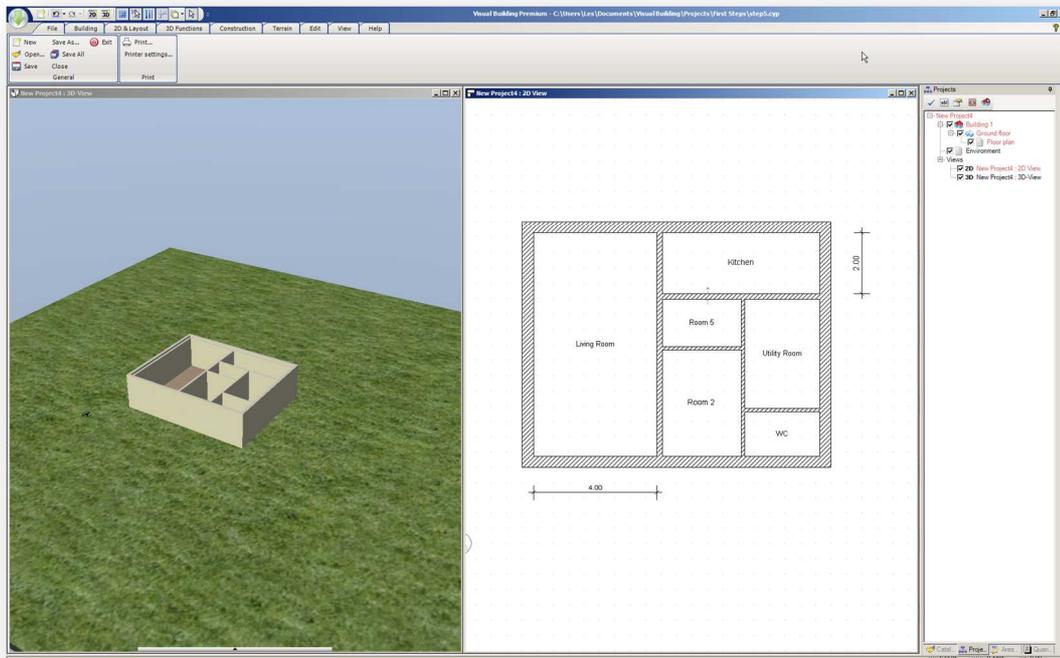
For this you can use the same construction aids as for the first interior wall. Do not forget to select the reference side of the wall with **Ctrl+w**.

Notice how everything you do in the 2D view is automatically replicated in the 3D view. You can also work in the 3D view and the 2D is also updated. You will however find it so much easier to work in the 2D view and not have to worry about the 3rd dimension.

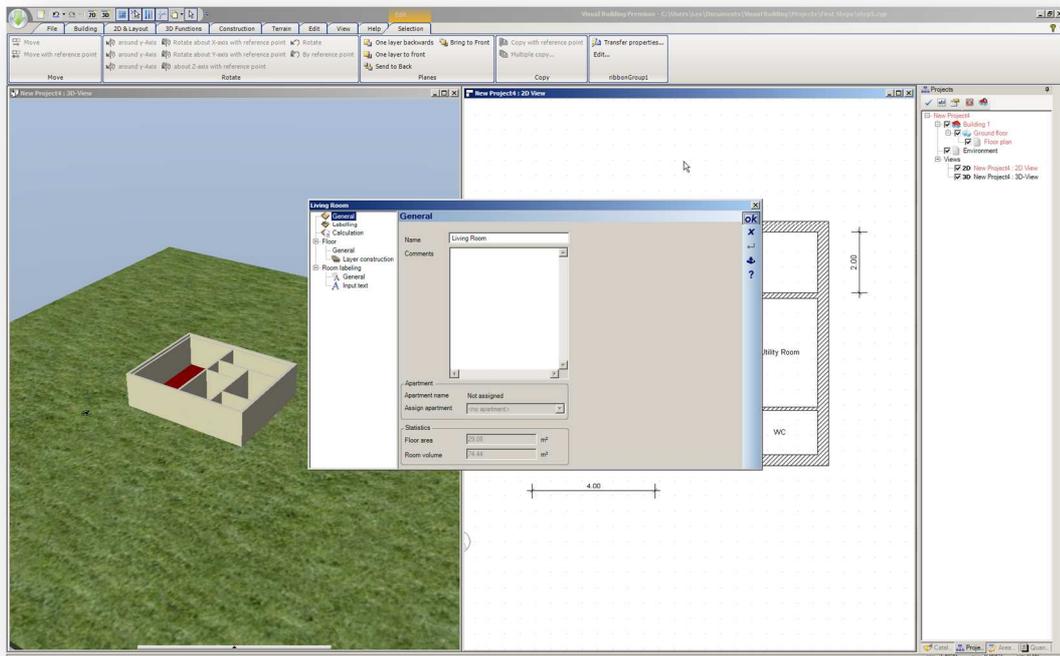
Now select **Non-supporting wall (interior)** from the Wall tools in the Building tab.



Insert in the plan a non-load-bearing interior wall as a parallel wall using the Insert Parallel wall tool as before. Repeat for two more internal walls as shown.



Now select the large Room 1 so that it is highlighted in red. Activate the Room dialog with a click on **Properties** in the context menu, which is opened with a right mouse-click, or alternatively double click on the selected room.



Change the name of the room to **Living Room**. In the same way change the names of the other rooms appropriately.

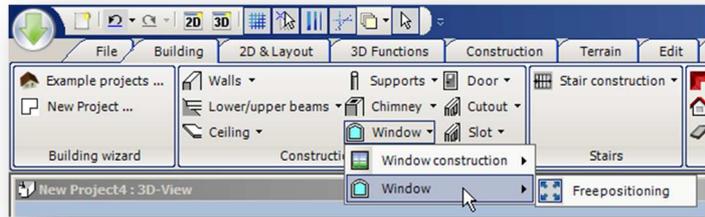
Note that each time you add a new wall if it dissects an existing room then a new room is created. You can determine that a new room is created because it is automatically labelled Room n. This happens for all wall types- except for the **Partition wall** type. The placement of the **Partition wall** type will not create a new room or form a connection to existing walls.

4.2.4 Inserting Windows

The software offers a selection of different windows and doors. We will begin by inserting a standard window.

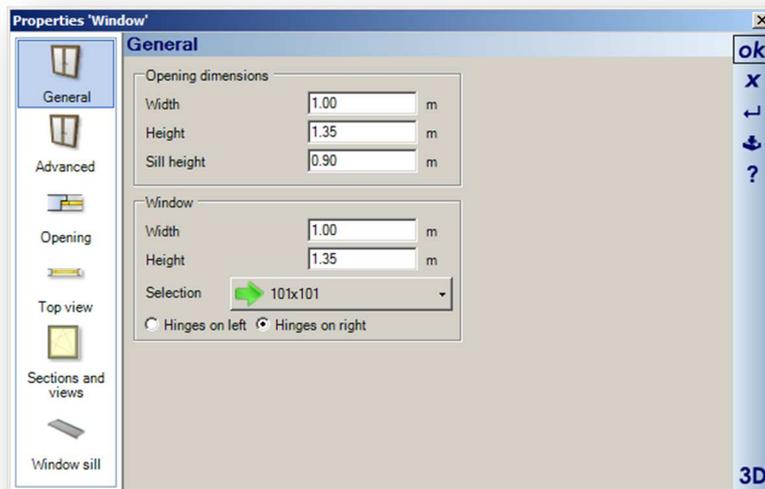
Locate the tool for a standard Window in the **Building tab Constructional elements group** and click with a left mouse click.

Note that there are two window tools. For now use the **Window** tool.

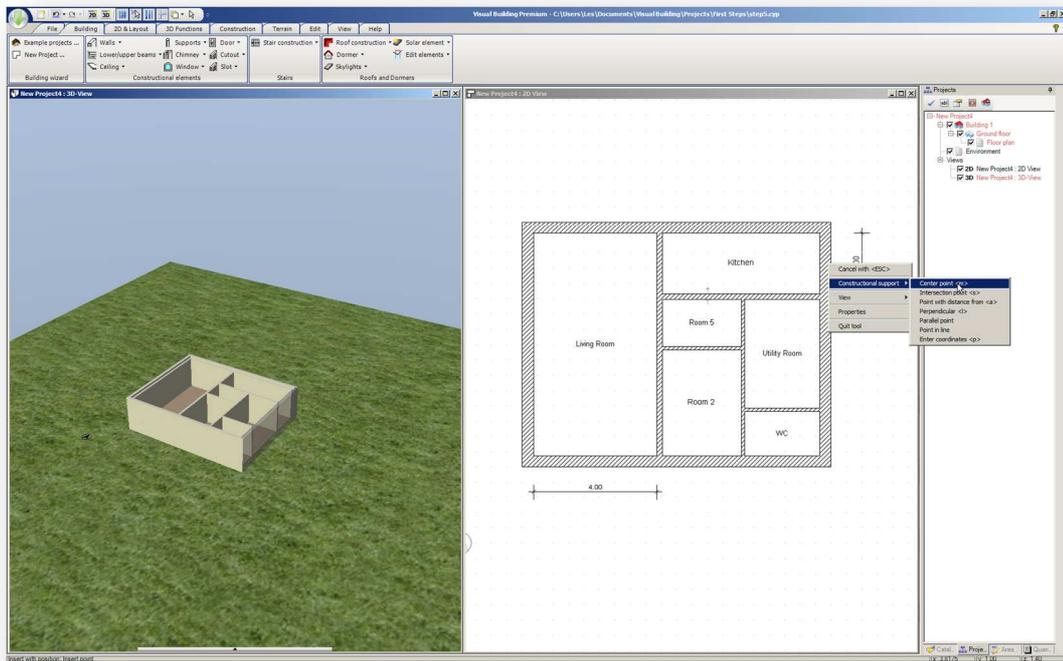


A right mouse click on the button now opens the properties dialog for Windows.

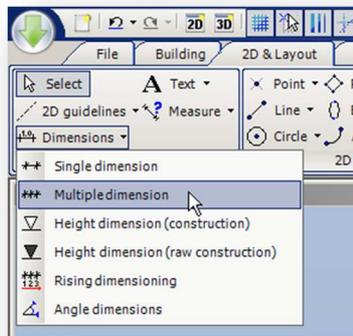
Change the height to 135 cm. and confirm it with **OK**



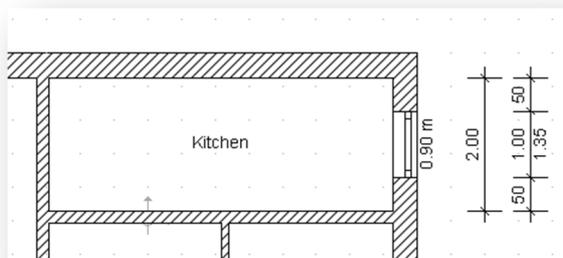
If you move the cursor over the plan, and in the vicinity of walls a preview of the window you are inserting is shown. You can see an arrow which symbolises the direction of opening of the window depending on which side of the wall the cursor is positioned. You can now position the window freely in the wall. However we want to position the window in the middle of the exterior wall of the room marked Kitchen. To do this, we will use the construction aids. Move the window over the right-hand exterior wall of the 'Kitchen' until the arrow for the direction off opening points inwards. With a right mouse-click open the context menu and select **Constructional support>Centre point**



You are now requested in the status bar to enter the start point of the length to be centred. Choose as the start point the inside corner of the exterior walls on the top right. As the end point select the inside corner adjacent to the Utility room. The window is now inserted in the middle of the wall. You can check this by activating the **Multiple dimensions** in the **2D & layout** tab.



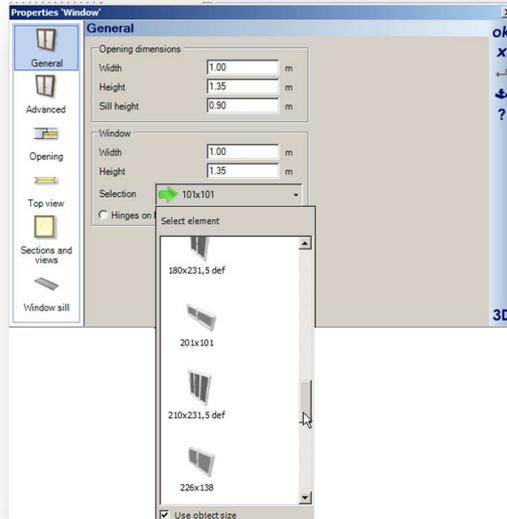
The chained dimensions are entered using the same two points as were used to construct the midpoint of the wall. Note also the sill height 0.90m is also automatically added.



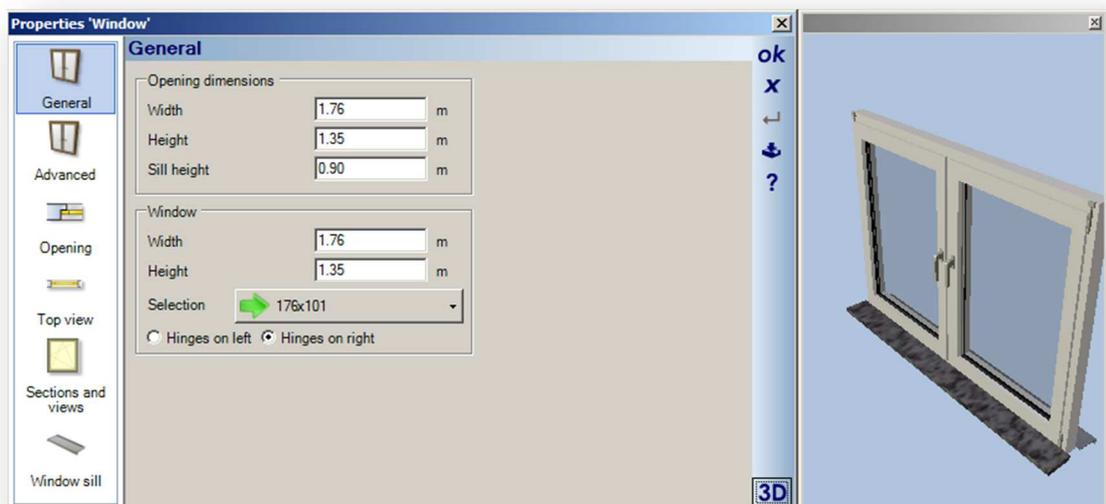
Using the same process, insert further windows in the Utility room and the WC. The centre point insertion can also be activated by pressing 'm' on the keyboard instead of using

the context menu item for **Construction aids**.

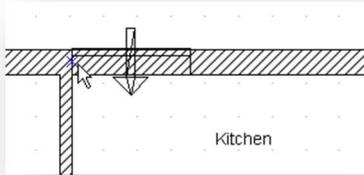
We will now place a different window to that we just inserted. With a right mouse-click on the **Window** tool in the left-hand vertical toolbar open the properties dialog for 'Window' and click on the button to open a selection of windows.



Check the box **Use object size**. at the bottom of the selection window. With a double-click, open the **2 Sash** folder and with a further double-click select the window '176 x 101.cyg'. Set the height of the window to 135 cm.

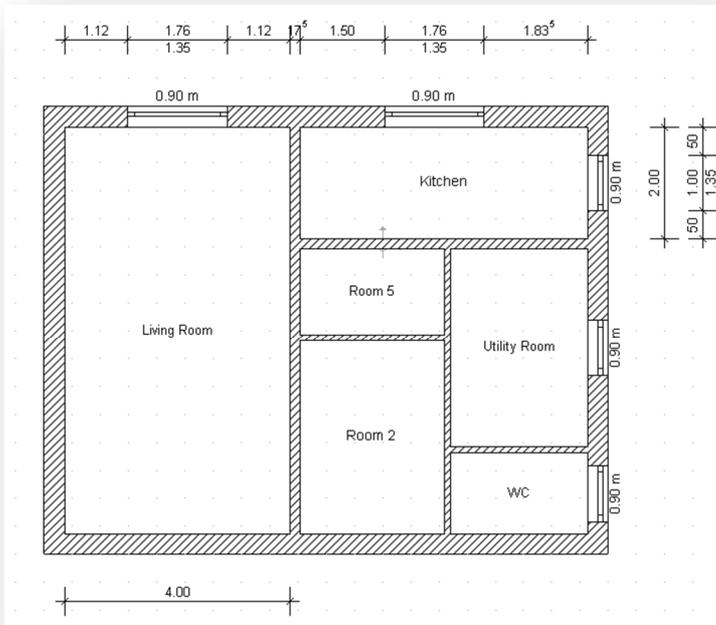


You can click on the 3D button to see a 3D preview of the window.



Position this window in the middle of the wall at the narrow end of the living room. In the kitchen we want to position the window at a distance of 1.50 m from the living room wall. To do this, press the key combination **Ctrl+w** until the left edge of the window is selected as the reference point. Move the cursor up to the interior wall so that the blue cross snaps to it.

Now Right click to activate the Constructional support menu and select **Point with distance from.** (Or alternatively use the shortcut key **a**).

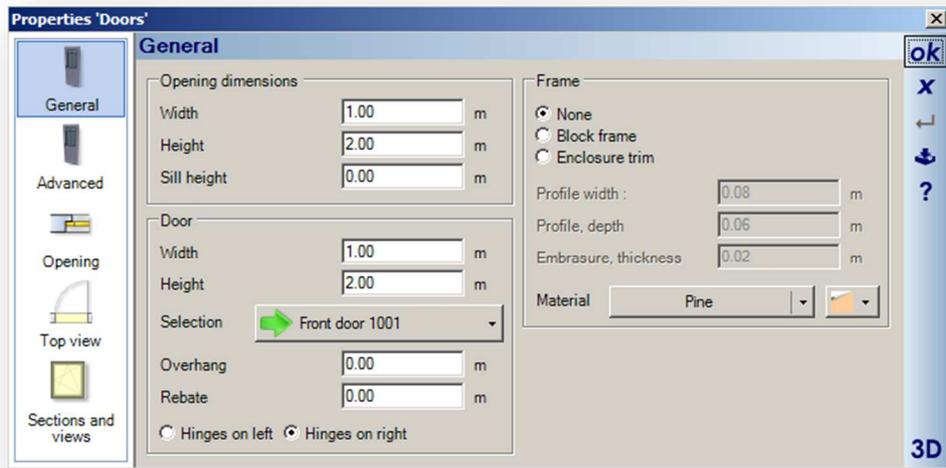


This tool now requires a start point and a direction. Start point is the left corner. Enter now the direction and place the window with another mouse click on the inner side of the wall. Enter 1.50 m in the appearing dialog.

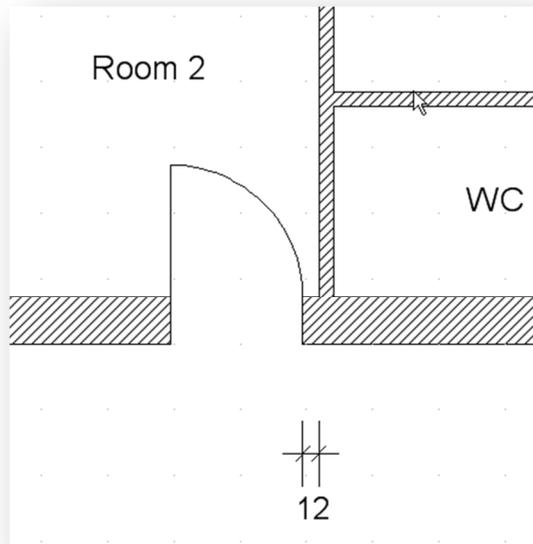
Place a similar window in the top Living Room wall, and then add some chain dimensions as before.

4.2.5 Inserting Doors

Doors are inserted in basically the same way as windows. The Door tool is located in the **Building tab – Constructional elements group** in the Ribbon bar. A right mouse click on the door tool opens the properties dialog for 'Door' with the **Selection** button located in the middle.

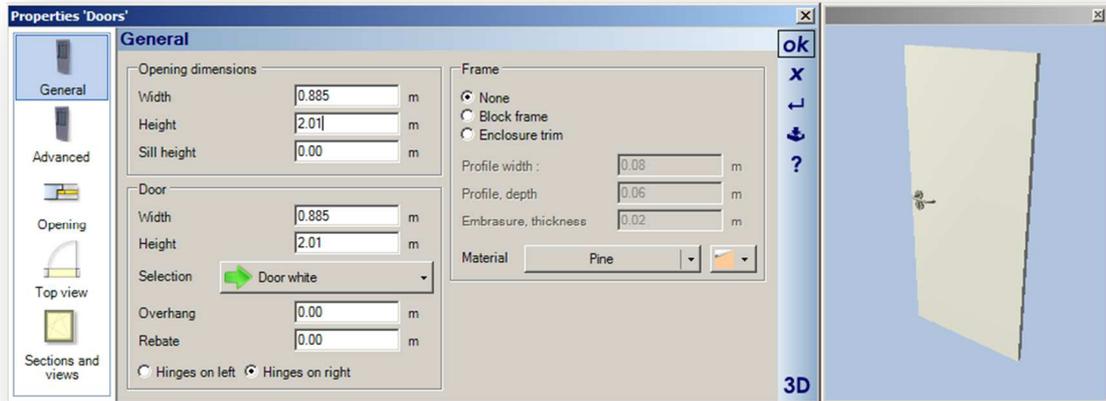


Check the **Use object size** box at the bottom of the selection window and with a double-click select a door from the list. Accept the settings with **OK** and insert the door in the exterior wall of the hall at a distance of 12 cm from the wall of the WC. To do this, select the right side of the door as the reference side with the key combination **Ctrl+w** and move the cursor to the edge of the interior wall adjacent to the WC.



Press 'a' on the keyboard and enter 0.12 after having selected the reference corner point and the direction. Click on **OK** to position the door.

To insert the interior doors right-click on the **Door** tool in the vertical toolbar and then select the Interior Doors folder and then an interior door. Enter 88.5 cm for the width and 2.01 m for the height.



After inserting the interior doors in the plan, some at a specified distance from other walls, some in the middle of walls, the plan appears as follows:

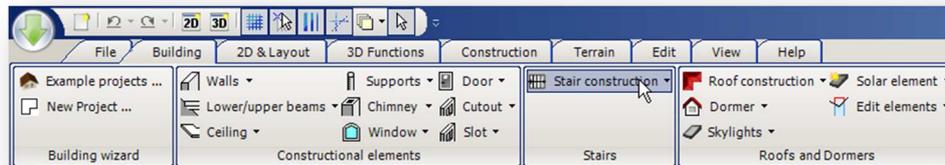


4.2.6 Inserting Stairs

The Stairs tool is located in the **Building tab – Stairs group** in the Ribbon bar. You can choose from three types of staircase:

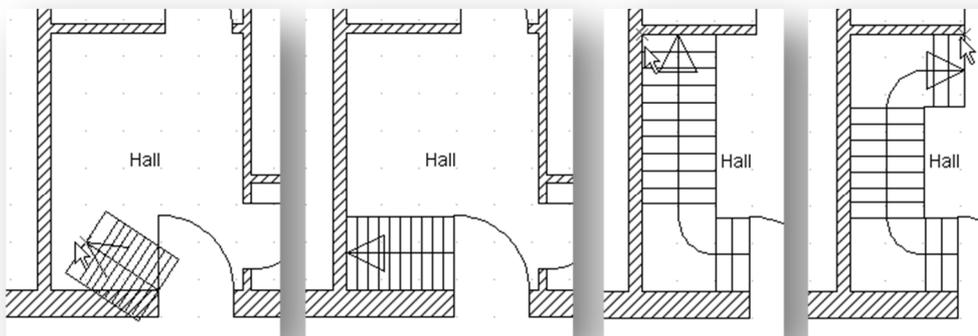
Straight stairs, Geometrical stairs, Stairs with landings

Select the **Geometrical stair**. Set the start point in the hall on the inside edge of the front door.



The stairs are now attached to the cursor.

Change the reference point of the stairs with the key combination **Ctrl+w** (select the bottom lower reference point).

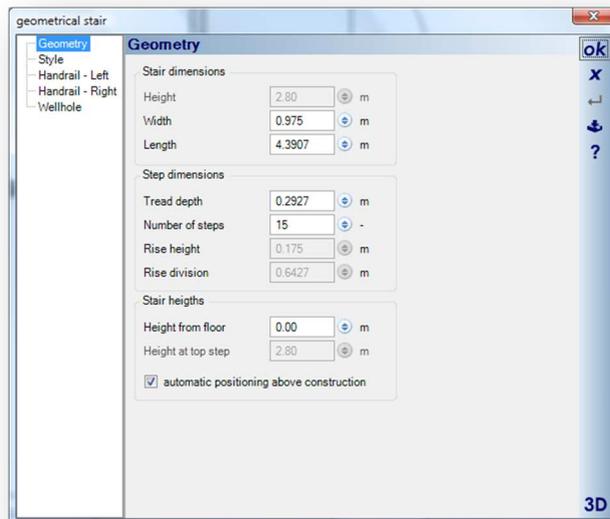


Click a second time in the bottom left-hand corner of the hall, a third time in the top left-hand corner of the hall and finally on the left edge of the door in the hall. Now press 'Enter' and the 'stair' dialog appears.

Simply click on **OK**. The plan of the stairs should now appear as shown in the following illustration.

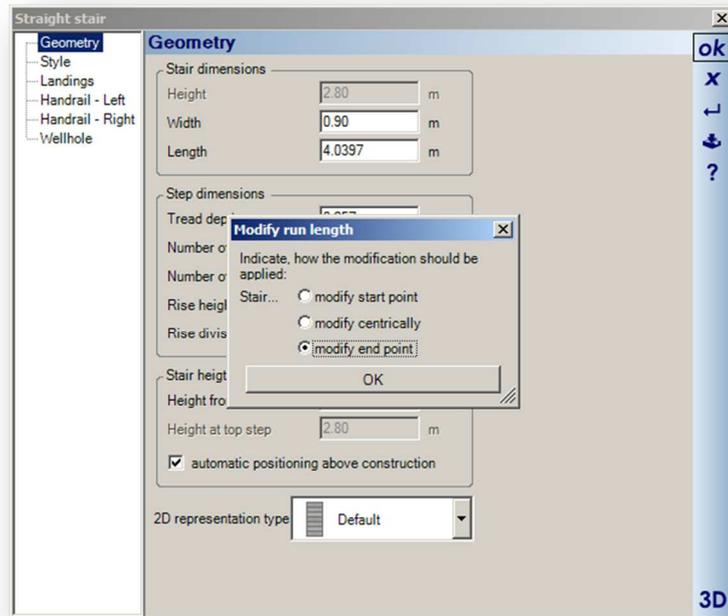


To edit the stairs select them with a left mouse click so that they are highlighted in red. With a right mouse click open the context menu and select properties. The 'stair' dialog appears. Be careful to select the stairs and not the stair well cut-out.



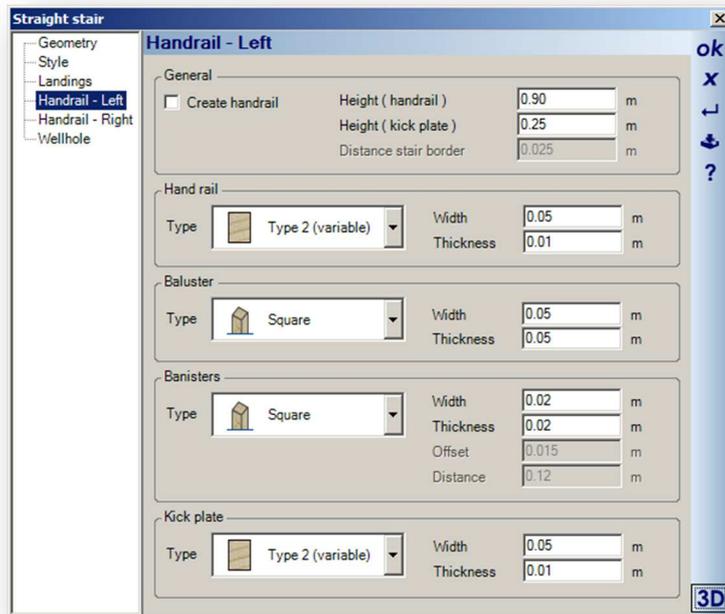
The dialog provides settings for the type of staircase construction (solid stairs or wooden stairs), for the type of banisters and the size of the stair well cut out. Under the **Geometry** tab

of the stair dialog, set the **Width in Stair dimensions** to 90 cm and the tread depth to 25.7 cm. If you click on one of the other input fields the message **Modify run length** dialog appears.

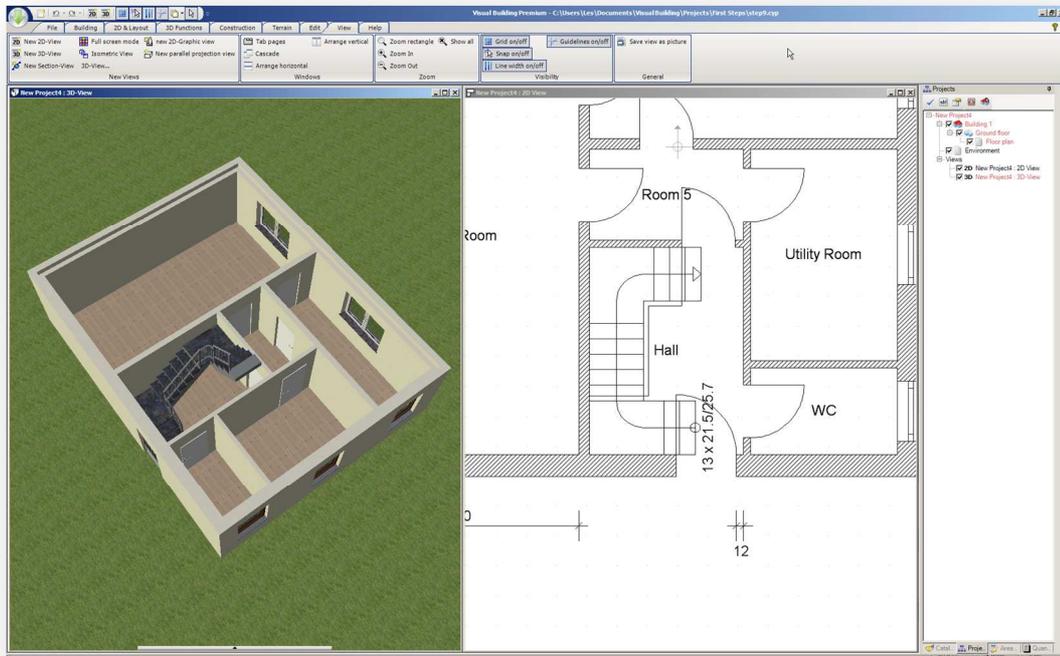


Select **modify centrally** and close the dialog with **OK**.

From the menu on the left select the properties dialog **Handrail left** and deactivate the option for **Create handrail**.

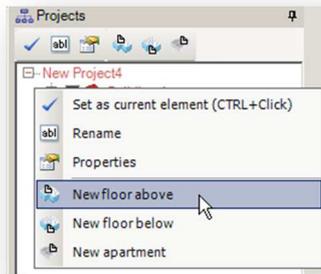


Close the dialog with **OK**. The stairs should now appear in the plan as shown in the following illustration:

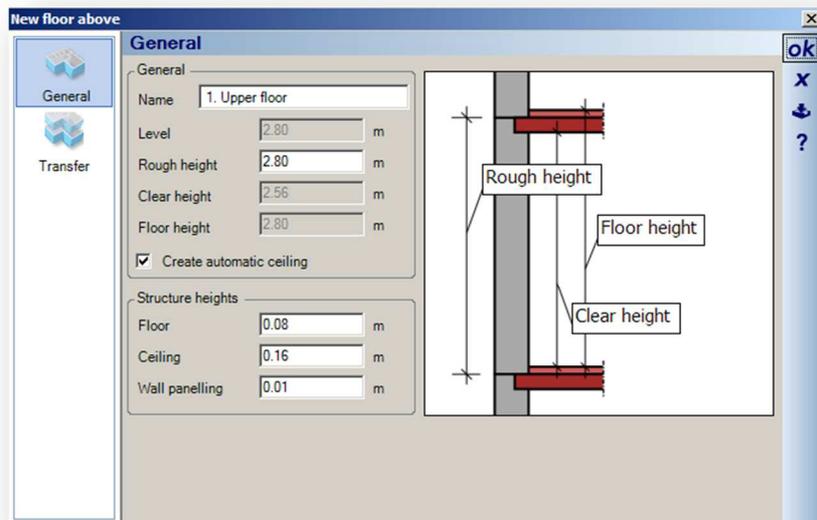


4.2.7 Copying a Floor

To create a new floor above the current one, go to the project viewer, highlight Building 1 and open the following context menu with a right mouse click:



A click on **New floor above** entry in the context opens the following dialog:

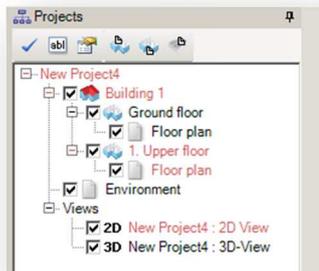


You can also open this Floor dialog by clicking on the **New floor above** tool in the toolbar of the project viewer.

In the Floor dialog select the **Transfer** tab in the left-hand column. Select under Objects **none** to cancel the current selection, followed by **Selected**. Then in the menu tree activate under 'Construction elements' only Walls, Floors and Ceilings.

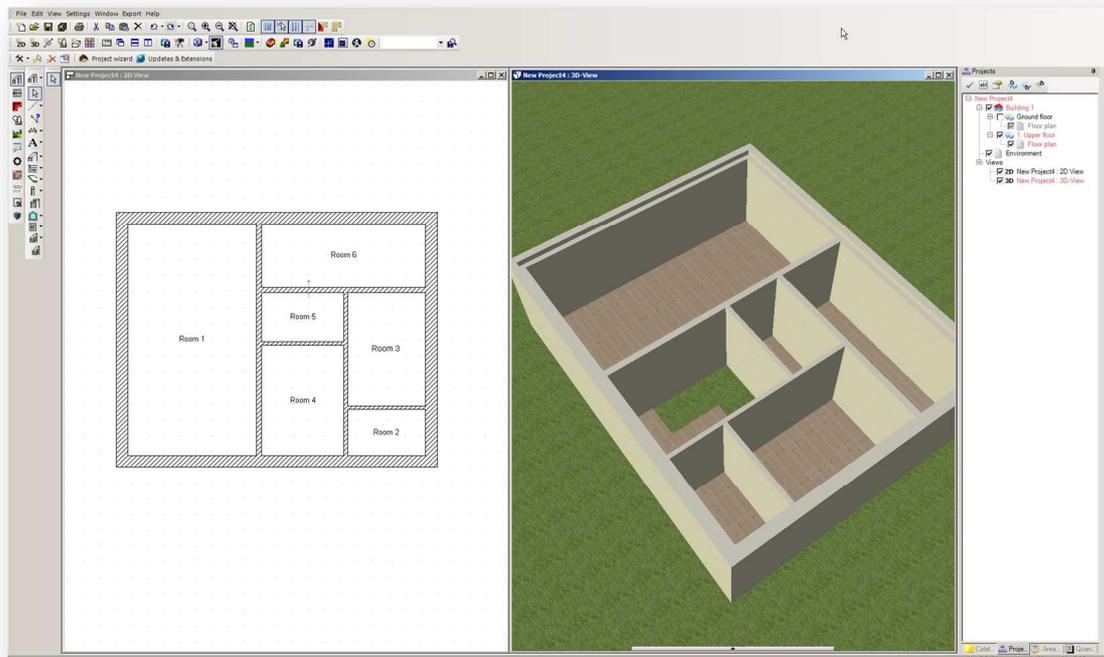
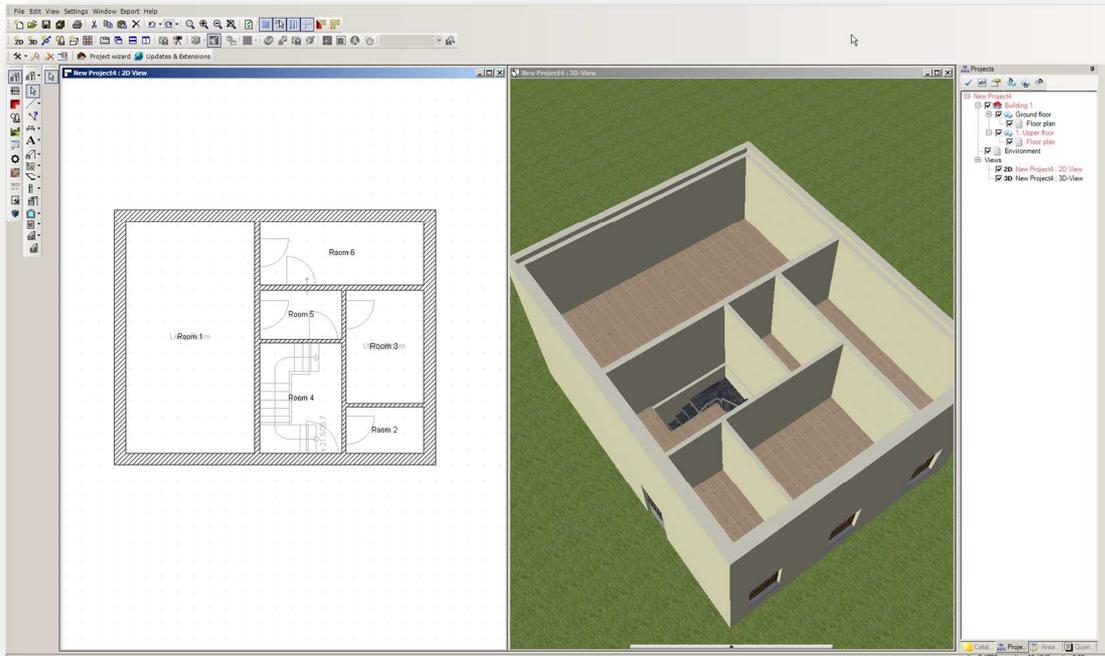


Confirm the settings with **OK**.

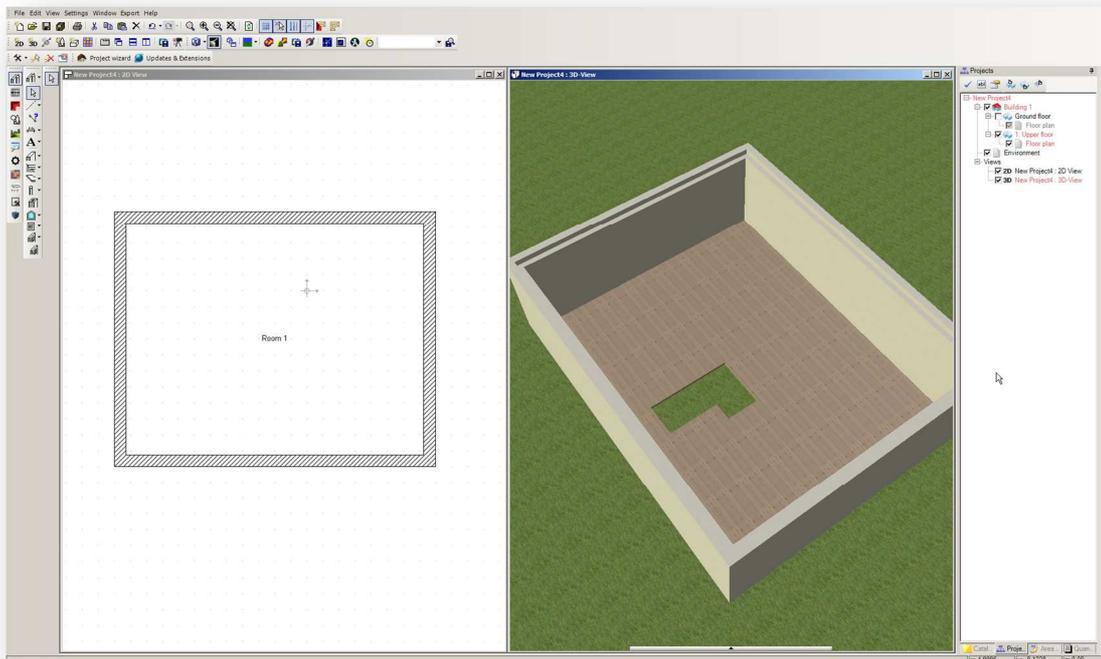


You now see the ground floor and the upper floor on top of each other.

To show just the upper floor deactivate the ground floor in the project viewer.



Now with only the upper floor showing, delete the interior walls by selecting a wall and then pressing **Del** on the keyboard. This can be achieved in either the 2D or 3D view.



4.2.8 Inserting a Roof

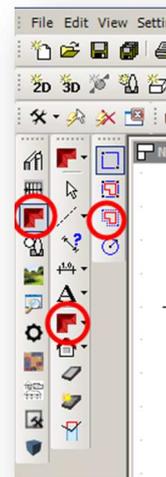
To insert a roof on the top floor, select the **Roof construction** tool in the toolbar.

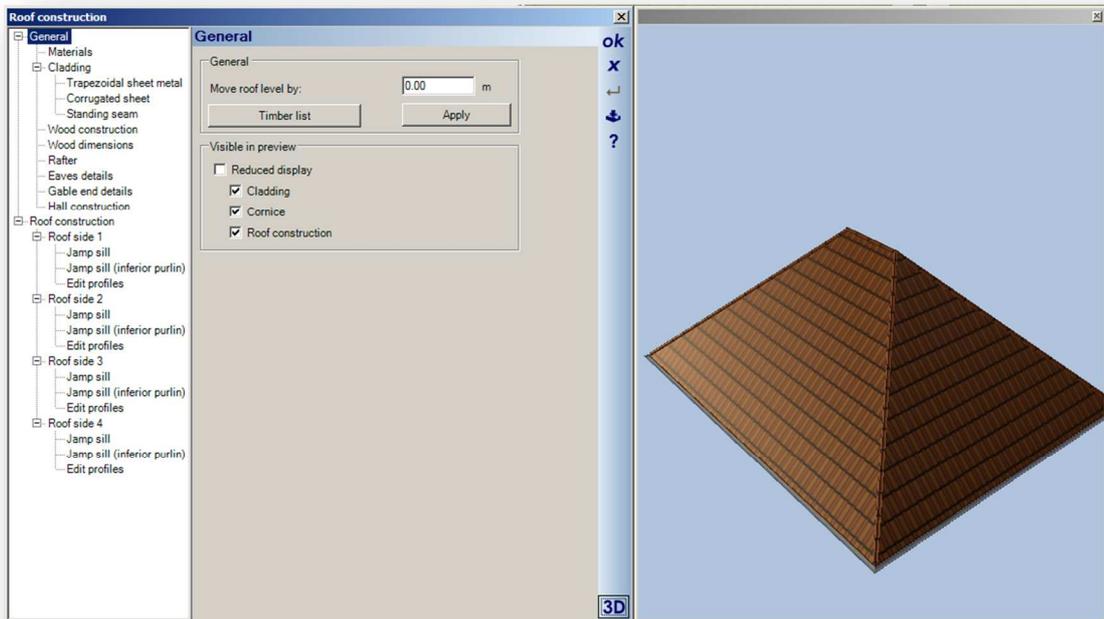
Now click again on the **Roof construction** tool in the Plug-in functions.

Select **Insert roof on selected contour**.

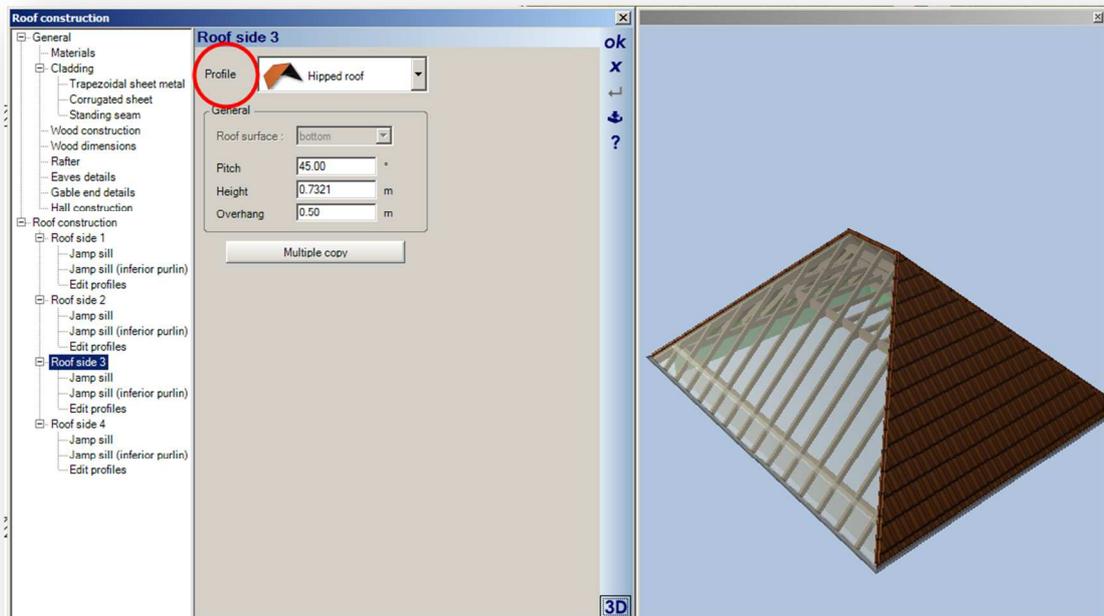
Move the cursor over the plan. As soon as the contour of the building is recognised it is outlined in green. With a left mouse-click, open the **Roof construction** dialog.

Click on the '3D' button in the bottom right-hand corner to obtain a 3D view of the roof.

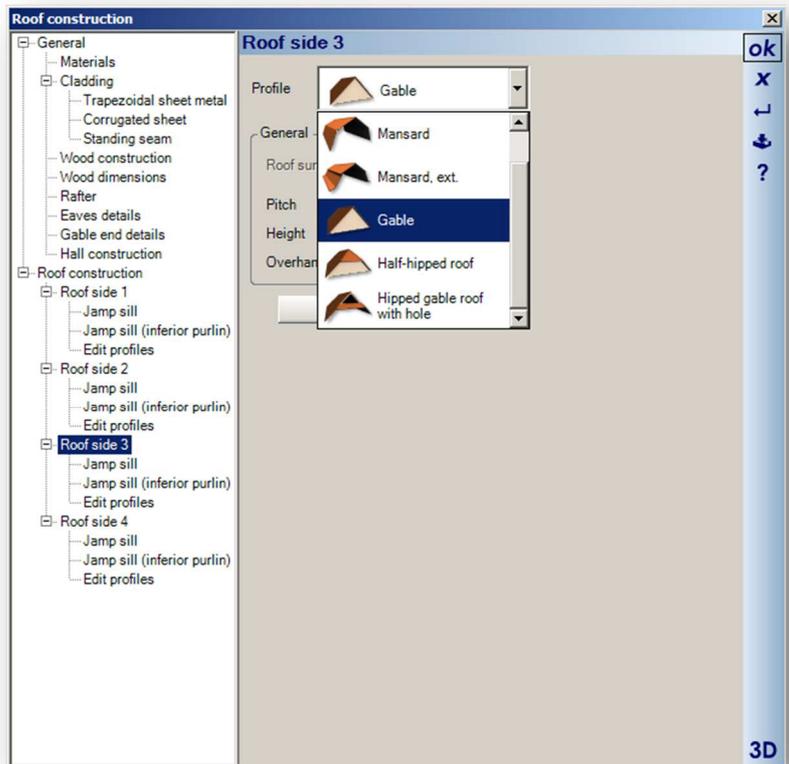




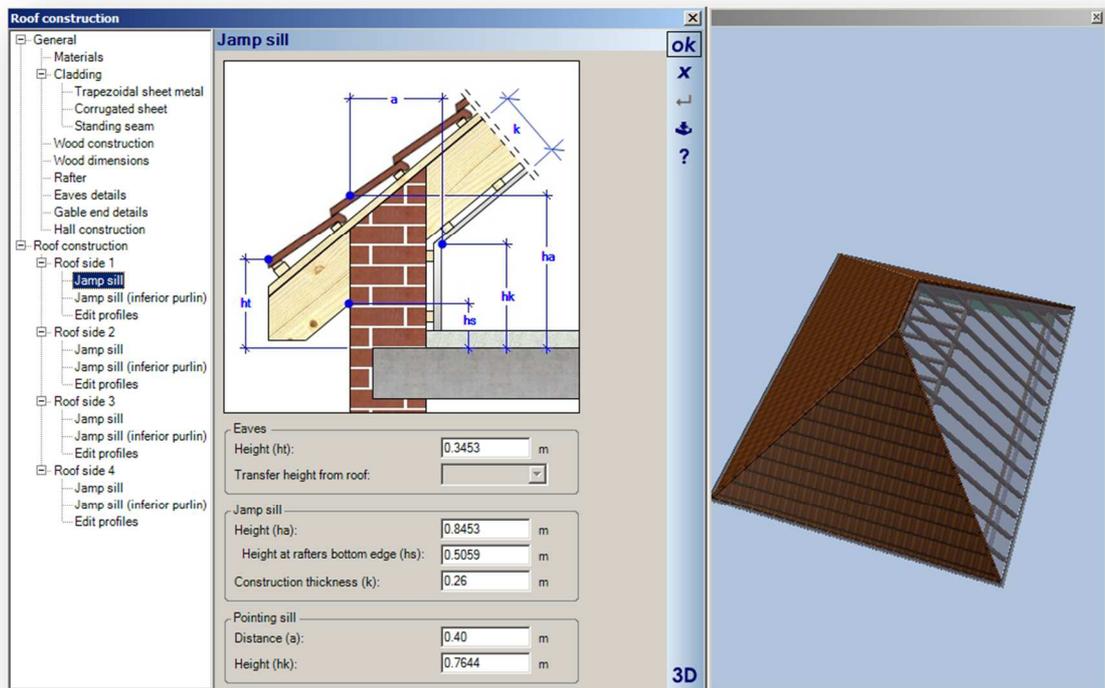
In the 3D view you can select a roof plane directly with a mouse-click and specify settings for profile, pitch, height and overhang.



Under Profile you can choose from the most common types of roof profile.

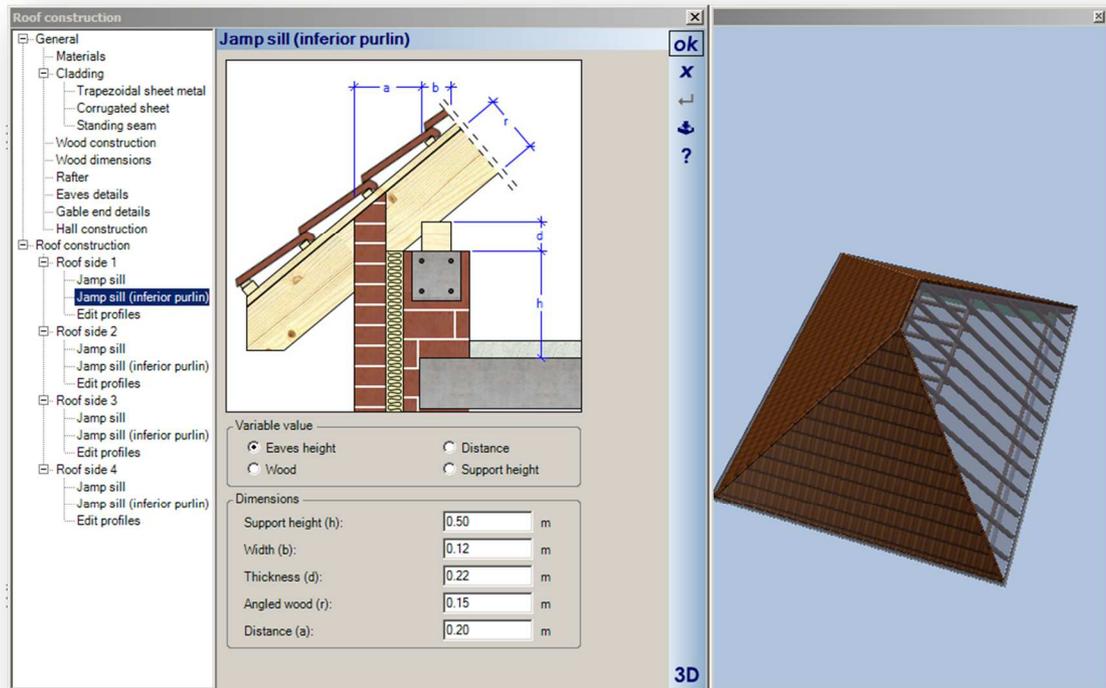


Click on Roof side 1 Jamp sill, noting that that side 1 of the 3D roof becomes transparent indicating that it is selected.



Here you can specify the parameters for the architectural aspects of the roof, e.g. height of the intersection: outside edge of brickwork / top edge of roof, or height of the eaves above the finished floor level, or height of the pointing sill etc.

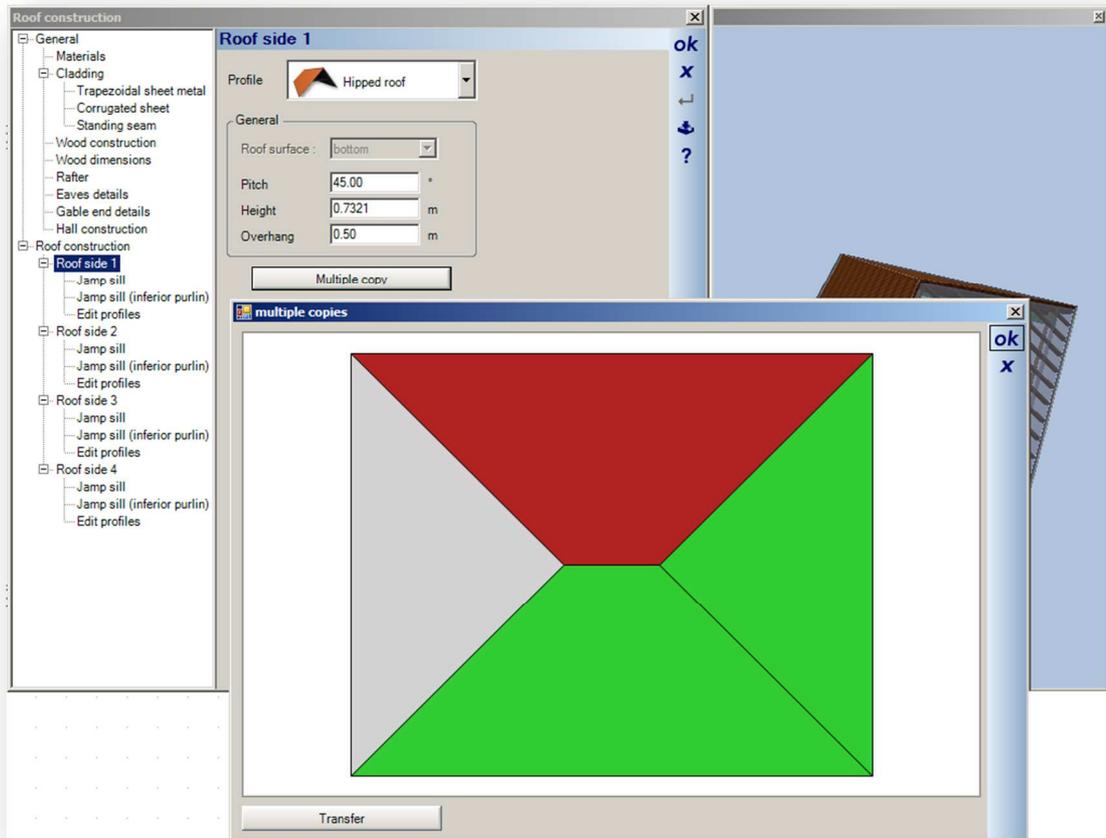
If on the other hand, you click on 'Jamp sill (inferior purlin)' for Roof side 1...



Here you can specify the roof heights for the structural aspects, e.g. support height of the eaves, width and thickness of the purlin etc

You can specify individual settings for each roof plane, or alternatively you can copy the settings from one roof plane to other roof planes. If for example you are in roof side 1, you can copy the settings for profile, pitch/, height and overhang, to other roof sides.

To achieve this select the source roof side, then click on the **Multiple copy** button. A new roof diagram will then appear, showing you selected source roof in red. Selected destination roof sides will appear green.

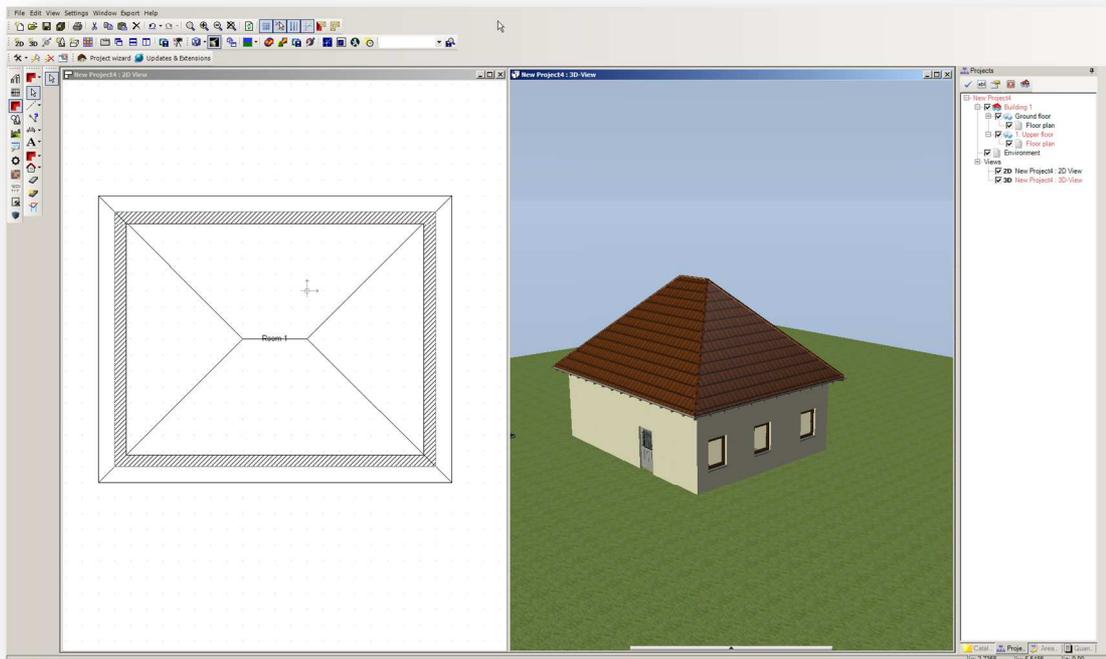


Accept the default settings by clicking on 'OK'.

In the plan the top view of a hipped roof is shown.

You can change the height that a roof sits on a wall using the Move roof level by feature, found in the **General** section of the roof dialog.

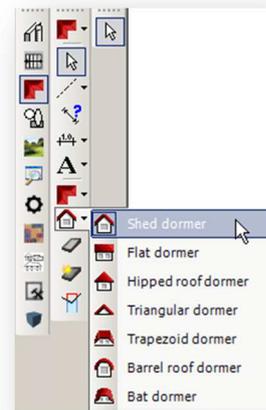
To raise the roof 50cm, enter 50 cm here and click on **Apply**. A negative value would lower the roof. Click on **OK** to exit the dialog, resulting in the following view:

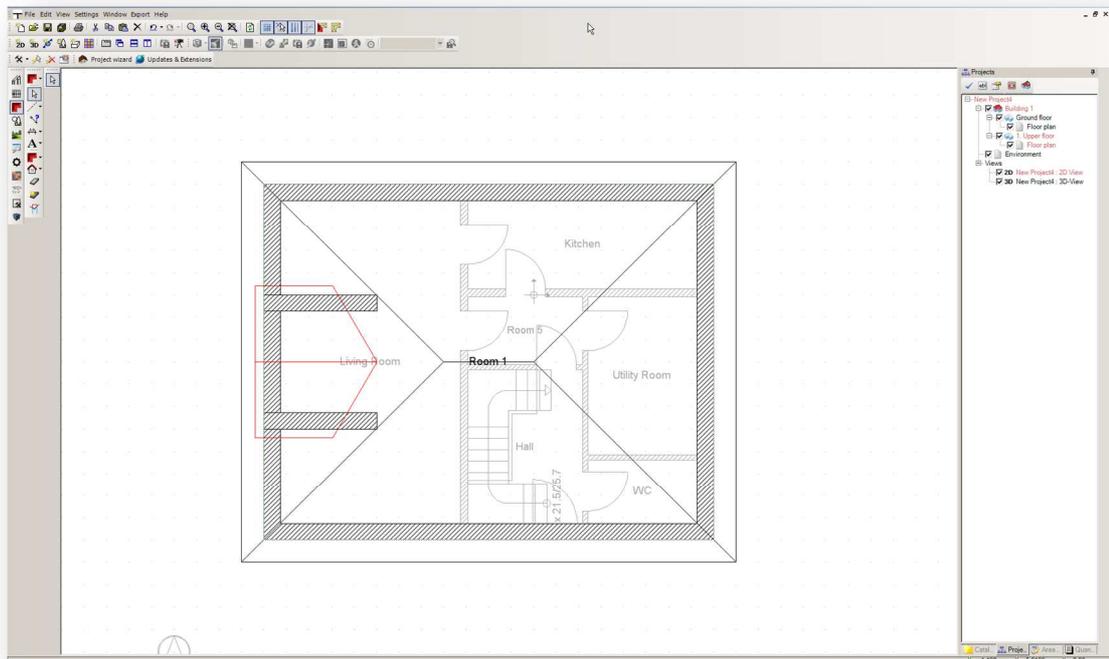


4.2.9 Inserting Dormers

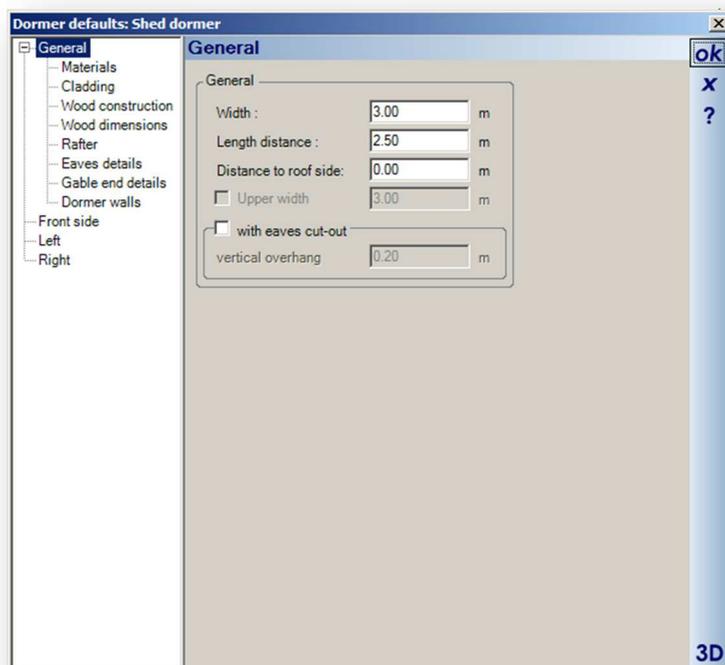
The Dormer tool is also located in the same toolbar as the roof tool. Clicking the Dormer tool will expand the tool showing 7 dormer types available.

Select the Shed dormer. The dormer is now attached to the cursor and can be dropped onto the roof. Move the cursor to the outside edge of the left exterior wall and drop the dormer on the roof with a left mouse click.

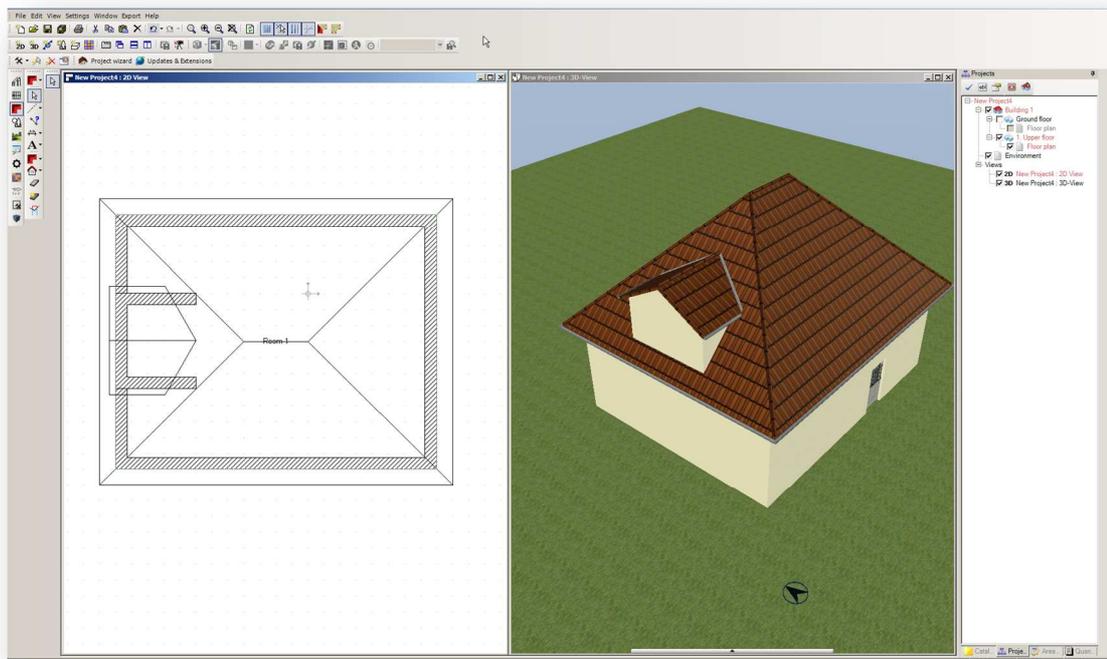




The 'Dormer' dialog is now opened.

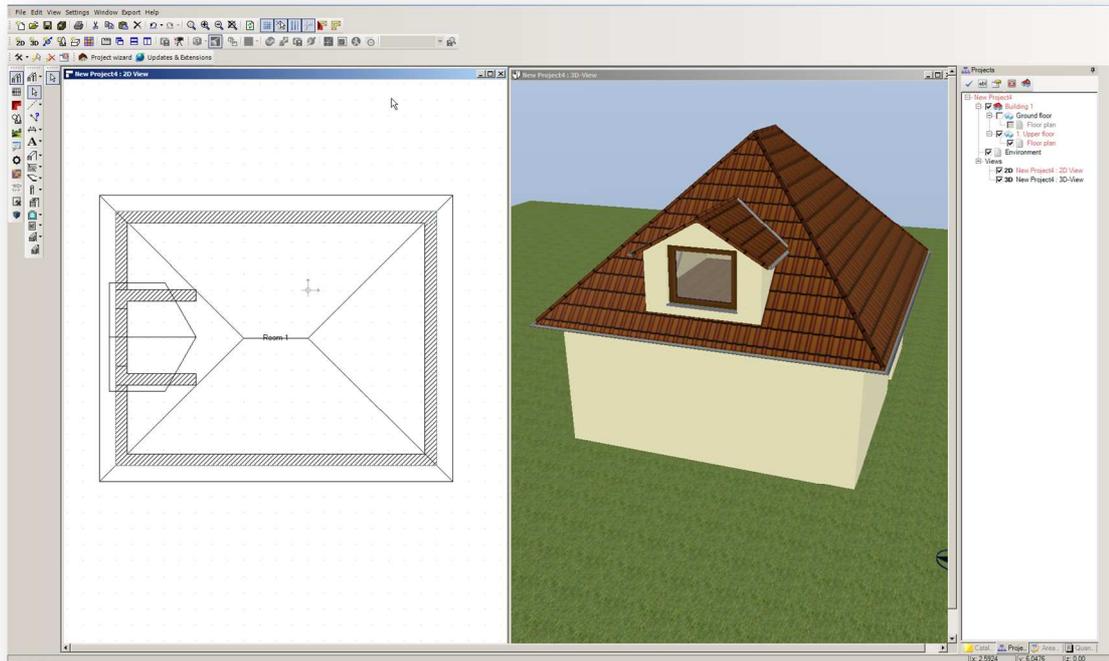


Click on **OK** to accept the settings shown under 'General'. Using the sub-items of 'General' we can specify the settings for 'Materials', 'Cladding', 'Timber construction', 'Timber dimensions etc., which we are familiar with from the 'Roof construction' dialog.



Now you can insert a window in the front wall of the dormer.

Visual Building User Manual



5 PROJECT FILES

5.1 SAVING PROJECTS

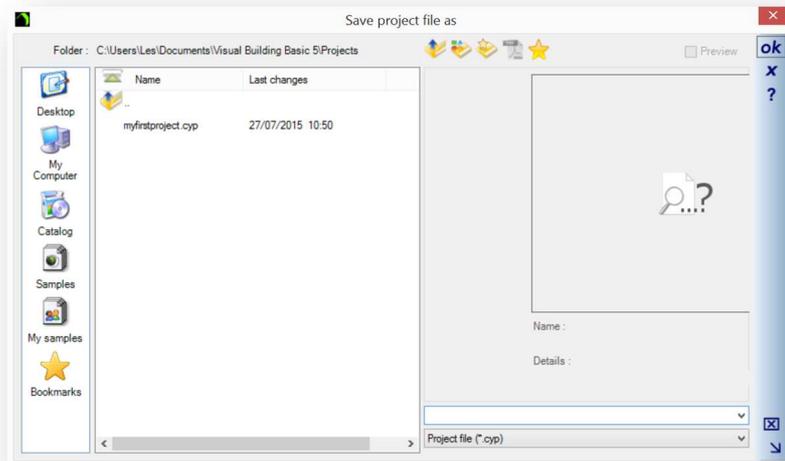
When you save a Visual Building project it is saved as a .cyp file. This file contains both the 2D and 3D data for your project. You can save the current Visual Building project using the **Save**, **Save As...** or **Save All** functions.

Save will save the current project under its current file name. This file name and path is displayed in top of the windows. If you have not yet saved a new project you will activate the Save Project dialog which will function in the same way as the **Save As** function. The first time that you save a project it will be saved in your Projects folder located at:

C:\Users\YOURNAME\Documents\Visual Building Basic 4\Projects

Save As... will activate the **Save project file as** dialog:

This dialog will by default save the current project in the Project folder, but by using the



navigation tools in the left hand bar, you can navigate to any folder in which to save your project. You also have the option to create a new file name by entering a file name in the text input field in the bottom left. The file suffix .cyp indicating that it is a Visual Building project file is automatically appended.

The **Save All** function will save all currently loaded projects, as opposed to the **Save** and **Save As** functions which only save the current project.

5.2 DIRECTORY NAVIGATION PANEL



This directory navigation panel appear in all file access dialogs and allows you to quickly select a different folder. Some of these are obvious from their name, but here is an explanation for all:

Desktop

This is your Windows desktop. It's an easy place to save files for quick access, but if over used will quickly become full. Its best used for a temporary place to save a file for access by another program or for emailing.

My Computer

Since the introduction of the UAC (User Account Control) in Windows Vista, and also implemented in Windows 7, and Windows8 and 8.1, this is a restricted area until you authorise Visual Building that it can save there by giving it Administrator privileges. Assigning Administrator privileges is detailed later in this documentation. If you do assign Administrator privileges to Visual Building the project file would still need to be assigned to hard drive and folder located at the My Computer level.

Use this use when you want to access external drives.

Catalogue

Depending upon your version the Catalogue's default path is located at:

- C:\Program Files\Visual Building Basic 5
- C:\Program Files\Visual Building Pro 5
- C:\Program Files\Visual Building Premium 5

This path will be different, if you chose an alternative installation path at install time.

This area is protected by the UAC until you assign Administrator privileges to Visual Building, and will prevent you from saving any files in the catalogue.

You can then save your projects (.cyp) in the **Projects** folder, save a texture (.bmp, .png) in the **Textures** folder, or save an object (.cyg) in the **Objects** folders.

There are several other less used folders that you can access:

AEC

This is where your doors, windows and other objects are kept.

Backgrounds

The background images that you can import behind a project live here.

Database

The files displayed within the Mercantile Directory live here.

Graphics2D

The 2D symbols (.cys) live in this directory. This will include any additional catalogue that you may have purchased such as the Fire Escape Plan catalogue.

Manuals

The manuals live here in pdf form, however these manuals will be out of date as we are constantly updating them, so please always download the latest manuals from our web site: www.visualbuilding.co.uk/documentation

Materials

The materials files (.mat) live here.

NormalMaps

The Normals map files (.jpg) live here. Normal maps can give your 3D project views a realistic 3D textured feel.

Program

Best leave the contents of this folder alone.

Templates

The report templates live here

You can of course use this path to open a file for input into Visual Building.

The contents of these folders are described in more detail within the relevant sections.

Samples

Depending upon your version the Samples default path is located at:

C:\Program Files\Visual Building Basic 5\Projects
C:\Program Files\Visual Building Pro 5\Projects
C:\Program Files\Visual Building Premium 5\Projects

This area is also protected by the UAC until you assign Administrator privileges to Visual Building.

You can of course use this path to open a file for input into Visual Building. This path contains all the example projects provided at installation time.

My Samples

This is the best place to save your own projects and is located at:

C:\Users\YOURNAME\Documents\Visual Building Basic 5\Projects
C:\Users\YOURNAME\Documents\Visual Building Pro 5\Projects
C:\Users\YOURNAME\Documents\Visual Building Premium5\Projects

Bookmarks

If you do decide to save a file in a location allowed by the UAC or on another drive then, you can bookmark that path by clicking on the Favourite star icon at the top of the dialog. This bookmarked path will then appear when the Bookmarks navigation tool is selected. Clicking on the entry will then take you there.

Along with the Favourite star at the top of the dialog, there are 4 other tools:

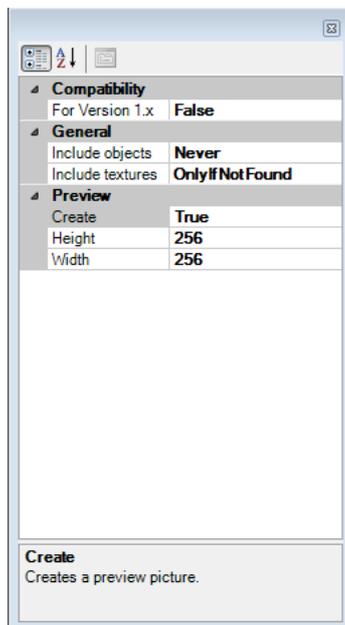
Up a folder to allow you to navigate up through a folder hierarchy.

Small/Large icons which allows you to see more in the display area by reducing the size of the icons.

Create a New Folder which does exactly that after being prompted for the new folder name.

PDF Reserved for a future feature

5.3 ADDITIONAL SAVE OPTIONS



If you select X button in the bottom right of the Save dialog, you will activate some additional File save options.

For Version 1.x should always be **False**

Include Objects

Never (Default): The project file will not include objects and only references to the objects in the catalogue are included in the project file.

Always: The project file will include objects not use references. This will cause your project file to grow substantially, because all the objects will be embedded into the project file.

Only if not found

The project file will include objects not found in the catalogue path, but will use references to those objects in the catalogue.

Only if not local

Reserved for a future feature.

Include Textures

Never: The project file will not include textures and only references to the textures in the texture catalogue are included in the project file.

Always: The project file will include textures not use references. This will cause your project file to grow substantially, because all the textures will be embedded into the project file.

Only if not found (Default)

The project file will include textures not found in the texture catalogue path, but will use references to those textures in the catalogue.

Only if not local

Reserved for a future feature.

5.4 ADMINISTRATOR PRIVILEGE

Since the introduction of the UAC (User Account Control) in Windows Vista, and also implemented in Windows 7, and Windows 8, all software restricted in writing data to specific paths and folders and have to be authorised to do so by the administrator (normally you). This mechanism prevents Visual Building from saving projects, objects, textures and other files into the installed folders that contain the original installed catalogues and example projects. You are supposed to save to your set of folders in the user's data path.

You can however enable Visual Building so that it can save to these installation folders by giving it Administrator privileges.

To give Administrator privileges to Visual Building proceed as follows:

1. Locate the Visual Building exe or link entry in the Start menu or desktop icon
2. Right click on the entry and from the context menu select **Properties**
3. Select the **Compatibility tab**
4. Tick the box: **Run this program as an administrator**
5. Click Apply and **OK** to close the dialog
6. Start Visual Building and you will now be able to save objects and textures into the catalogue folders.

These are normally located at:

C:\Program Files (x86)\Visual Building Basic 4\Textures

C:\Program Files (x86)\Visual Building Basic 4\Objects

6 PROPERTIES OF VIEWS

6.1 ARRANGING VIEWS

The 2D Views, 3D Views and Elevation views can be rearranged – cascaded, tiled horizontally or tiled vertically. In addition, the software offers with the Tabbed view button, the option of presenting the views in tabbed form. After the button has been activated it is locked to prevent access to the other functions for arranging views. By clicking once more on the tab option button the views are once again cascaded.



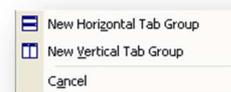
These view tools are found in either the View toolbar or in the Ribbon bar – View tab – Windows group.

6.2 TAB PAGES



With the tab option, all the views are grouped together in the top margin of the planning area. If there is not sufficient space to show all views, the views that are not shown can be accessed using the left and right arrow buttons. The currently active view can be closed with the close button.

Tabs can be grouped together horizontally or vertically by dragging one of the displayed views into the planning area of an active group using the mouse. On releasing the left mouse button, a context menu appears with which the type of tab group can be defined or the action cancelled.



The size of the displayed view windows can be modified with the mouse at their borders.

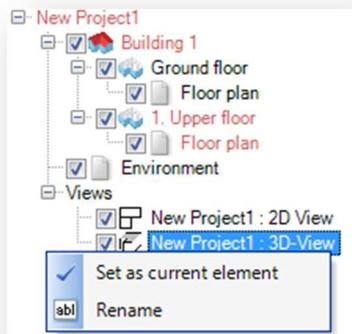
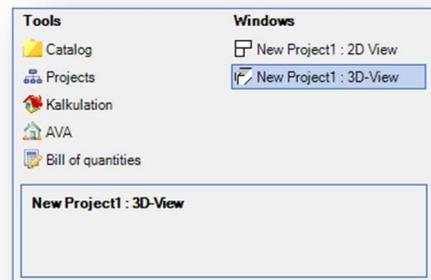
6.3 SWITCHING VIEWS

In addition to the usual ways of switching views, i.e. using the menu box, the title bar or the corresponding tab, there are two other possibilities.

First, the key combination 'Ctrl+Tab' activates a dialog to switch between views.

By holding down 'Ctrl' you can switch between the views and the tools with the arrow keys on the keyboard. As soon as you release 'Ctrl', the dialog is closed and the selected view is activated.

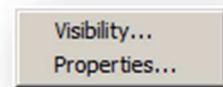
Second, in the project viewer, click on a view to select it, right-click to open the context menu and then set it as the current element.



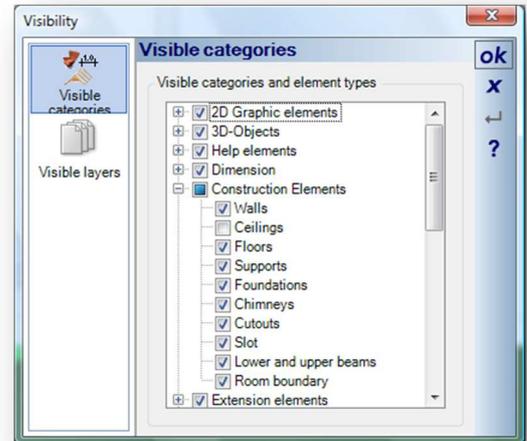
6.4 VISIBILITY

The visibility settings for the objects and elements can be modified separately for each view. Use of the visibility feature improves clarity and speeds up planning.

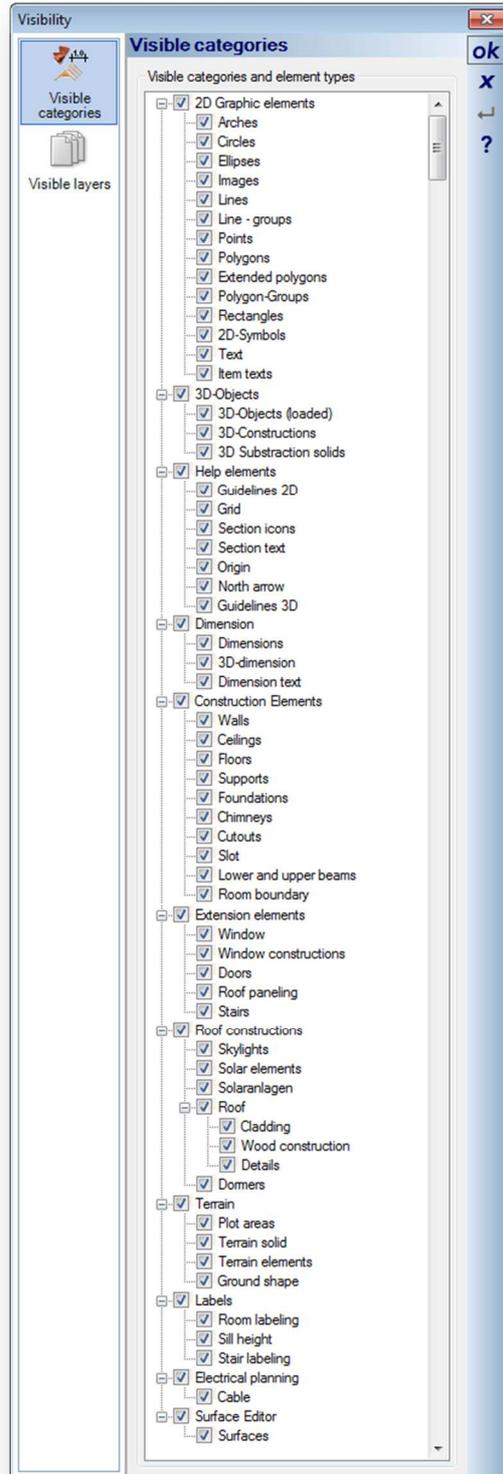
The 'Visibility' dialog with parts for 'Visible categories' and 'Visible layers', can be activated using the context menu opened by a right mouse-click on the selected view.

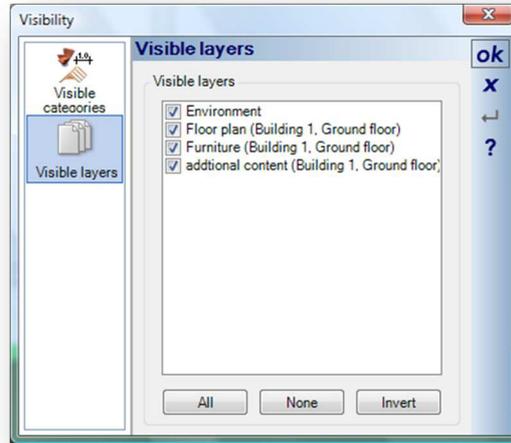


All elements are presented hierarchically in the 'Visible categories' area of the dialog box. In the tree structure you can deactivate each element individually. A checked box indicates that the corresponding element or the entire category is visible. An unchecked but filled box indicates that at least one of the elements in this category has been set to invisible.



Here is an expanded edited image showing all trees expanded:

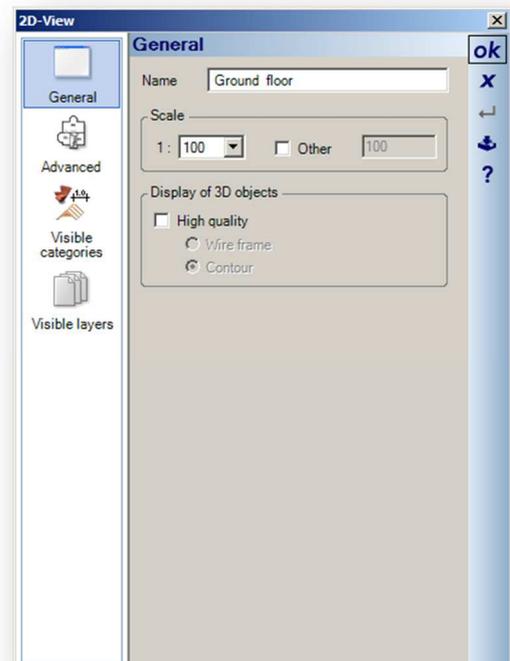




The 'Visible layers' tab shows all layers for the project, which you can select or deselect their visibility. You can also change the visibility of layers, buildings and floors (which are also just layers) using the project viewer.

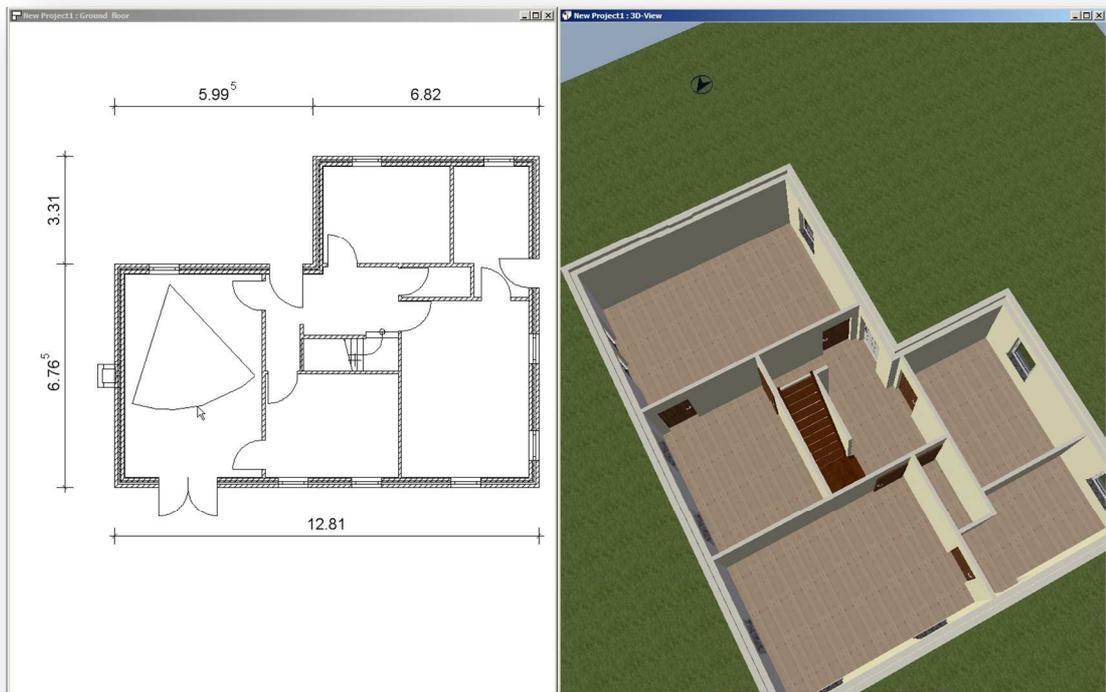
6.5 SCALE

You can set the scale individually for each 2D view using the properties dialog, which is activated using the context menu opened by a right mouse click in the active 2D view.

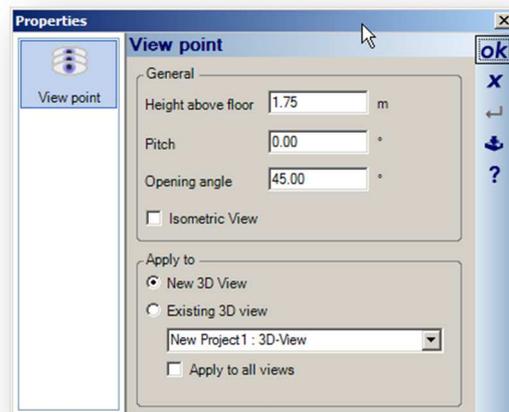


6.6 SETTING A 3D VIEW POINT

 With the **Set 3D viewpoint** tool you can activate the dialog to set a view point. Although the result only has an effect on one or more 3D views, it is possible to set a view point equally in 2D plan views as well as in 3D views. After a click on the tool, you can define in the chosen view, the view point with the first left mouse click, and then a direction with the second left mouse click. As an aid, a preview of the direction and current angle defined is shown in all views.



The second mouse-click opens the 'Properties' dialog. Apart from the height above the floor, the pitch and the opening angle, you can also specify whether a new 3D view should be opened, or whether the new view point should apply just to an existing view or all 3D views.



Setting a view point using this tool does not actually save the view. To achieve this you should use the **Save user viewpoint** tool, located in the 3D View toolbar or in the Ribbon bar – 3D Functions tab – General group.

6.7 ZOOMING, SCROLLING AND ROTATING

6.7.1 Zooming

The zoom tools are found in the **Ribbon bar – View tab – Zoom group**. These are also located in the **Default toolbar**. These are the tools for zooming and function the same in all views.



- Zoom rectangle
- Zoom in
- Zoom out
- Show all

Additionally, there is the function 'Zoom to Cursor'. With this function zooming takes place directly at the cursor position using the mouse wheel, if the key combination 'Ctrl+Shift' is kept pressed.

'Ctrl+mouse wheel' results in 'Zoom in' or 'Zoom out', depending on the direction in which the mouse wheel is turned.

6.7.2 Additional Functions in 3D Views

Apart from the functions mentioned above, you can also zoom in 3D views by holding down the right mouse button and dragging the mouse up or down. This movement corresponds to the functions 'Zoom in' and 'Zoom out', although here the zooming is continuous and not in predefined steps as with the buttons.

With the aid of the key combination 'Shift + left mouse button', you can reposition the scene to prevent the 3D model from sliding out of the window when zooming.

6.7.3 Scrolling

There are also several options for scrolling:

Mouse wheel: Up and down

'Shift+ mouse wheel': left and right

The arrow keys provide the same functions as the mouse wheel.

6.7.4 Rotating in 3D Views

In 3D views, the scene can be rotated in all directions using the mouse or the arrow keys by holding down the left mouse button. Note when rotating a scene, the cursor should not be positioned over a selected element; otherwise the movement of the mouse is interpreted as a repositioning of that element.

6.8 SNAP FUNCTION

The snap properties can be defined by right clicking on the Snap tool located in the **Ribbon bar – View tab – Visibility group**.

The snap properties are also defined using the **Settings-General** menu. The defaults specified aid the insertion of elements using the snap-cursor.

 There are three versions of the snap-cursor; the symbols denote, from left to right, snap to a point, snap to a line and snap to the intersection of two lines.

6.9 2D VIEWS / CROSS-SECTIONS

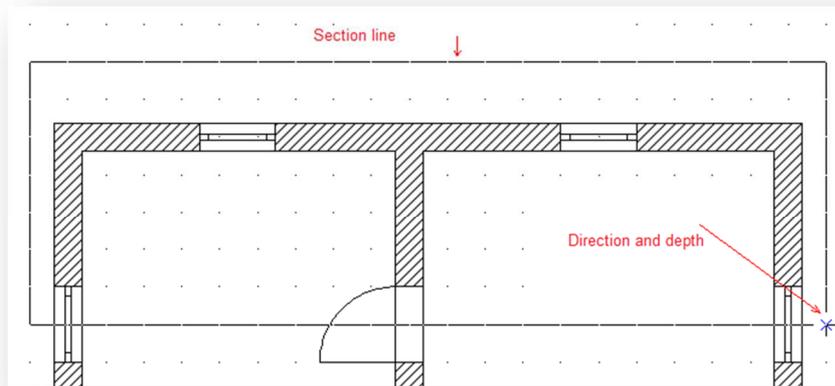
Version Note: 2D Cross section views are available only in Visual Building Basic, Professional and Premium versions.

Elevation views and section views are created in the same way. The main difference is that for the elevation view the section line does not pass through the building.

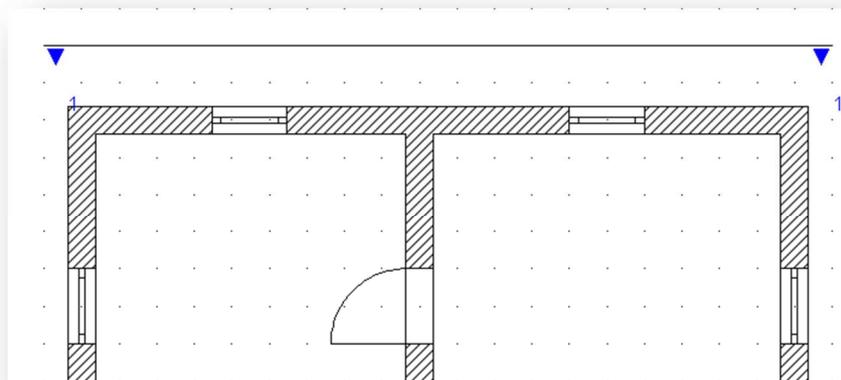
6.9.1 Creating Cross-Sections

The Section view tool is located in the **Ribbon bar – Views tab – New views group**. It is also located within the **Views toolbar**.

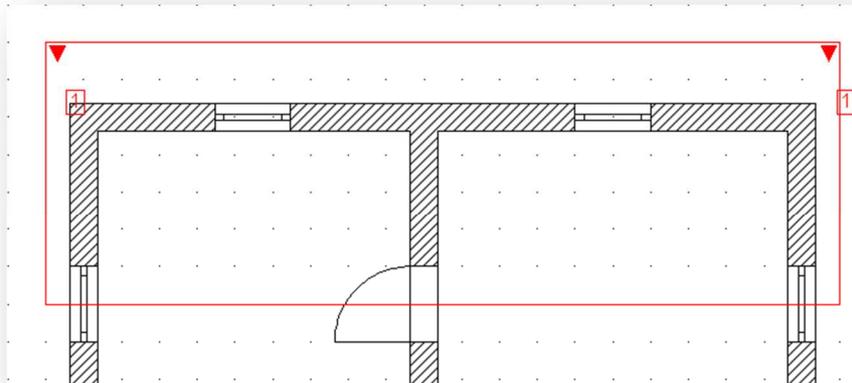
 A new cross-section view can be created with the Section view tool. Using the mouse, first the cut line is defined, and then with a rectangle, the direction and depth of the cross-section view is defined.



After the cross-section has been defined with the rectangle, the new view is calculated and immediately displayed. A cross-section symbol, which indicates the line and depth of the cross-section, is inserted in the 2D plan view.

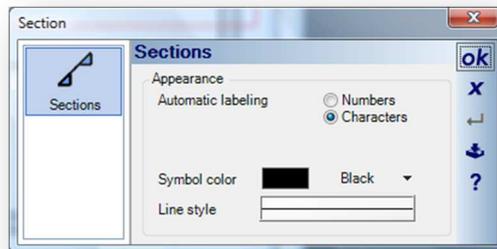


If the cross-section symbol is selected, the depth and the exact position of the cross-section are shown.



6.9.2 Options for Cross-Section Symbols

There are various options for the notation of cross-section symbols in 2D plan views. You can choose between automatic notation with capital letters or numbers. These are displayed below the arrows of the cross-section symbol, starting with A – A for capital letters and 1 – 1 for numbers.

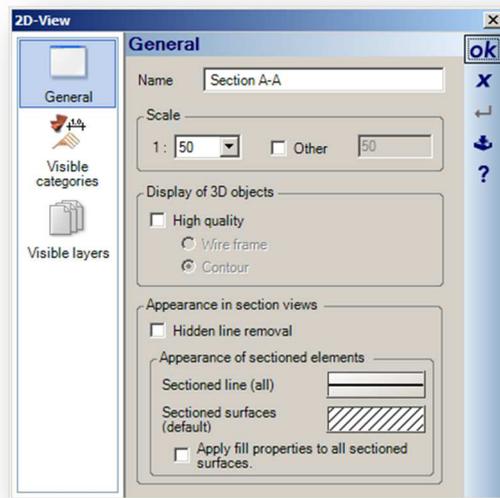


At both ends of the cross-section symbol, text is generated that can be edited with standard functions, and that can have, instead of letters or numbers, any content and be freely positioned.



6.9.3 Exterior Views with hidden lines

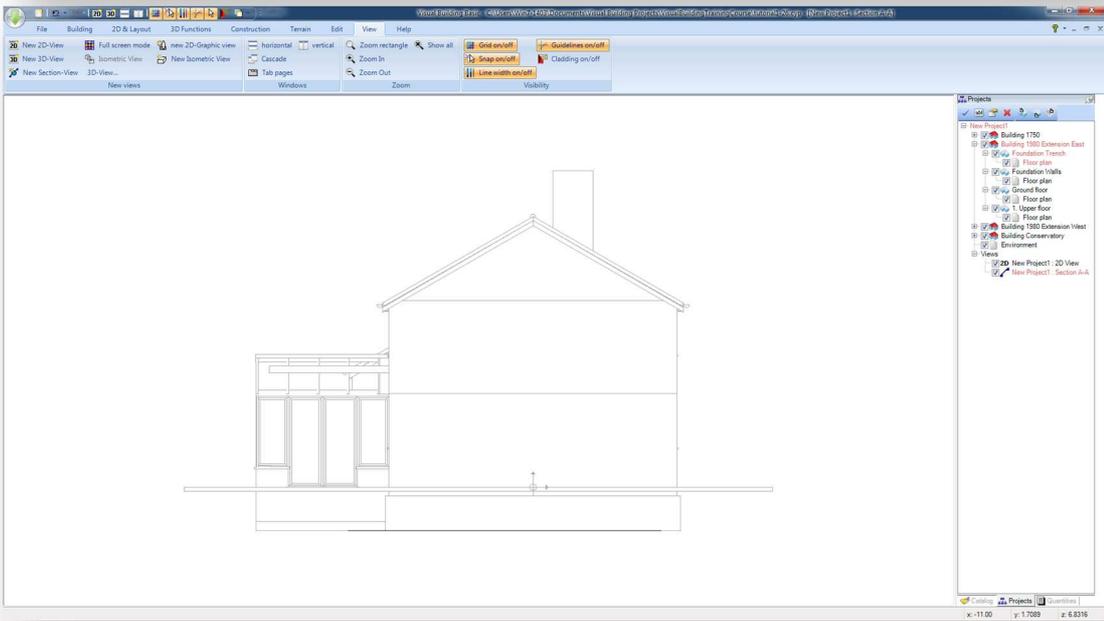
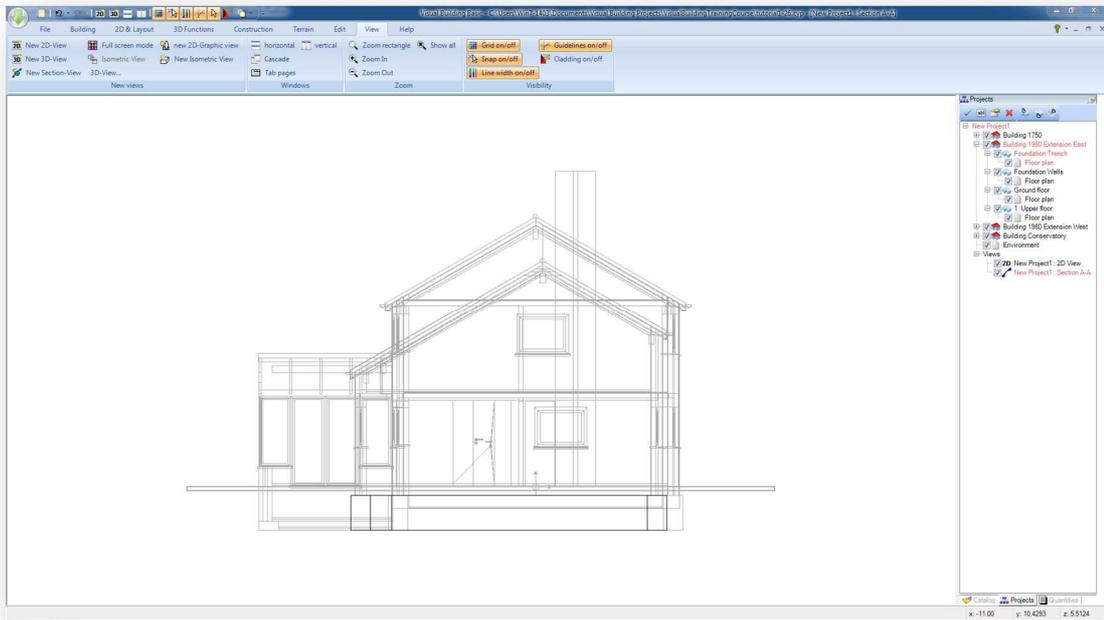
You can create exterior views, with hidden lines removed, with an option in the 'Properties' dialog of the cross-section view.



As soon as the dialog is closed with **OK** the view is recalculated, which can take several minutes depending on the elements contained in the view. For the same reason it is not recommended to have views open with this option, when planning or making modifications to the project. A basic concept of the software is that a view is updated after every change, which can have a considerable negative effect on performance for views without concealed lines.

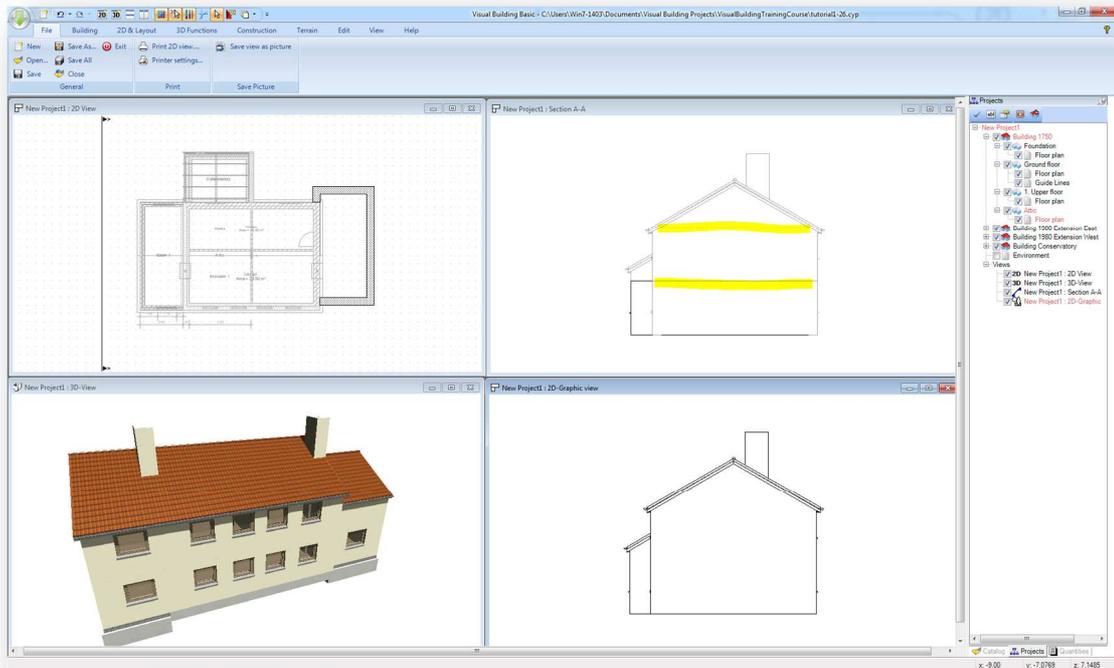
The effect of this option is shown in the following examples, with the first image showing all lines, i.e. **Hidden line removal** is not selected.

The second images shows the effect of **Hidden Line removal**.



6.9.4 Removing Floor Lines in Elevation View

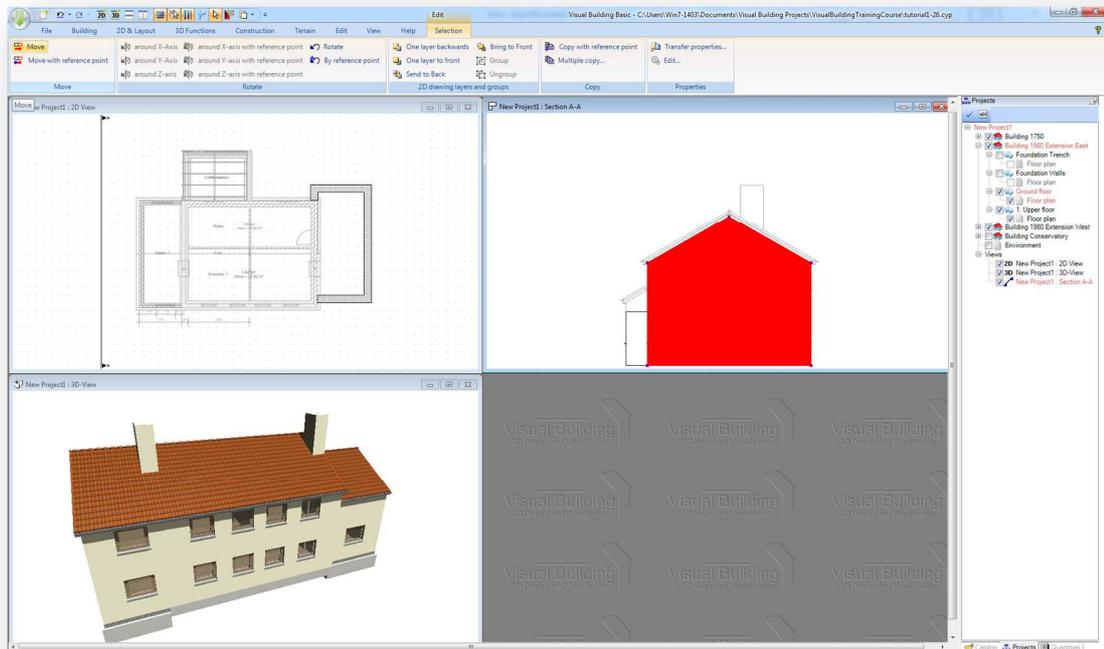
When you create an external elevation view, you will notice that the lines representing the division between floors are still displayed. These lines can be removed / hidden in one of two ways:



With the elevation view as your current selected view, create a **New 2D Graphic View**. This will create the same view, but this view is editable, allowing you to delete any unwanted lines. This is shown in the bottom right view in the previous image.

Alternatively, if you don't want to create an additional 2D Graphic view... In the section view you can place a white filled polygon over the elevation to hide the unwanted lines. You can also use the Surface Editor to achieve the same.

You can add dimensions and other text to the elevation views.



6.9.5 Saving Images from 2D Views

 Images from 2D views can be saved in any supported format. The format together with the file name can be specified in the 'Save' dialog. The content displayed for the active 2D view will be saved. With the aid of the settings for visibility it is possible to specify precisely the image content.

6.10 2D GRAPHIC VIEWS AND PARALLEL PERSPECTIVES

Version Note: The 2D graphic view and Isometric view are only available in Visual Building Basic, Professional and Premium versions.

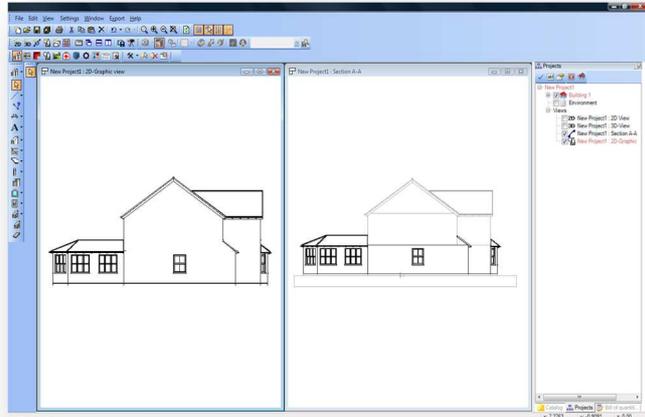
 The New 2D Graphic view tool is located in the **Ribbon bar – View tab – Visibility group**. It is also located in the **View toolbar**.

With the New 2D Graphic view tool a 2D graphic view can be created from an active 2D view and its content. This view no longer contains construction components. All content is converted into the 2D graphic elements, i.e. lines, polygons etc., with which the construction components were originally defined. These 2D elements are no longer linked to the current project. The advantage of a 2D graphic view is that all 2D elements can be edited and, if required, deleted separately. This makes it possible to perform detailed editing on certain elements of your

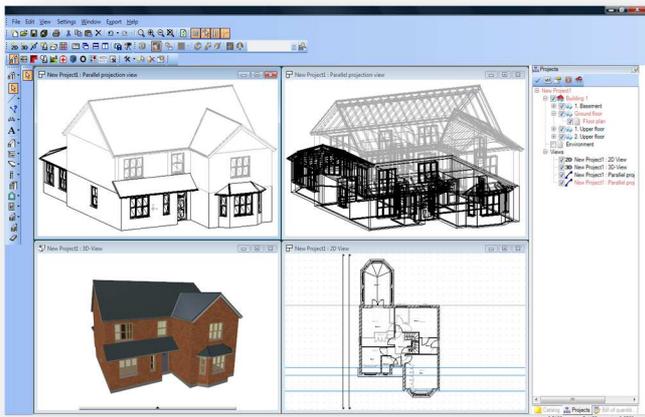
drawing and then save them as 2D Symbols for later use. Alternatively, you can delete unwanted elements, such as the line between floors shown in the example which originates from the walls, before printing the plan.

When creating a 2D graphic view, depending on the settings for visibility and resolution, several tens of thousands of graphic elements may be generated, and can seriously affect the performance. Therefore, 2D graphic views should only be created when really necessary and closed as soon as possible.

The Isometric view tool is located in the **Ribbon bar – View tab – Visibility group**. It is also located in the View **toolbar**



An isometric view can be easily created from an active 3D view, by positioning the 3D view as required, and subsequently opening the new view. You will then be asked if you would like to maintain the angle of view. These views are still linked to the construction model and behave similar to cross-sections. You can thus modify visibility settings and if required affect the representation by activating hidden line processing. On the top left of the following illustration a perspective is shown, which was created from the 3D view beneath it. To the right of it you can see a further perspective with activated hidden line processing. Representations using hidden lines require a great deal of processing, in particular when changes are made to the model. It is therefore recommended that this function only be used when really necessary, or that visibility for these views is disabled in the project viewer. Non-visible views are not constantly updated and therefore do not affect software performance when planning.



6.11 COPYING AND EDITING MATERIALS AND TEXTURES

The Copy/Edit Materials and Texture tools are located in the **Ribbon bar – 3D functions tab – Edit group**. They are also located in the **3D View toolbar**.



The first step after clicking on one of the buttons to copy materials or textures is to choose the source material or texture. To do this, a 3D cursor is displayed with which the selection is performed with a mouse click. Subsequently, with further mouse clicks on the chosen targets, the copying process is begun, and can be continued until terminated with **Esc** or with the context menu item for 'Cancel with ESC'.

The 'Edit Material' button opens the 'Properties' dialog after the material has been selected for copying.

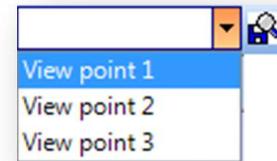
Tip: To copy the texture coordinates hold down the 'Shift' key.

6.12 VIEW POINTS

The **Save User Viewpoint** tool is located in the **Ribbon bar – View tab – General group**. It is also located in the **3D View toolbar**.

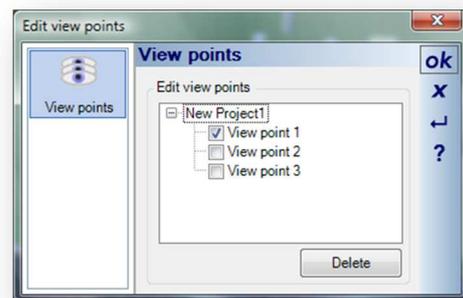


A view point defines a position in a 3D scene which can be saved under a given name and used again at any time. You can access the viewpoints defined in the project using the list displayed on the left of the 'Save view point' tool.



A click on the desired view point changes the 3D view to reflect the chosen position. Viewpoints are, as opposed to other properties of 3D views, common to a project, which means their positions apply to all 3D views of a project, and not only for the view in which they were created.

When a view is saved, you can allocate it a name and save options. The save options apply when images are saved and specify in advance the desired settings. You can find more details about this feature in the chapter 'Saving Images'.



You can delete existing viewpoints using the dialog which is opened with a right mouse click on the **Save User Viewpoint** tool. You can remove the positions which are checked in the tree structure with a click on the 'delete' button, before you exit the dialog with 'OK'.

6.13 SAVING VIEWS



The 6.13 tool is located in the **Ribbon bar – View tab – General group**. It is also located in the **3D View toolbar**.

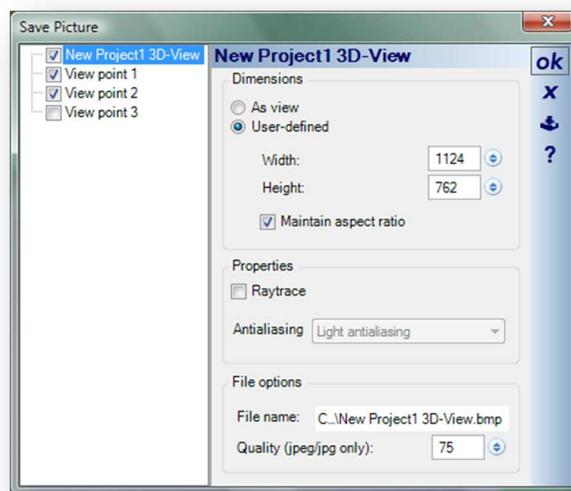
It is possible to save several views with different settings in one operation. The positions of the images can be specified in all available views, and additionally over the view points of the current project, for which the image options can be specified when the points are created. The images are saved using the dialog that is opened with a click on the **Save View** tool.

On the left-hand side you can select the views and viewpoints for which images are to be saved. On the right-hand side, you can specify for each image the resolution, antialiasing, the file name and the image format. The images are saved when the dialog is closed with 'OK'.

The processing and storing of images with the ray tracer is performed in parallel, i.e. after a click on **OK** the operation is started. Therefore, while the images are being produced, you can continue working quite normally with the software, although the saving of images is of course an additional load on the system. While images are being saved you are not allowed to terminate the software or to close the project.

The progress of the save operation is shown by a progress bar.

Using this method you can save any 3D view to a file and then print that file.



6.14 3D FULL SCREEN MODE

The **Full Screen View** tool is located in the **Ribbon bar – View tab – New views group**. It is also located in the **Views toolbar**.

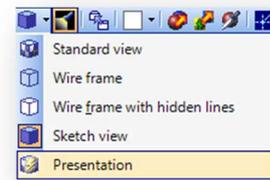
The **Full Screen View** tool creates a new 3D view in full screen mode. In this view you can also open the properties dialog or edit an object, e.g. a window, with a double click. But unlike normal 3D views, the selection of an object is not cancelled with **Esc**, since **Esc**.



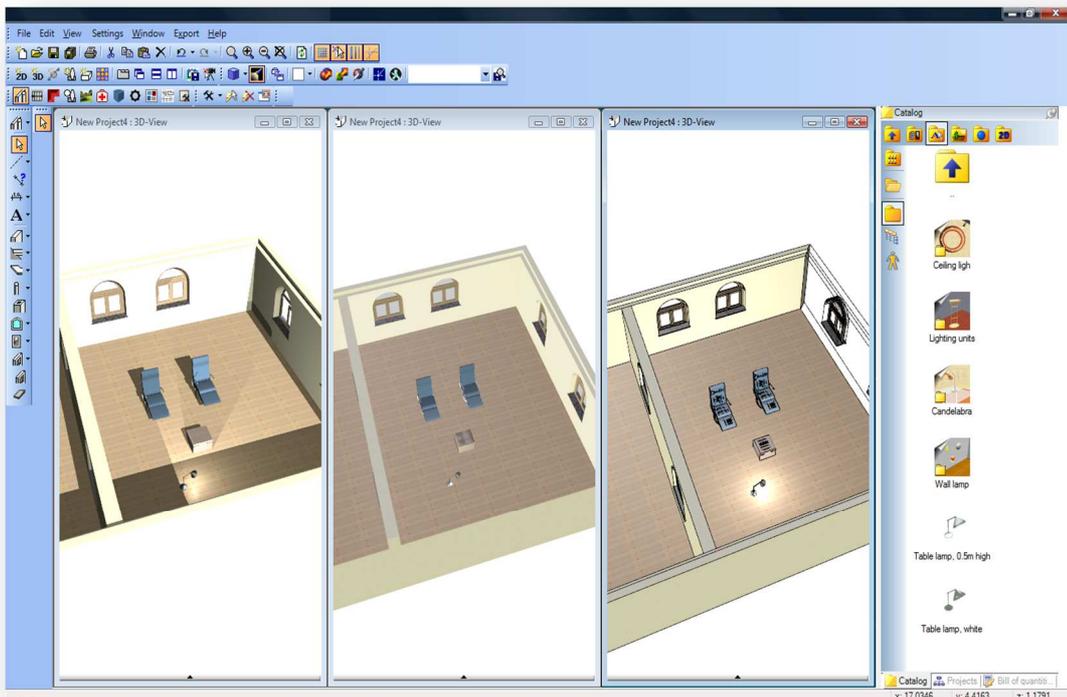
The cancel tool in the top right of the full screen view is used to terminate full screen mode. In this case, if you want to cancel the selection of an object, you have to click in an empty area of the scene.

6.15 PRESENTATION AND SKETCH VIEWS

Apart from the normal 3D view there are two other view modes available, which however depend on the capabilities of the graphics card of the computer being used. Since not all graphics cards support the required functions, it is possible that neither of these views can be activated. For certain planning functions at the moment, working with these views may be considerably slower, for instance editing timber constructions or surface elements. In this case it is recommended to work with the normal view and to activate the presentation and sketch views only if you wish to create images in these formats.



The following illustration shows the basic differences between the three display formats. From left to right it shows a presentation view, a normal view and a sketch view. The presentation mode supports real time shadows, real time light sources and Normal Maps. Overall the results are clearly more vivid than with the alternative method of



calculation.

The view type tools are located in the **Application Menu–Settings 3D view–Appearance**. These view type tools are also located in the **3D View** tool bar. The various 3D display formats can be activated using the option button with the same name.

7 3D VIEW SETTINGS

When this dialog is activated via the **Application Menu–Settings 3D view–Appearance**, the 3D View Settings dialog consists of 5 tabs: **Appearance**, **Snap Points**, **Sun Position**, **Raytracer** and **Walkthrough**.

These dialogs can also be activated by right clicking on the tools in the **3D View** toolbar.

This dialog can also be activated via the 3D view context menu (right click on the 3D view) and selecting Properties, in which case it will display 3 additional tabs: **General**, **Visible Categories** and **Visible Layers**.

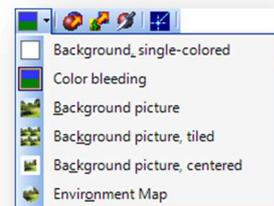
7.1 GENERAL

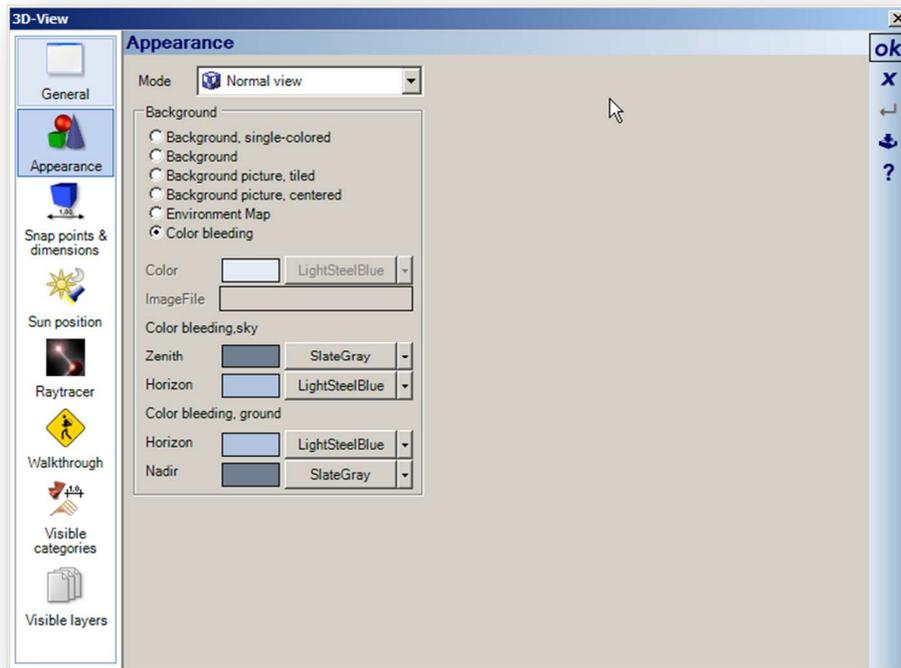
The General tab will allow you to change the current selected view name.

7.2 APPEARANCE

For the background in views, the software offers the option of monochrome, colour bleeding and background image. Each of these options can also be displayed in one of several variations. These settings can be specified using the 'Background mode' button.

Each button activates the appropriate background mode based on the settings for the properties of the view. Therefore, if no image has been selected for the 'Background image' option, no change in the view will be seen if this option is selected.

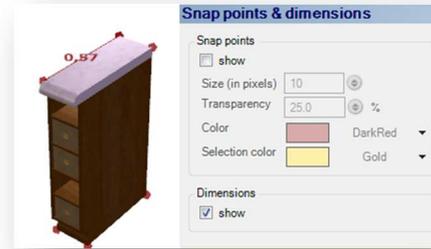




For each background option shown under 'appearance', only the appropriate settings are active. If one of the background image options is set, the 'open image file' dialog can be activated using the field to the right of 'Image file', which then automatically shows the contents of the directory 'your software-installation\Backgrounds'. Only the links to background images are stored in the project library. If you create a project with a background image and the project is passed to another user, then the recipient's system must have the image stored in exactly the same place, otherwise it will not be found when the project is loaded. The software differentiates here between relative and absolute paths. If you select an image from the directory 'Backgrounds', which is the default for 'open image file', then the path to the background image is stored relative to this, indicated by an asterisk before the file name. If you select a different directory, then the absolute path is entered here. The recipient of a project must then not only have the image, but also the corresponding path, on his system, whereas in the case of the relative path for the directory 'Backgrounds', it is sufficient to supply him with the image, which he can then copy into the directory 'Backgrounds'.

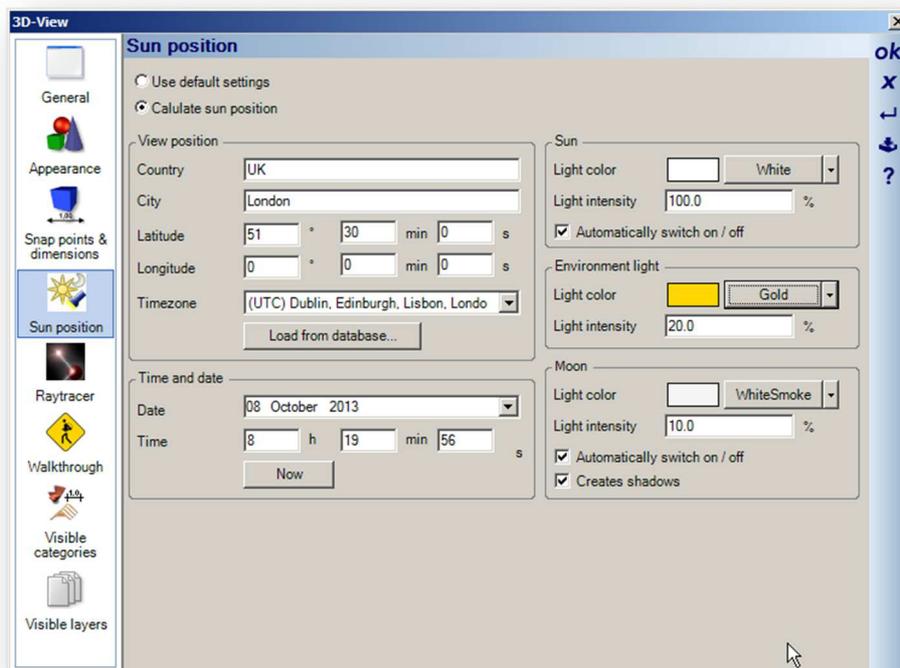
7.3 SNAP POINTS AND DIMENSIONS

Our 3D-objects can contain snap points, which depending on the settings for the snap function; can be used to place them in 3D views. By default snap points are invisible, but as for dimensions, can be shown to enable better monitoring of objects that have several points relatively close together. In addition, 3D dimensions can be switched on and off using the general visibility function.



7.4 SUN POSITION

To illuminate a 3D scene, the software uses internal light sources, with default settings that can be switched on and off with the  button. Furthermore, for each 3D view, individual settings for geographical position, date and time of day can be specified under 'Position of the Sun', and for the light sources simulating the sun and moon, the colour and intensity of the light. Thus the software makes it possible, with appropriate settings for the project, to check in the various views the effects of shade on the building at different times of the day.

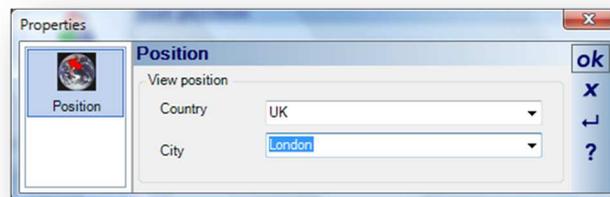


Geographical Location

You can define your location, or to be exact the location of your property with longitude and latitude, if the values are known.

Alternatively you can load predefined locations for your country from a database which is stored as a XML-file in the directory '\Program'. The name of the XML-file is 'Citydata.xml', and as long as the structure and hierarchy of the file are observed, you can extend the file yourself by adding further countries or places.

The desired location can be selected from a list of place names in the dialog activated with **Load from database**. To avoid having to make a choice of location by scrolling through thousands of place names, the drop down menu is automatically modified as soon as you start to enter a name. Therefore if you enter 'LON' in the field, only place names beginning with these three letters are shown.

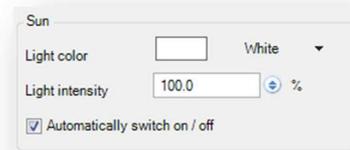


Time and Date

In this area the date and time are automatically provided at which the software was last started. To update the time, click on the button marked 'Now'.

Sun

The colour and intensity of sunlight have to be set manually if required. The software does not attempt here an automatic adjustment based on the position of the sun. The light source is just as bright shortly after sunrise, as at midday. The option to 'Switch on and off automatically' comes into effect when the position of the light source drops below zero height (z-coordinate), representing more or less a precise sunset. If this option is activated, the light source is then switched off, otherwise it continues to illuminate the scene, and shines from below the ground so to speak.



Environment light

Background lighting is provided by an ambient light source which is used to achieve a more uniform illumination of the scene. Ambient light on its own can be seen if the colours for the light sources for 'Sun' and 'Moon' are set to black. Generally however, the default settings can be left unchanged.

Moon

As for the sun, the colour and intensity of the light source for 'Moon' must also be set manually if required. Additionally, the moon has the property to cast shadows, which however may not always be desired. If the sun and moon are both above the horizon during the day, and this option is activated, the moonlight would result in a double shadow, which in reality would not occur due to a lack of brightness. As a simple rule, the option **Creates shadows** should be deactivated during the day.



7.5 RAYTRACER



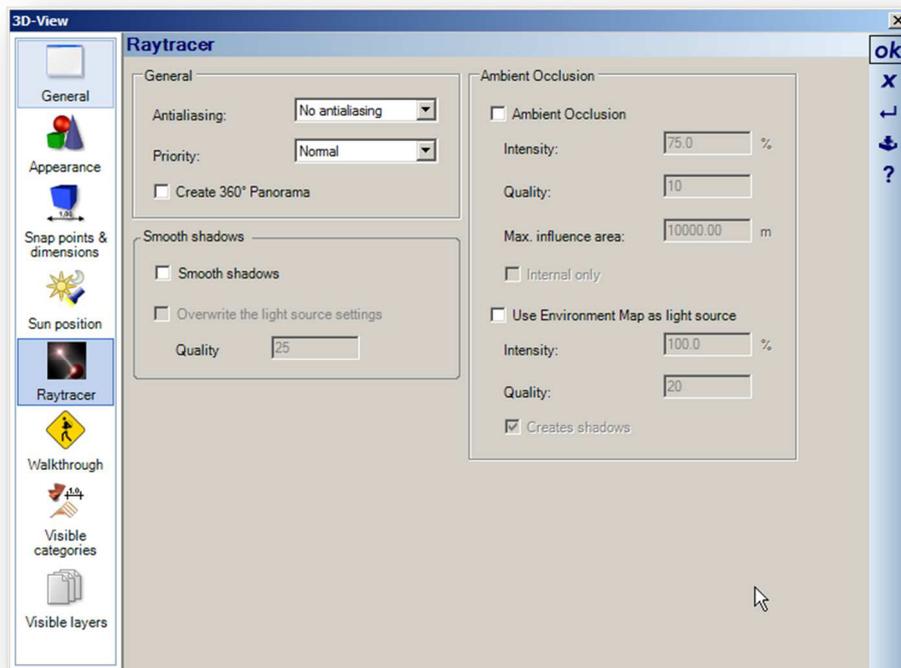
The **Raytracer** tool is located in the **Ribbon bar – 3D functions tab – Raytrace group**. It is also located in the **3D Views toolbar**.

Raytracing is always performed in the current 3D view, with its current resolution / window size. The smaller the window, the faster the process is completed. Further, all visible elements in the scene are considered in the process, including the 100 x 100 m plot created by default. In order to speed up processing, it is recommended that non-visible elements are really deactivated using the 'Visibilities' dialog, or in the case of the plot over the environment layer in the project viewer, before ray tracing is started.

After ray tracing is started, the software first performs certain internal processing, which depending on the contents of the 3D view, can take some time. Only when this is completed is the current state of the calculations really visible.



The settings for antialiasing have a considerable affect on the quality of the representation and can be specified, before ray tracing is started, using the context menu which is activated with a right mouse click on the Raytracer button.



On the other hand, antialiasing also has a considerable negative affect on performance, and should be used no more than necessary.

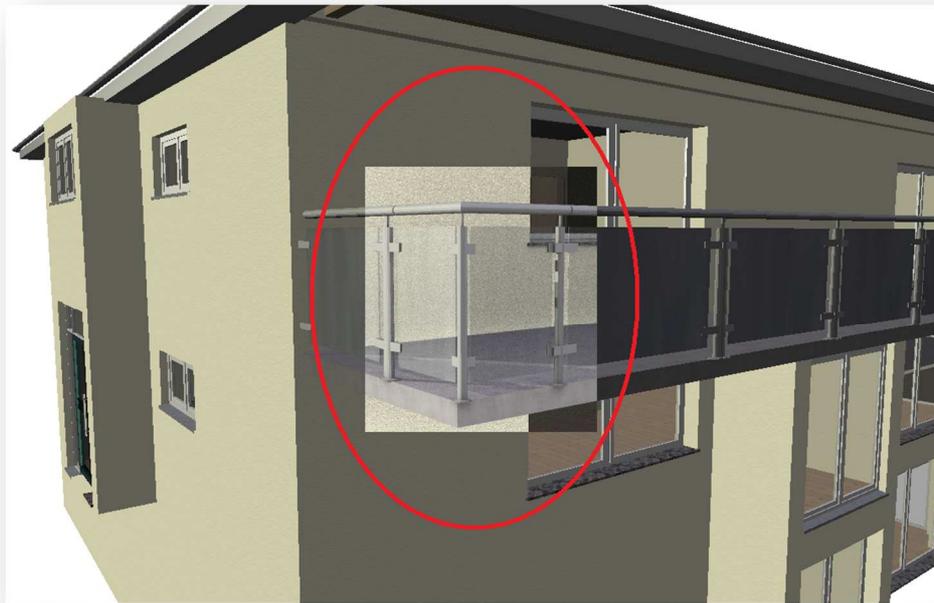
Raytracing can be terminated by pressing the **Esc** key.

7.5.1 Raytracing Detail

The **Raytracer detail** tool is located in the **Ribbon bar–3D functions tab–Raytrace group**. It is also located in the **3D Views toolbar**.

In the design phase and while materials, the position of the sun and raytracing settings for the scene are still being modified, it can be helpful to only process certain parts of the 3D view to check the results of raytracing. Otherwise, the whole scene would have to be processed, which according to settings could take some time, to only then find that certain details are perhaps too bright or too dark. To achieve this use the “Raytrace detail” function provided in the 3D view tool bar.

After clicking on the appropriate button the function requires a rectangle to be entered in the 3D view. Once a rectangle has been defined, processing starts automatically for the detail using the current settings for raytracing.



7.5.2 Shadows, ambient occlusion and smooth shadows

Raytracing provides options for different kinds of shadows.

Ambient Occlusion

This ambient occlusion function is used mainly to create a particular lighting atmosphere, by using a combination of interior light sources and ambient lighting. With conventional rendering, without ambient shadows, the results corresponds to a summer day with a clear sky. However, rendering with ambient shadows alone would correspond to a hazy and very cloudy day with a lack of sunlight. Since both extremes are relatively unimpressive, the aim is to find a reasonable compromise.

First the amount of ambient light from interior light sources should be removed (settings under 'Position of the Sun'). This will be replaced later by ambient shadows. The moon should also be deactivated. Next the brightness of the sun should first be reduced to a value between 50% and 75%, so that the final image will not appear to bright.

The user can now check whether the shadows are suitable and if necessary readjust the position of the sun.

Now activate ambient shadows. The default values (75%, 10) are a good initial setting. If the shaded areas appear to dark, the brightness for ambient shadows can be increased. If the lighter areas are too bright reduce the brightness of the sun. Once the overall settings are satisfactory, one can also try using high antialiasing and a higher value for quality of ambient shade (15-20). After a few attempts the user should soon get a feeling for the optimal settings.

Additional tips: The environment map is the best choice of background. Here the perspective is always correct and reflexions in windows automatically appear realistic. With ambient light sources there should always be an object (e.g. terrain, pedestal etc.) beneath the house or planned object. Otherwise light can reach the supposedly shaded areas from below.

Special effects should not be used for the materials. Luminous materials only make sense for objects that actually glow (neon lights, lampshades etc.). It should never be used to make objects brighter than they really are.

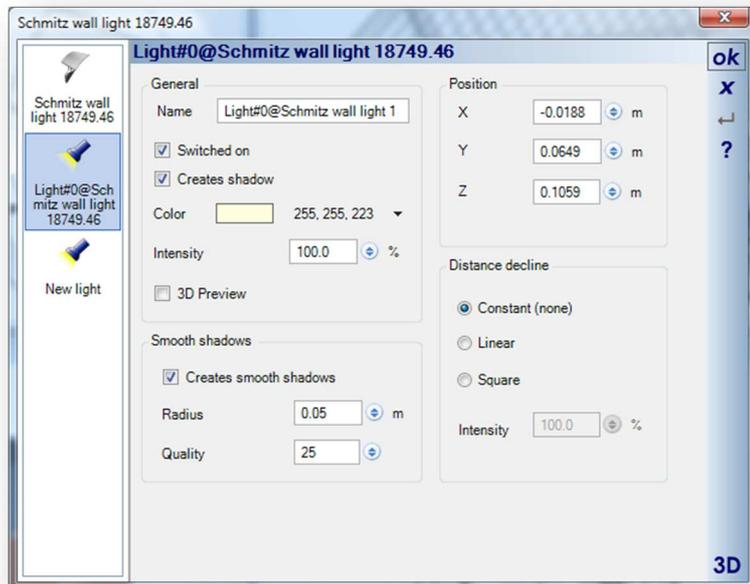
Here two examples of the effect of ambient shadows. The following illustration also shows a comparison of the objects calculated with and without ambient shadows (top).



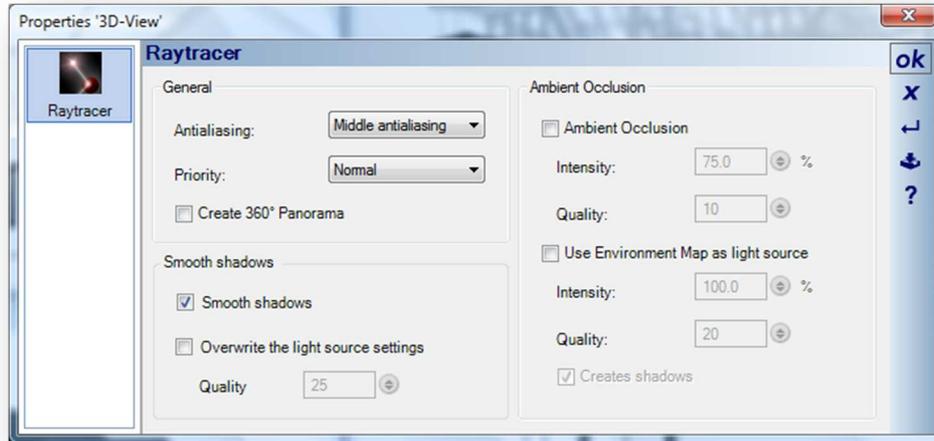


Smooth Shadows

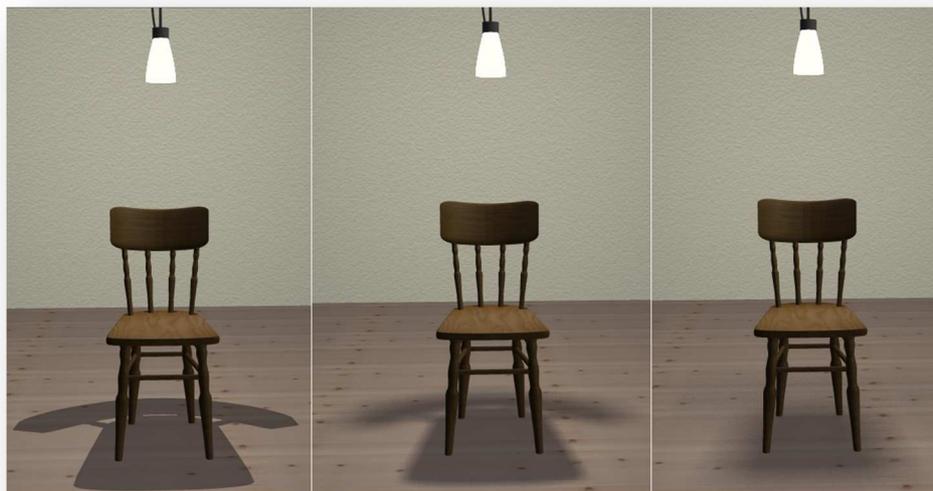
Smooth shadows can be realised in two steps. First, the size of the light source in the 3D object, for example a lamp, must be specified realistically. A light bulb, for instance, measures about 3 cm, whereas larger frosted glass lamps can measure from 20 to 30 cm. Low-voltage ceiling spots, however, generate hard shadows since their surface is very small (punctual). It all depends on the individual light source, so there is no general rule that can be recommended here.



Subsequently, the option for smooth shadows must be selected in the 'Raytracer' dialog.



The setting for quality functions in the same way as for ambient shadows and ambient lighting. The higher the setting the less 'noise' there is. In this case larger light sources require a higher quality setting. The size of the light source is limited to 1 m to ensure a reasonable range of adjustment. This should be adequate since 2 m (2*R) light sources are not very common. Here a basic example. In the following illustration we see a chair and a light source, without soft shadows, with soft shadows and a 5 cm light source, and finally with soft shadows and a 20 cm light source (from left to right). The larger the light source the softer the shadows appear. All examples were calculated with medium antialiasing.



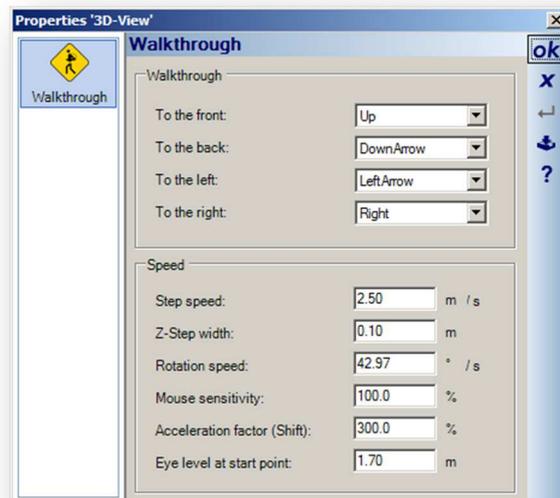
7.6 WALKTHROUGH



The **Walkthrough** tool is located in the **Ribbon bar – 3D functions tab – General group**. It is also located in the **3D Views toolbar**.

In an active 3D view the 'walkthrough' mode can be activated with the Walkthrough tool. In this mode direction and inclination are controlled by moving the mouse. Using the mouse wheel, the height of the viewing position can be altered. Forward and sideways movement are controlled by default with the arrow keys. Other key combinations and further options can be specified in the 'walkthrough' dialog. The dialog is activated by a right mouse-click on the button, or as a properties box in the 3D view.

The movement can be accelerated by a specified factor by pressing the SHIFT key when moving.



Each 3D view also offers a panel at the bottom with which you can walk through the current window.



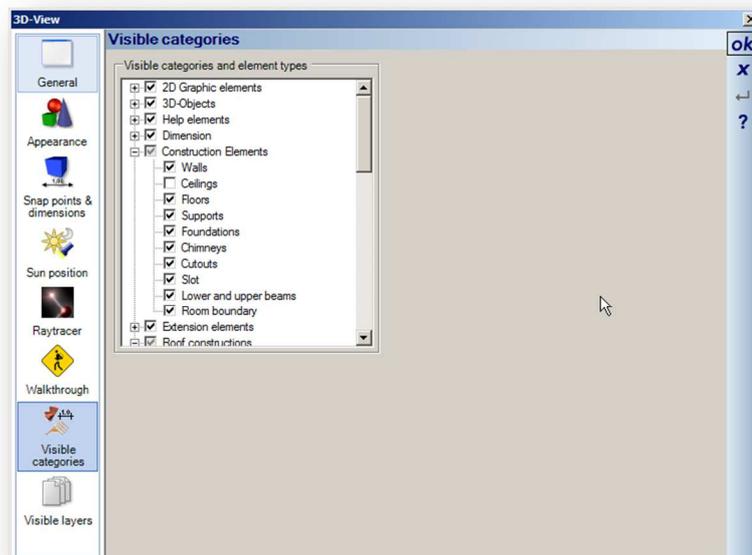
The functions in the panel differ slightly from those for rotating and zooming with the mouse. The two buttons on the right rotate the scene about the current observation point and not about the origin of the scene, and the 'Move forward' button moves the view point past the centre based on the geographical coordinates, whereas zooming with the mouse stops here.

7.6.1 Creating videos of walkthroughs

Although there is no internal video recording feature within Visual Building, it is entirely feasible to record a walkthrough sequence using most screen recording utilities- such as Expression Encoder. Best performance is achieved if you reduce the Step speed, rotation speed and mouse sensitivity to low values.

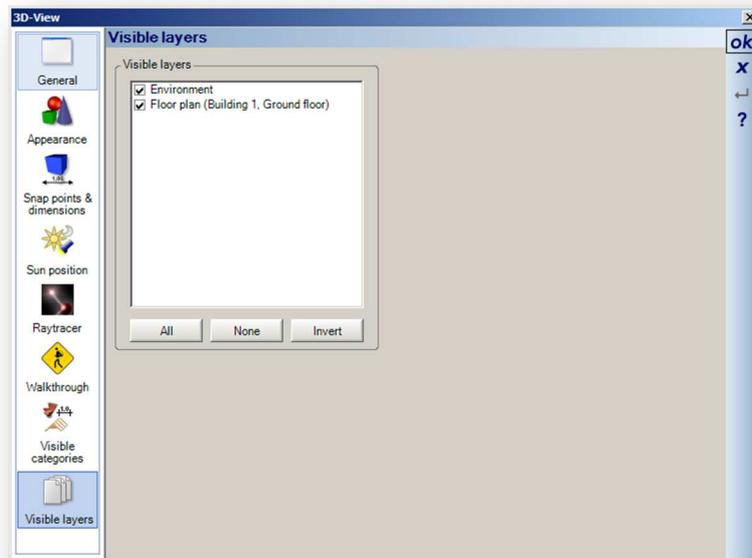
7.7 VISIBLE CATEGORIES

This tab is only visible if a current 3D view is selected. You can switch off and hide from display in the current 3D view any component.



7.8 VISIBLE LAYER

This tab is only visible if a current 3D view is selected. You can switch off and hide from display in the current 3D view any layer, i.e. any building or floor.



8 GENERAL SETTINGS

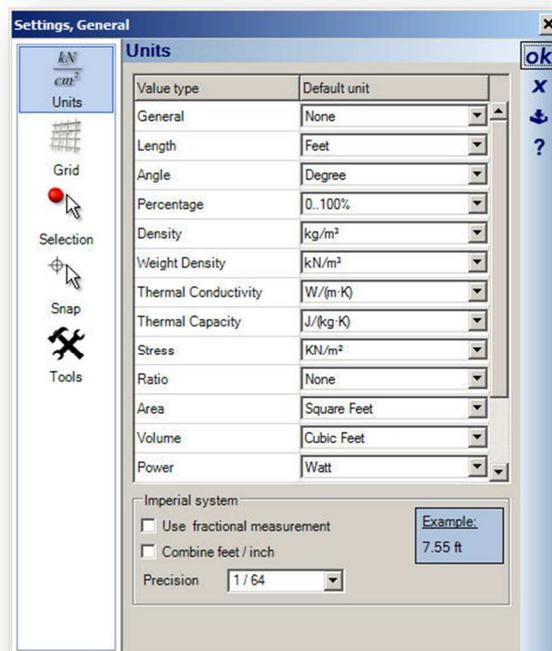
The General Setting dialog is activated either via the **Ribbon Application menu**, or via the **Toolbar Settings** menu entry.

 **Save as default** button.

You can specify default values and general settings for your work with the software using the 'Settings>General..' menu. The settings for each page of a dialog can be saved in your UserConfig file with the **Save as default** button, and are then available again the next time the software is started. This means that the **Save as default** button has to be pressed once for each category, e.g. Units or Grid, as the settings are only saved for the current category.

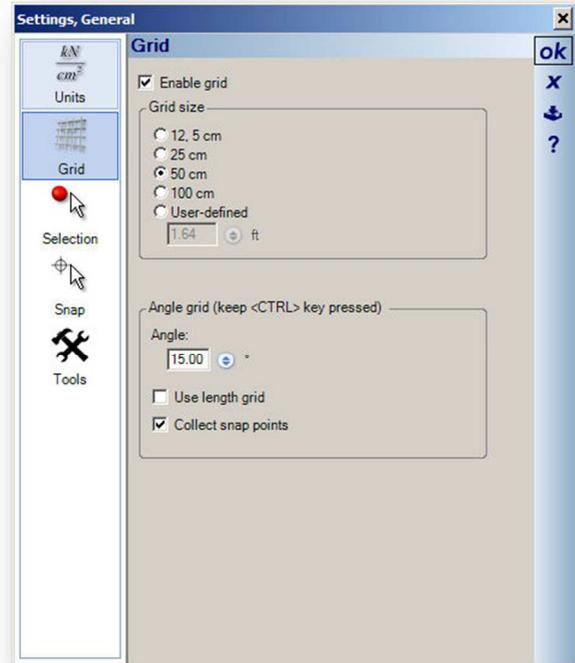
8.1 UNITS

The default units for all numeric input fields can be specified here.



8.2 THE GRID

The settings for the grid always apply to all 2D plan views and are immediately active after the dialog has been terminated with 'OK'. If the grid is deactivated here, then it is removed from all views. If you wish to work in a specific view without a grid, then set the grid in that view as invisible using 'Visibilities>visible categories> .

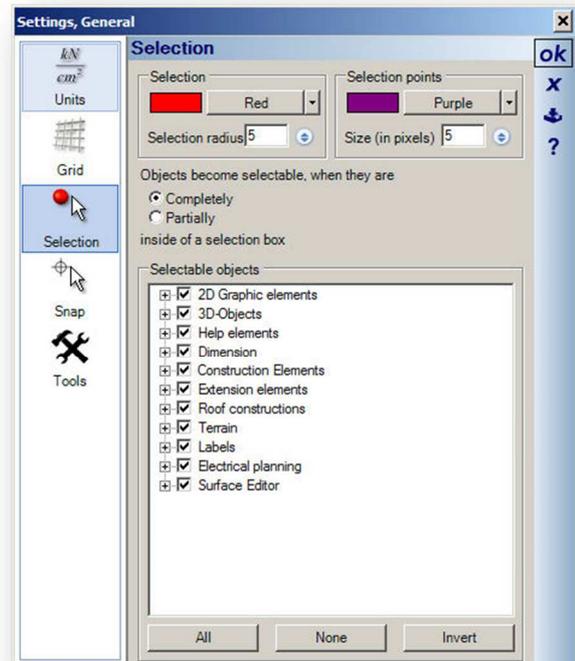


8.3 SELECTION

 Select tool

Settings for 'Selection' always apply globally, i.e. in all views. Changes are active as soon as you terminate the dialog with 'OK'. The selection colour defines how selected objects are to be displayed in 2D views. The settings do not apply to 3D views, where selected elements and objects are identifiable by the material turning red.

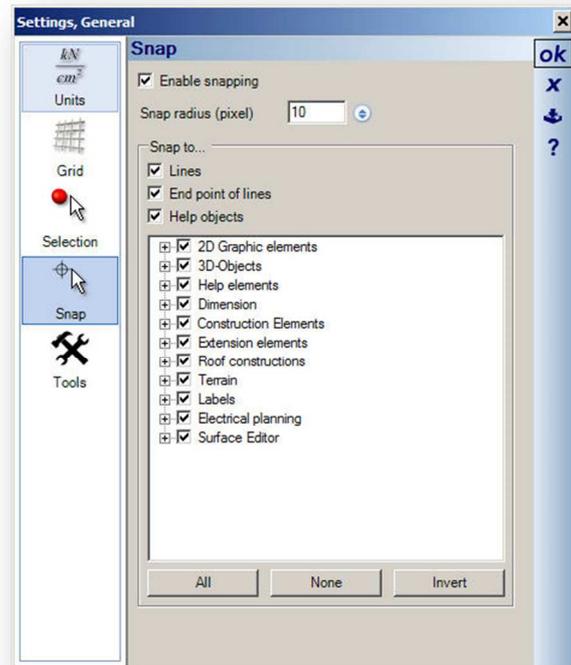
The 'Selection radius in pixel' determines how close to an element you have to click, in order to select it. This is mainly of interest for narrow objects such as lines, dimensions, etc, since normally objects are selected simply by clicking on them. When the select tool is active, a selection rectangle can be created by dragging out the rectangle while pressing the left mouse button. All selectable objects are then, dependant on the settings specified



here, selected, if they lie totally or partly within the rectangle.

8.4 THE SNAP FUNCTION

The snap function provides assistance when inserting objects with the mouse. The function detects objects within a certain radius of the cursor and automatically positions the cursor at or on the object. In this dialog you can specify for all views whether the snap function should be active, to which objects it should apply and within which radius of the cursor. The radius should not be too large, otherwise it is likely that a number of objects will be found within the radius and the snap function is then no longer practical, or the cursor jumps back and forth between objects.

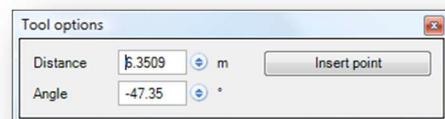


8.5 TOOLS

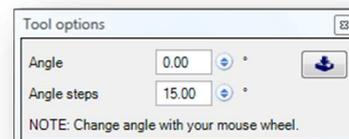
During input of certain elements such as walls and lines, and also when positioning elements from the catalogue, the user is assisted by tool option dialogs. With the aid of these dialogs the user can specify input with numerical precision instead of using the mouse, or when positioning an element from the catalogue, it can be rotated using the mouse wheel before insertion.

The tool option dialog appears while the input tool is active, and disappears automatically once input is aborted or terminated. Here are two examples of tool option dialogs:

Inputting walls and lines:

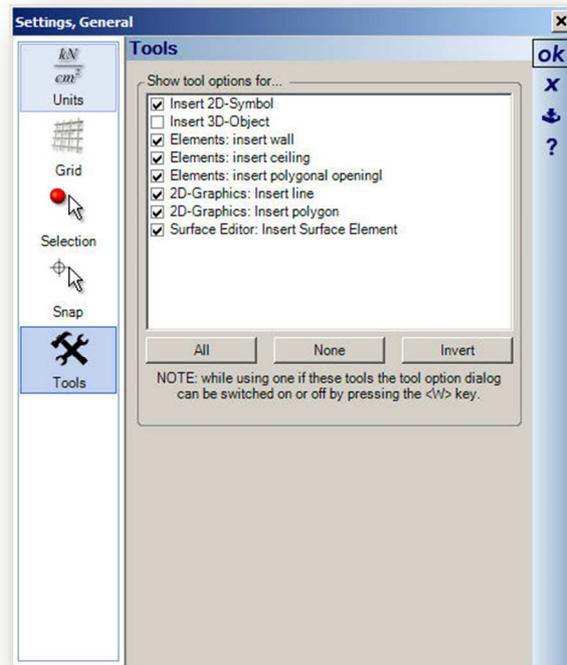


Positioning 3D objects or 2D symbols from the catalogue:



Using the 'General' > 'Tools' dialog these assistants can be permanently disabled when not needed. This is achieved by deactivating one or more of the tools not required and using the **Save as default** button.

As described in the dialog, the tools can be activated or deactivated as required during planning using the 'W' key.



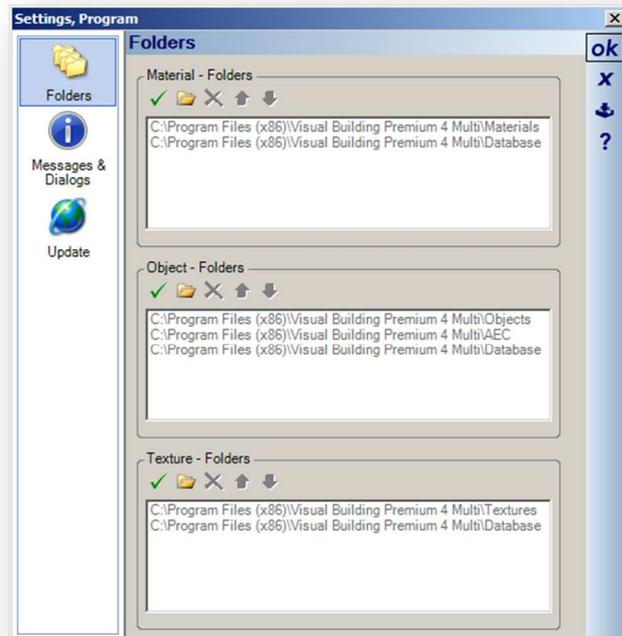
9 PROGRAM SETTINGS

The Program Settings dialog is activated either via the **Ribbon Application menu**, or via the **Toolbar Settings** menu entry.

The Program – Settings dialog contain two tabs- the Folders tab and the Messages and Dialogs tab

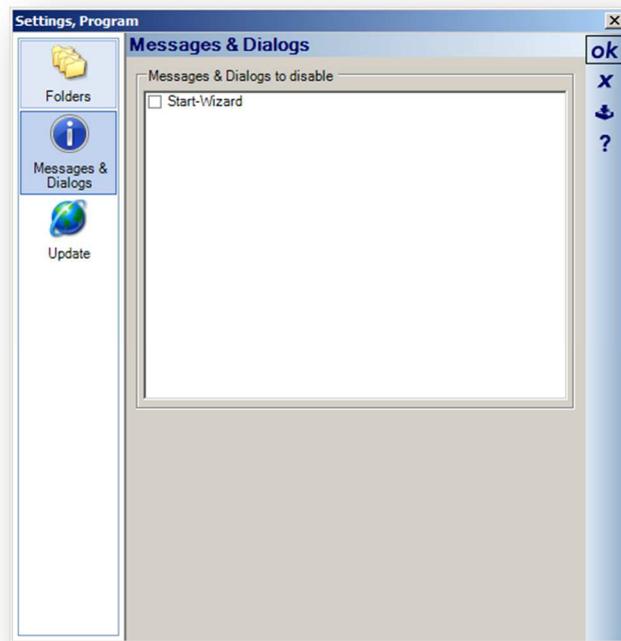
9.1 FOLDERS

The path names for the Objects, Textures and Materials are maintained here. Initially only the default paths are set here, but you can add additional folders for Visual Building to search.



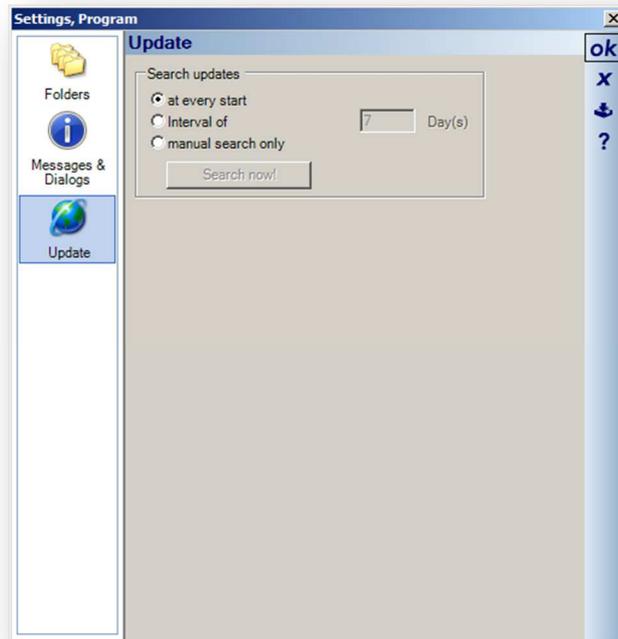
9.2 MESSAGES AND DIALOGS

You can reset the default value for the Start Wizard dialog here.



9.3 UPDATE

You can change the intervals by which Visual Building will search online for an update.



10 THE CATALOGUE

10.1 THE CONTENTS

The toolbar at the top of the 'Catalogue' dialog provides access to the various categories available in the catalogue.



-  **Construction Elements:** References the directory 'Installation\AEC\' and allows access to such elements as windows, doors, skylights and walls, which are located in subdirectories of '\AEC\'.
-  **3D Objects:** References the directory 'Installation\Objects\'
-  **Textures:** References the directory 'Installation\Textures\'
-  **Materials:** References the directory 'Installation\Materials\'
-  **2D Symbols:** References the directory 'Installation\Graphics2D\'

10.1.1 Windows/Doors/Skylights/Walls

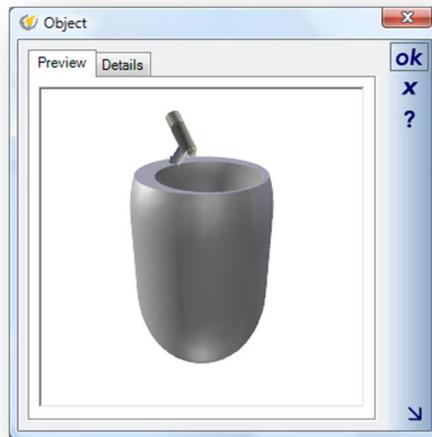


Windows, doors and skylights are objects which possess additional information, known as 'Chunks'. These properties are defined in the 'Edit Chunks' dialog, in which 'openings' (chunks that describe the opening created, for example by a window in a wall), alternative 2D representations and numerous other options can be specified.

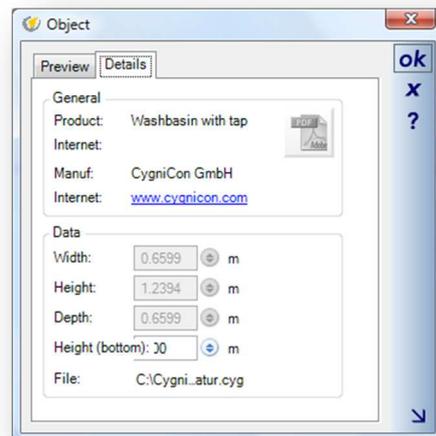
10.1.2 3D Objects



A double click on the 3D object selected from the catalogue opens the 'Object' dialog, which contains two tabs for '3D Preview' and 'Details'.



The 'Details' tab provides data for the dimensions of the object, and if possible, details of the manufacturer, an article description and internet links, as well as optional information such as technical data or catalogue pages in PDF-format. If this information was specified by the creator of the object in the 3D-Converter, then it can be accessed directly with a double click on the appropriate entry. The arrow in the bottom left-hand corner indicates that you can change the size of the dialog window if necessary.



10.1.3 Textures

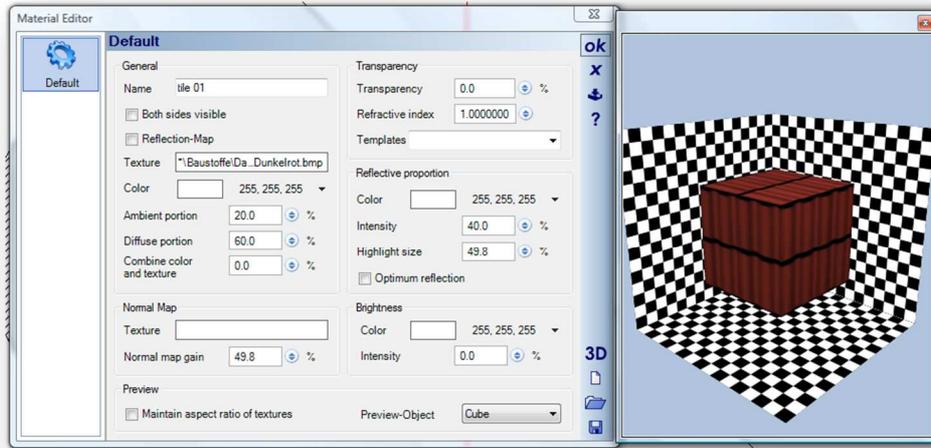


The 'Textures' dialog differs solely from the 'Object' dialog in that it does not contain a 3D preview, but instead shows an image of the normal representation of the texture. No dimensions are shown, as these are dependent on the texture coordinates of the element that uses the texture.

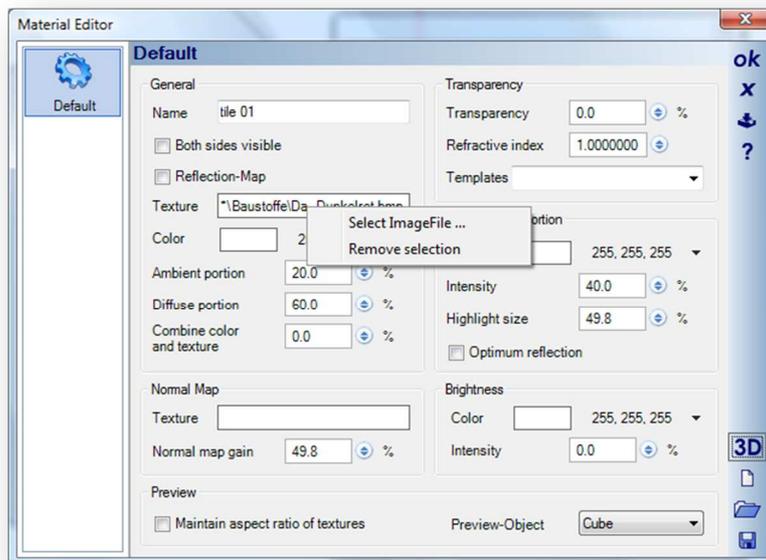
10.1.4 Materials



The 'Material Editor' is opened with a double click on a selected material or, after a right mouse click, using 'Properties' in the context menu.



Here we find all the settings needed to modify an existing material, or to create a new material and save it in the catalogue. The software uses its own format for materials, with the suffix *.mat. The material files can contain, in addition to the material properties, textures and normal maps, since these files for different image formats are included directly in the *.mat file. If you wish to change the texture or normal map for a material, right click on the field with the title 'Texture', under 'General' or 'Normal map'. Using the context menu, you can activate the 'Open image file' dialog or delete the image directly. A left mouse-click on one of the two images activates the 'Open image file' dialog directly.



10.1.5 2D Symbols



The '2D symbols' dialog accesses graphic symbols in our own file format *.cys. A double click on the selected graphic symbol shows a preview, the dimensions of the file, and the file name including details of the path.

10.2 CREATING YOUR OWN DIRECTORIES, MODIFYING PREVIEW IMAGES

Since the catalogue can be expanded at any time, it is also possible to modify the name and the preview image of a directory.

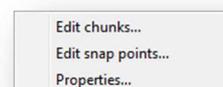
To do this, right-click on the directory using the mouse and select 'Properties' from the context menu. Now choose an appropriate name for the directory, and for the image which is shown in the catalogue instead of the folder symbol. The name entered does not rename the directory itself.



10.3 ADDITIONAL FUNCTIONS

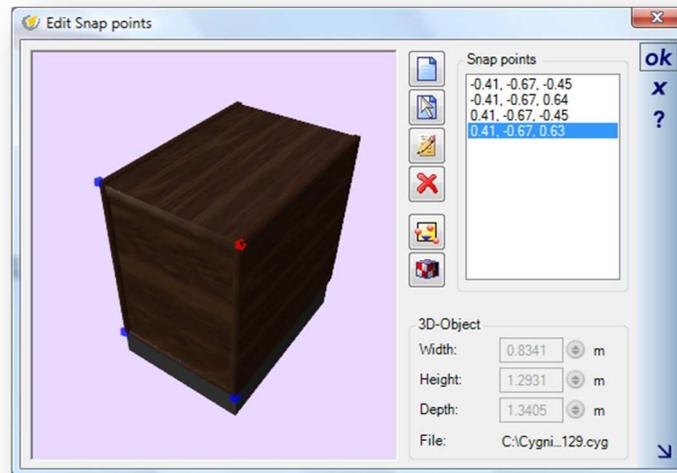
10.3.1 Snap Points for 3D Objects

A right mouse click on a 3D object which has been selected in the catalogue opens the following context menu:



A click on the entry for 'Edit snap points' opens the snap point editor, in which snap points can be defined for an object using the mouse, or be specified numerically. Snap points are not shown in 3D views and are used exclusively for positioning 3D objects.

When defining snap points with the mouse, you have the option of snapping to edges and/or corners. For the sake of clarity, the representation can be changed for complex objects. Selected snap points can be edited or deleted from the list. On exiting the dialog with 'OK', the snap points are stored permanently in the *.cyg file.



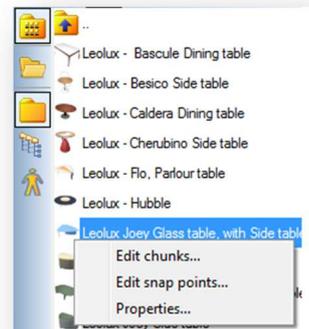
10.3.2 Effect of Snap Points when Positioning 3D Objects

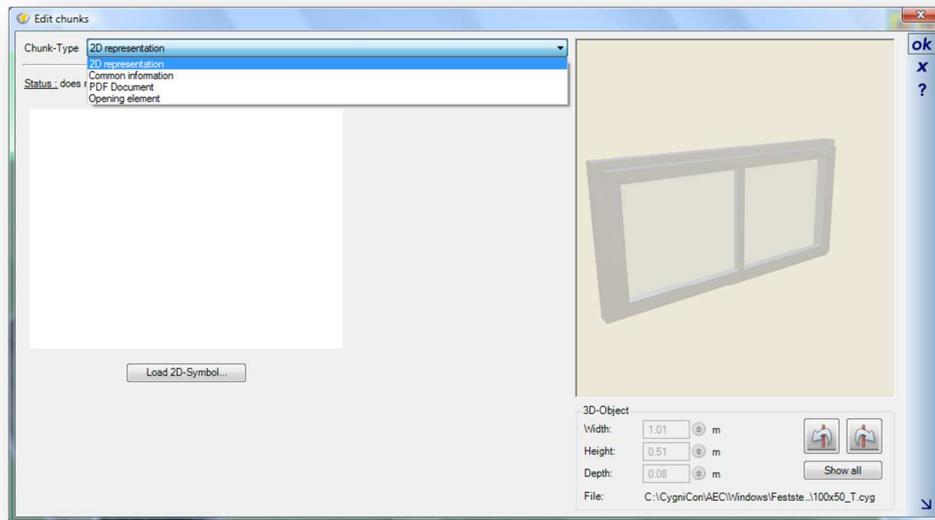
When a selected object is being positioned with the mouse, snap points are detected within a specified radius (in cm) of the cursor. If the snap points of two objects are detected within the snap radius, then a preview is automatically created which shows the user how the objects would be positioned, were the mouse button to be released.

10.3.3 Additional Information and Properties for 3D Objects

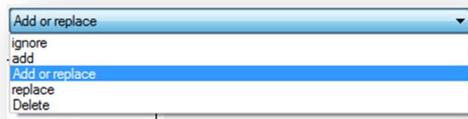
If one of the 3D objects such as a window, door or skylight, is selected from the catalogue, a right mouse click activates the following context menu.

The 'Chunk editor' dialog is opened using the 'Edit Chunks context menu', and this is the tool in your which is used to allocate certain additional information to objects. The Chunk editor is opened together with a 3D preview of the selected object. You can select what kind of additional information is to be edited or added, under 'Chunk type'.



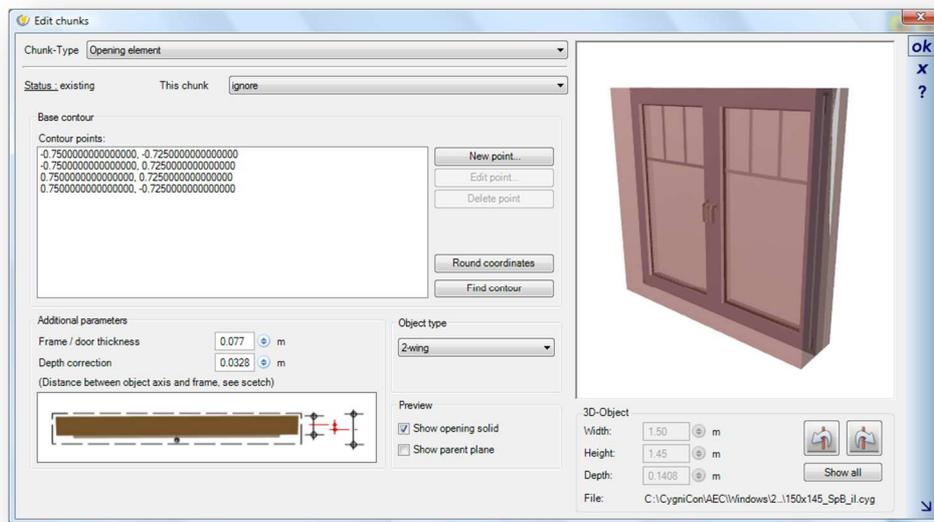


You then specify how the additional information is to be processed when the 'Chunk editor' is closed with 'OK'. This is important, because if you forget to select the Add or replace option, you will lose your edits when you close the Chunk Editor.



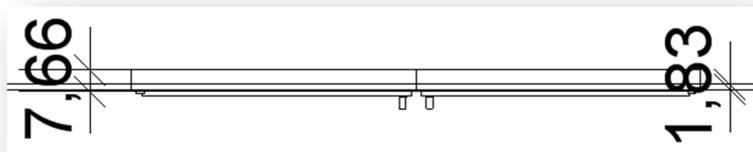
Creating your own Windows and Doors, Chunk Type 'Opening element'

The Chunk type 'Opening element' specifies the properties that windows and doors require in order to be used as construction elements. The most important information is for the 'opening solid', which creates the corresponding opening when the object is inserted into a wall. The contour of the 'opening solid' is normally recognised automatically with the 'Find Contour' button. Depending on the modelling of the 3D object, the automatic contour may however contain a unnecessarily large number of contour points, for example if the model contains fine modelled curves. Each of the contour points generated can be selected in the list and edited or deleted. If the 'Show 'opening solid' option is active, the effect on the 'opening solid' can be seen directly in the object preview.



Frame/door thickness allows you to take this additional thickness into account. Adding a value greater than needed will cause a door / window for example to stand proud of the wall.

Depth correction allows you to adjust the distance between the object from and the object's axis. If the object is later to be inserted correctly into a wall, a depth correction must be specified. This correction is necessary, especially with rebates, since only the frame is of interest when positioning the window, and not the casements and their fittings or other elements contained in the 3D model. The simplest method to obtain the required values, is to drag the 3D object into a 2D plan view, and to measure it accurately with the aid of guidelines, the 'Centre guideline' option delivers the required axes position. The values obtained can then be entered with the chunk editor.



Preview – Show Opening solid

This gives you a visual indication of the actual opening size that will be created.

Preview - Show parent plane

This shows the plane that is normally the axis of the object.

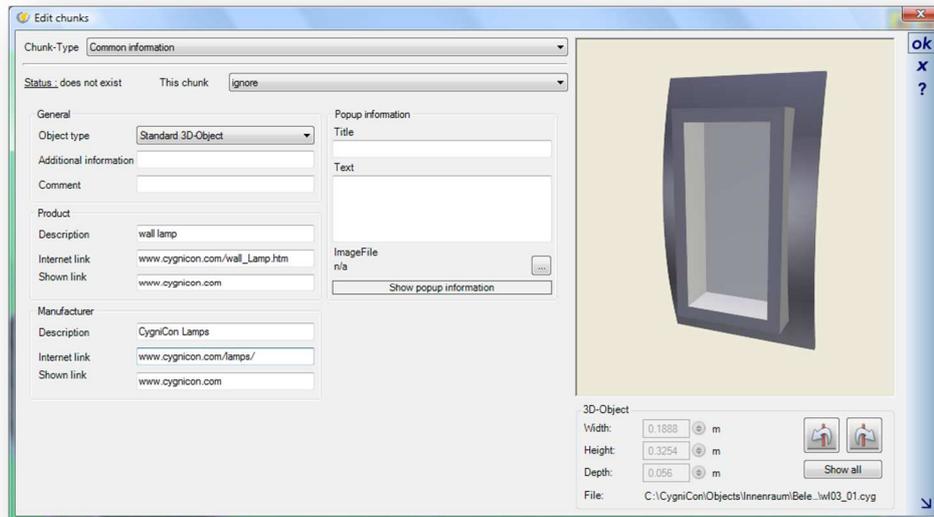
Preview - Show base contour

Shows the base contour points defined by base contour values

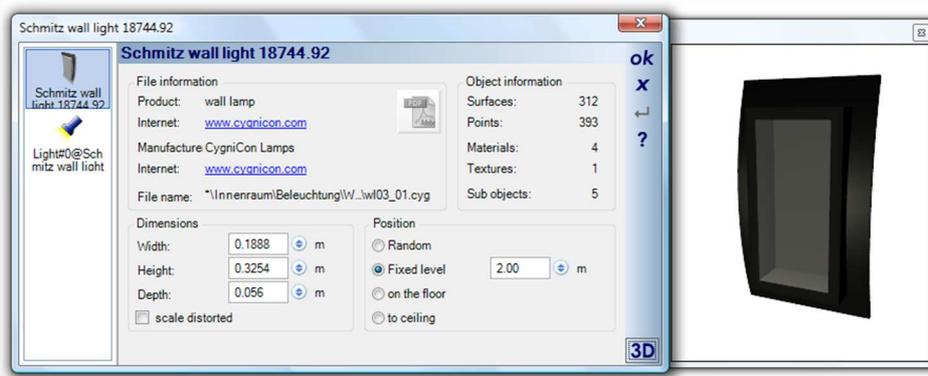
To fully understand these values, try experimenting with an object's contour points and see the effect in the preview window.

Manufacturers' Data in 3D Objects, Chunk Type for General Information

3D objects can contain information about the product and its manufacturer. This data can be edited in the catalogue under the chunk type for 'General Information'.

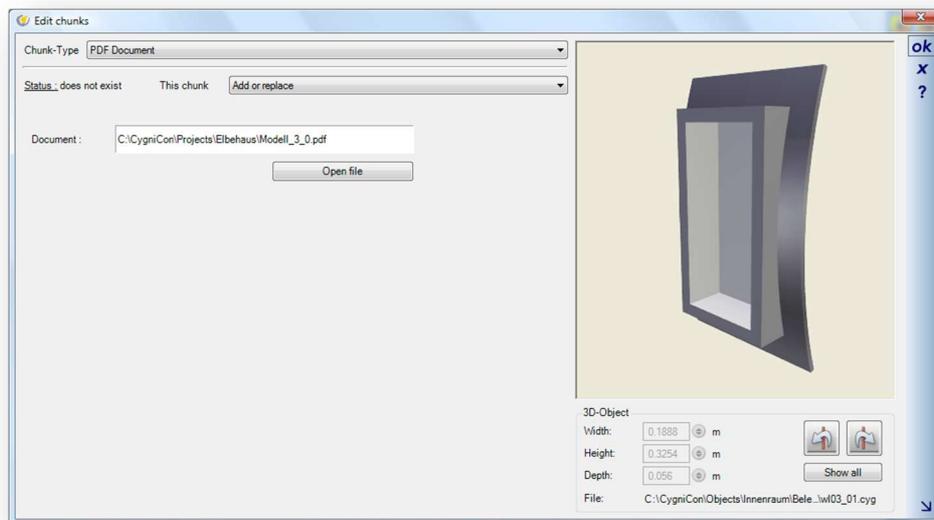


The objects can also contain separate internet addresses for the product and the manufacturer respectively. The program differentiates between the internet address shown, and the one that is actually used as soon as the user requests further information from the pages of the manufacturer during construction. The reason for this is that the link to a product can be of any length, depending on the range of products of the supplier, and is therefore not always suitable for display in a dialog. The full addresses are shown as a tooltip in the object properties dialog. A click on the internet address automatically opens the default browser, and the page is shown if the system is connected to the internet.



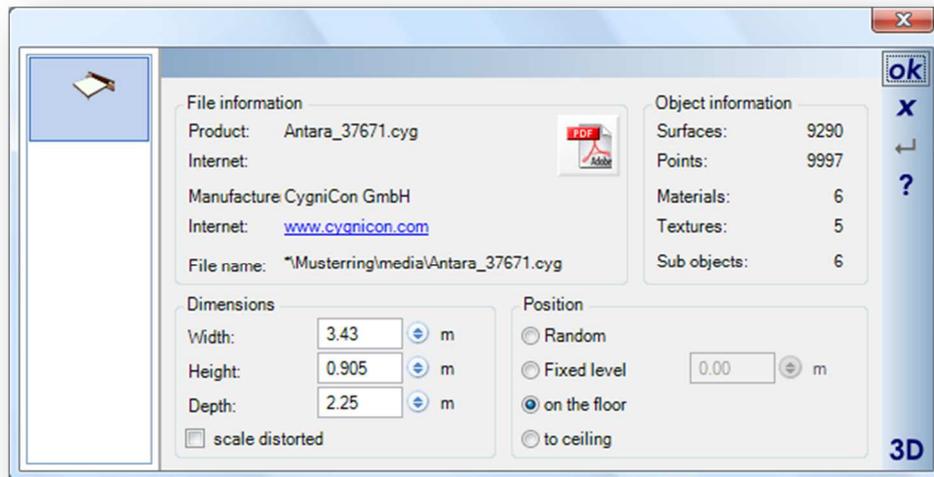
Manufacturers' Data in 3D Objects, Chunk Type for PDF Document

Apart from their names and internet links, 3D objects can optionally contain further information about the product in PDF format. The PDF files are integrated in the 3D objects and are therefore always available, irrespective of where the object is used.



The PDF document is selected with a click on the PDF button, and can then be opened using the 'display file' button.

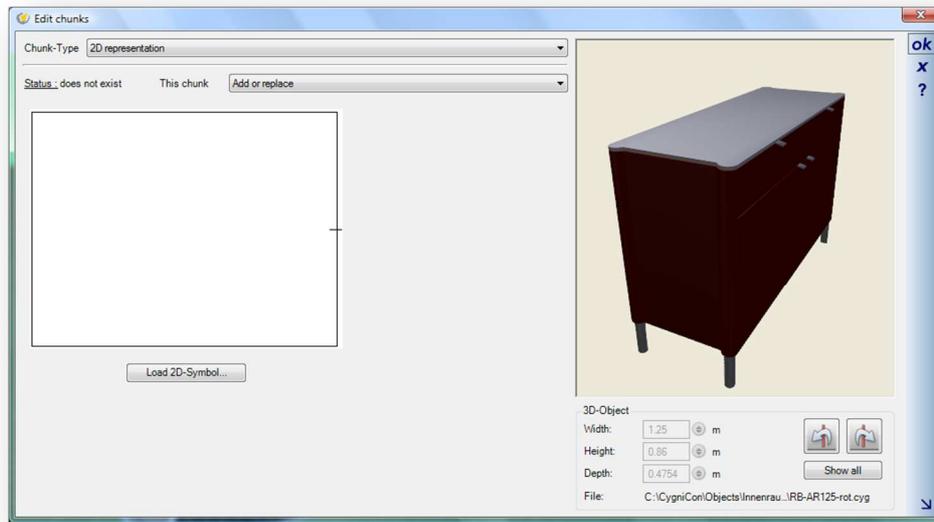
For objects which contain PDF files, the PDF button is active in the object properties dialog, otherwise the PDF button is inactive and appears grey.



A click on the PDF button automatically opens the document with the default program for PDF files. With this function, manufacturers have the possibility your software to provide, together with their 3D construction elements, catalogue items with photos, technical data or any other information which might be of interest to customers and planners.

Alternative 2D Representation of 3D Objects, Chunk Type for 2D Alternative Representation

The representation of 3D objects in 2D plan views is generated by default from the 3D model and its defined edges when the object is loaded i.e. when it is inserted from the catalogue. Alternatively, objects can have fixed representations defined in the form of 2D-symbols (*.cys files). This fixed representation is allocated to the object using the 'Alternative 2D representation' chunk. Objects which contain a chunk for alternative 2D representation are always automatically represented by this symbol. Working with fixed representations can considerably improve the graphic quality and speed up the loading of 3D elements which contain a lot of edges, as the 2D representation no longer has to be generated.



When using alternative representations of objects, it should be noted that they are automatically scaled according to the exterior dimensions of the 3D object. Therefore, the proportions of the symbol should correspond to those of the 3D object. If the scale of an object with an alternative representation is later distorted, then the 2D representation is distorted to the same extent. The following illustration shows a table with its automatic alternative representation on the left, and on the right its representation by a symbol added later.



It is possible to automatically create an alternative 2D symbol for a 3D object using the **3D Converter**. The 3D Converter will also automatically convert a folder and its entire contents, including subfolders, giving you the option to overwrite any existing alternative 2D symbols.

10.3.4 Open File, Selecting Files Locally

3D objects which are not stored in the Installation\Objects directory are not visible in the catalogue and can therefore not be used in planning. However these objects can be accessed with the function 'Open file' on the left side of the catalogue. Then select the required object in the 'Open file' dialog. When the dialog is terminated with 'OK', the object is loaded and is available to be positioned using the normal drag and drop procedure.

The paths of objects loaded in this way are always absolute paths on your system. This means that subsequent changes in the directory structure, or if the object file is moved or deleted, will result in the object no longer being available to the project.

Valid files such as objects, textures and materials can also be directly imported using the Windows Explorer and used in planning. In this case the absolute paths of the files also apply for the project.

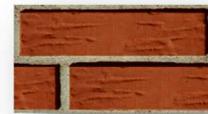
10.4 CREATING YOUR OWN BRICK TEXTURES

If a texture is to be applied to a surface such as a wall or floor, then it must be made to be tileable, so that each texture joins seamlessly with all adjacent textures. The brick and tiles textures supplied with the catalogue have already been edited so that they can be used in this way.

10.4.1 Existing tile catalogues

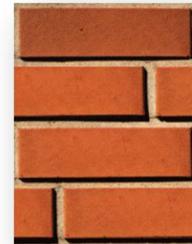
So let's examine some existing texture tiles in detail to see how this was achieved.

This is is the texture located in the catalogue in:
Textures / Materials / Stone / Bricks / Brown / Type-08 / 08_01.bmp



It is a 256 x 139 32 Bit Color bmp file.
The texture size in the catalogue has been preset to width: 0.25
height: 0.17

This is is the texture located in the catalogue in:
Textures / Materials / Stone / Bricks / Brown / Type-01 / 01_01.bmp



It is a 194 x 256 32 Bit Color bmp file.
The texture size in the catalogue has been preset to width: 0.25
height: 0.25

This is is the texture located in the catalogue in:
Textures / Materials / Stone / Bricks / Brown / Type-25 / 25_01.bmp



It is a 260 x 291 32 Bit Color bmp file.
The texture size in the catalogue has been preset to width: 0.25
height: 0.25

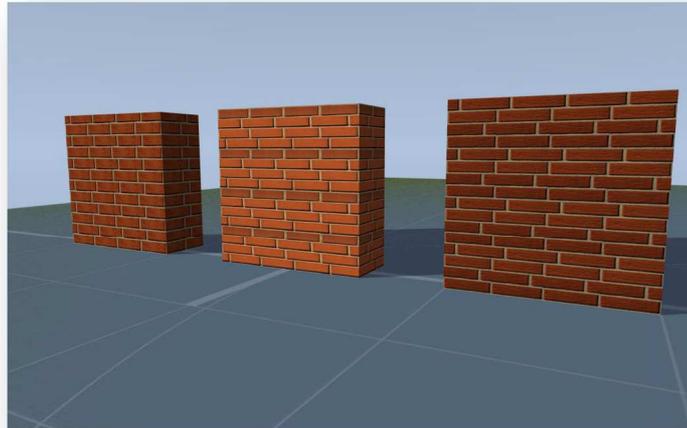
So you can see that all the images are different sizes and yet they tile in much the same way. The following shows the above bricks tiled into a 1m x 1m wall.

It is the value defined in tile texture size width and height that defines how many tiles are required to tile a 1m x 1m area. The actual original texture size does not matter in this

calculation, but does affect the quality. Most of the original textures try to fit near to a 256 pixel width or height.

If the tiles width was set to 1 then it would require only 1 tile to fill the 1m x 1m area. If the tiles width was set to 0.25 then it would require 4 tiles to fill the 1m x 1m area.

All of the tile samples are 1 brick wide and so to fit 4 bricks on a 1m width wall we need to set all the tile widths to 0.25. However the tile sample 08_01.bmp is only 2 bricks high and we have set the tile height to 0.17 in order to display 12 bricks on our 1m height ($1/0.17 = 1.6666$). The 25_01.bmp sample is 4 bricks high and setting its tile height to 0.25 will give us 16 bricks on the 1m high wall.



Note however that if you set the width and height settings to different values, the tiled image will be distorted from the actual tile used. This can be intentional as in the case with 08_01.bmp because the image only contains 2 bricks in its height.

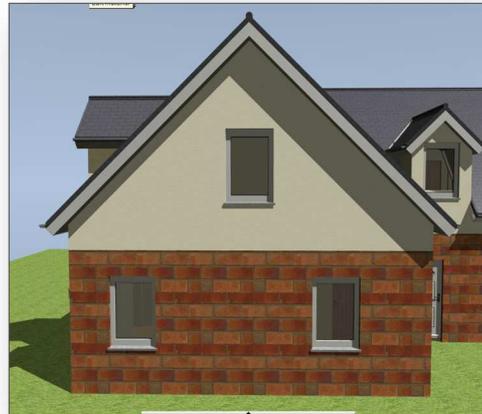
10.4.2 Creating a new tile image

There are now many brick manufacturers and offering many different brick sizes and so we will now demonstrate how to import an image from a manufacturers catalogue and calculate the texture height and width values to display a scaled tiled image.

1. Locate a texture that you want to use as a tile source.



If we were to use this brick texture as is we would end up with the following:

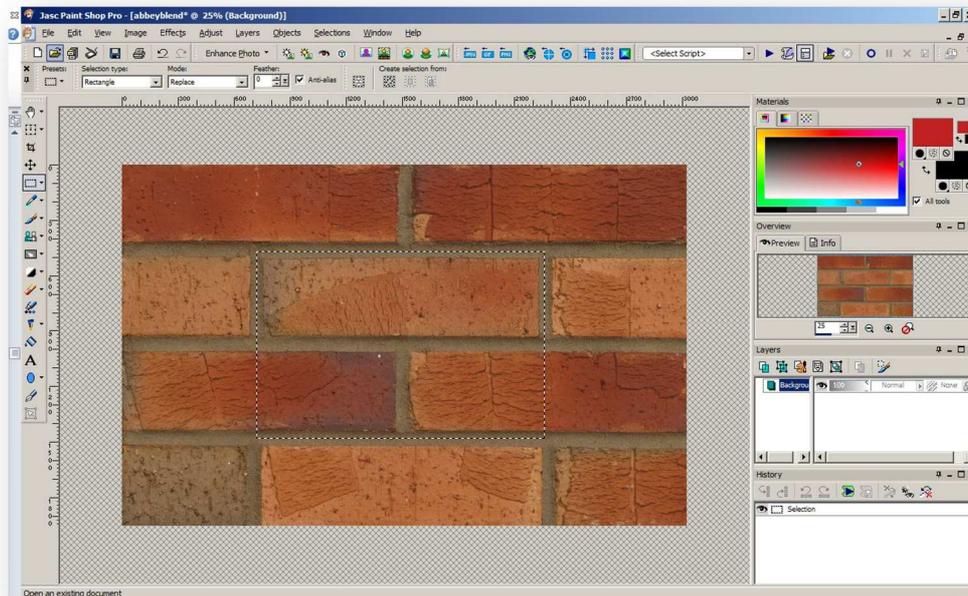


The texture is tiled but the scale is too large. Even if we reduce the brick scale by reducing the Width and Height from 1 to 0.25 we would get the following:



The brick scale is better, but the tiled image is repeated in such a way that the result looks bad. This is because the image we used is not tileable.

Using a image editing tool such as PhotoShop or PaintASho Pro cut out an image that can be repeated:



Cut out a section along the mortar joints and use 1 brick width to get an image like:



Using a Width: 0.25 and Height of 0.125 would give you the above. The scale is good but the repeat pattern could still be improved.

Using PhotoShop or PaintShop Pro we can then edit the original brick texture again to produce a large tile image:



which produces a tiled area:



So remember a larger sample will create better results. Brick sizes may vary, and you can account for this as follows...

If for example assume you are using a brick 215mm x 102.5 x 65mm and allowing 10mm for mortar. A wall of 5 bricks long would be 1.115m long. $(215+10+215+10+215+10+215+10+215 = 1115\text{m})$. You can adjust the height using either a known wall height or sill height.

Drag your brick onto the wall and then adjust the tile width until exactly 5 bricks fit in the length. You can do the same with the height.

A good scaled tiled texture can look as follows:



11 MANUFACTURERS CATALOGUE

As opposed to standard the catalogues for objects, textures and materials, this catalogue contains information concerning manufacturers and their products.

The manufacturer's catalogue is opened with the  button in the left margin of the catalogue toolbox. To return to the standard catalogue, click again on the button, otherwise the manufacturer's catalogue remains in the foreground.

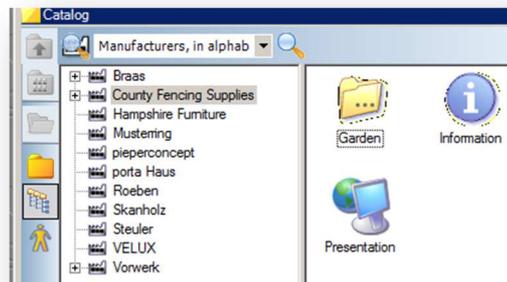
This is a standard feature on all versions of Visual Building.

11.1 VIEWS IN THE MANUFACTURERS CATALOGUE

The manufacturer's catalogue differs significantly in its characteristics from the known catalogues. Firstly, it is presented in a tree structure, which can be displayed in various forms. Manufacturers can be found either using an alphabetical list, or using predefined categories. The categories can be shown in one of two ways, alphabetically or hierarchically.

The alphabetical view lets you navigate directly to information about the manufacturer, whereas the categories select only the manufacturers for a particular product range.

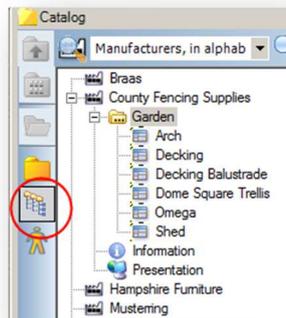
If you are a manufacturer and would like your product included in this catalogue, please contact Visual Building Ltd



11.2 MANUFACTURERS' INFORMATION

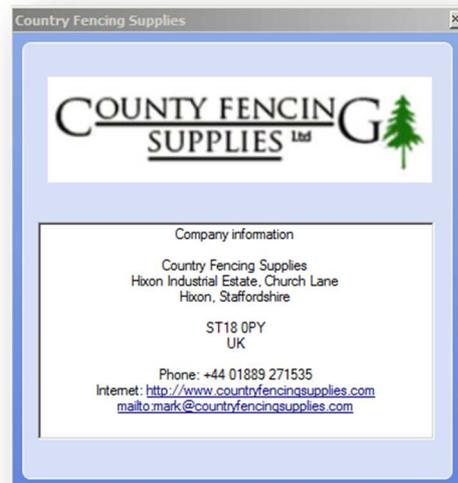
Manufactures can take advantage of advertising their products within Visual Building. The information and products which are made available by manufacturers, depends of course on the individual manufacturer. Basically, the following information can be found.

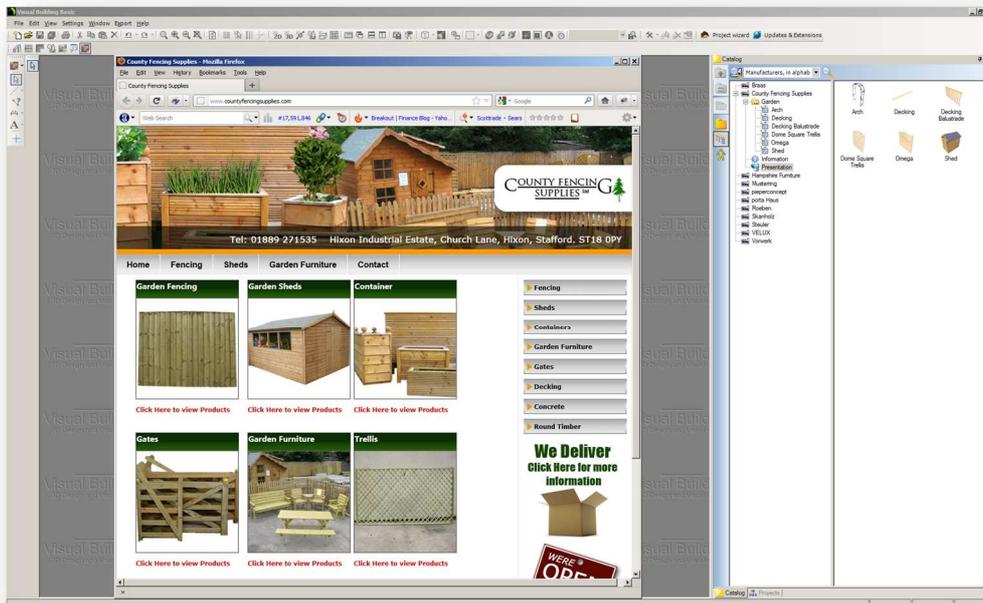
- Information
- Presentation
- Products and product ranges



A double click on 'Information' represents the contact data of the manufacturer. The contact data can comprise of an address, links to internet pages or an email address. A click on a internet link automatically opens the default browser for your system, or your email program for a new mail, with the email address of the manufacturer already specified.

A double click on 'Presentation' opens internet pages, which may have been provided by the manufacturer, locally in your browser. A connection to the internet is not always necessary, depending upon the information supplied by the manufacturer. The internet pages can contain any additional information which the manufacturer wishes to make available.



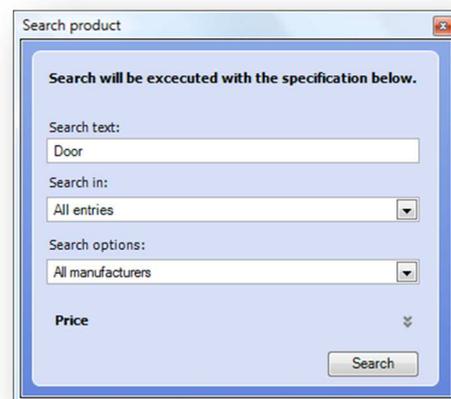


11.3 MANUFACTURER AND PRODUCT SEARCH

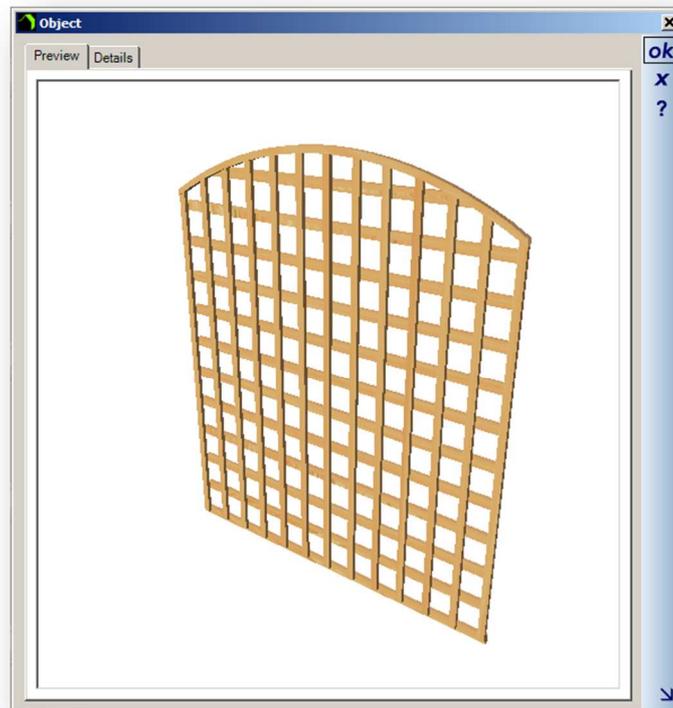


Various options to search for manufacturers and products are provided, and are being constantly enhanced to meet the requirements of the manufacturers. Basically however, the conspicuousness in the catalogue affects the results of the search. Various mechanisms to filter the results can be selected, including a choice of preferred manufacturers. The search for a specified search term is performed by means of a full-text search in the manufacturer's database.

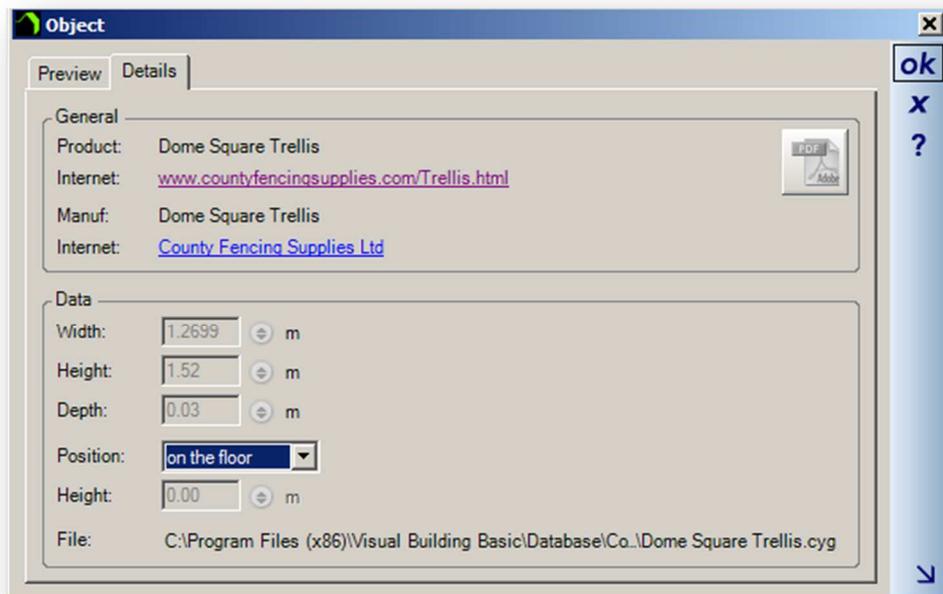
All further functions of the manufacturers catalogue correspond to the those of the standard catalogue, i.e. you can insert the products in plans per drag and drop, and a double click on a product opens the appropriate properties dialog, depending on whether we have selected a 3D object, a texture or a material.



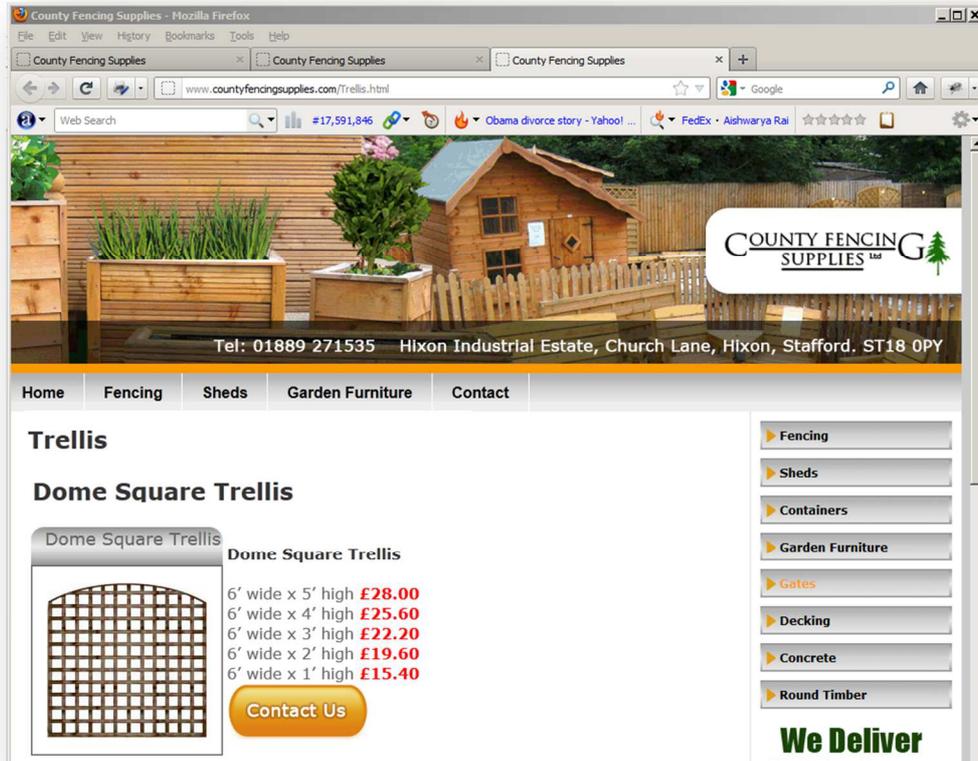
The objects / textures supplied in the catalogue can also have additional manufacture data included within them. For example, the Dome Trellis fence: Double click on the fence in the catalogue and you can explore the object in 3D:



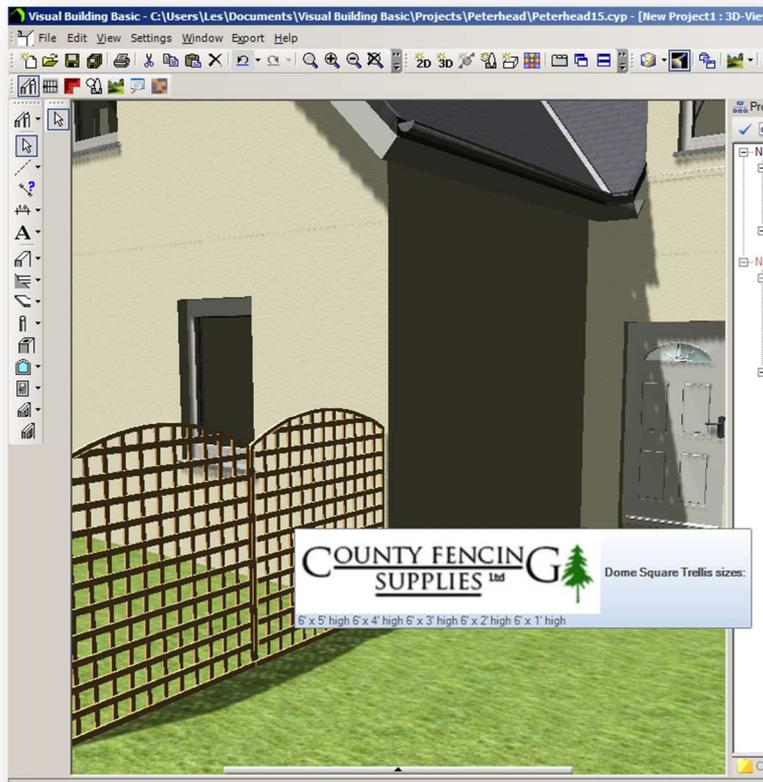
Click on the Details tab:



This dialog displays additional data about the object, including the manufacturers main website link and a link specific to this object:



The object may also include additional information in pdf format within the object itself. When such an object is used within a project, if the user hovers the mouse over the project, then a popup appears providing additional informat about the object.



Manufacturers and suppliers wishing to take advantage of this unique form of marketing / advertising and be able to reach the attention of all Visual Building users, should contact Visual Building Ltd.

11.4 PRESENTATION LINK

The Presentation icon is a link to the manufacturer's website. This link may be stored either as an off line copy of the web site or an online link.

The presentation data is located in the manufacturer's folder:

C:\Users\NAME\Documents\Visual Building\Manufacturer
Catalog\MANUFACTURER\info.zip

For an online web link, info.zip contains either a simple index.html file which redirects the browser to the actual web page.

For an offline web link info.zip contains all the html and images required to display an offline copy of the web site.

11.5 INFORMATION LINK

The Information link data is displayed from the data contained in the MANUFACTURER.xml also located in the manufacturer's folder. This xml file also contains the manufacturer's logo that is displayed in the Information panel.

11.6 PRODUCT FOLDERS

There are one or more product folders associated with each manufacturer. The structure and contents of these folders are defined in the cc.xml file located in the manufacturer's folder. This minimal xml structure required is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
</WEB2CAD >
  <ORGANISATION>
    <CATALOG>
      <PRODUCT_CATEGORY name="Folder" synonyms="" id="197">
        <ASSEMBLY name="product1" drawing3d="media/44_025_ALESSI.jpg"></ASSEMBLY>
        <ASSEMBLY name="product2" drawing3d="media/44_201_ALESSI.jpg"></ASSEMBLY>
        <PRODUCT_CATEGORY name="Subfolder" id="198" >
          <ASSEMBLY name="product3" drawing3d="media/26_020.jpg" ></ASSEMBLY>
          <ASSEMBLY name="product4" drawing3d="media/26_021.jpg" ></ASSEMBLY>
        </PRODUCT_CATEGORY>
      </PRODUCT_CATEGORY>
    </CATALOG>
  </ORGANISATION>
</WEB2CAD>
```

If you would like your products / services added here, please email Visual Building Ltd.

12 MERCANTILE DIRECTORY

The Mercantile Directory is similar to the Manufacturers catalogue but advertises services instead of products. There are many users of Visual Building that provide a service that may be of interest to all other Visual Building users, for example:

Estate Agents
Solar Panel Installers
Central Heating installers
3D Visualisation specialists

If you would like your products / services added here, please email Visual Building Ltd.

13 THE PROJECT VIEWER

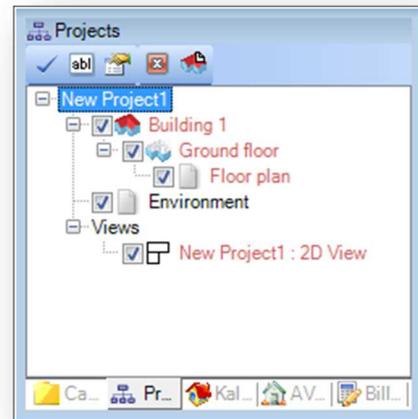
13.1 GENERAL

The toolbox on the right-hand side of the software window contains, as well as the catalogue and possible extensions for special plug-ins, also the project viewer, which is the central place in your software for maintaining projects and their hierarchy, and for creating buildings, floors and layers. The project viewer is activated with a click on the 'Projects' tab, which is located by default at the bottom of the toolbox.

When a new project is created, a basic structure is automatically provided. This consists of a new project, a 'Building 1', a 'Ground floor' and the associated 'Floor plan' layer.

Furthermore, the projects contains 'Environment' layer, which in turn contains such elements as 'Plot' and the 'North arrow' - elements which only occur once in a project. A new project also opens a new 2D plan view, which is listed under 'Views'.

The current layers and their associated hierarchy are shown in red in the tree, to improve clarity. Elements, e.g. walls, are always inserted in the current layer, i.e. in the example shown in the 'Floor plan' layer.



The visibility can be set individually for each view with the check boxes in the tree.

Depending on where you are currently positioned in the project hierarchy, the project viewer provides various buttons, with which the functions valid for this level or the information contained there, can be accessed. The functions which are provided for all levels, and can be



accessed using the context menu opened with a right-click, or alternatively using the buttons, which are from left to right:

- Refresh
- Set as current element
- Rename
- Properties

13.2 PROJECT PROPERTIES



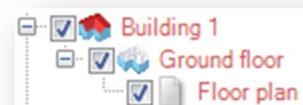
The project properties comprise of project name, data concerning changes, as well as the name and address of the planned building, the planner and the owner. There is no connection between the project name and the name of the project file.

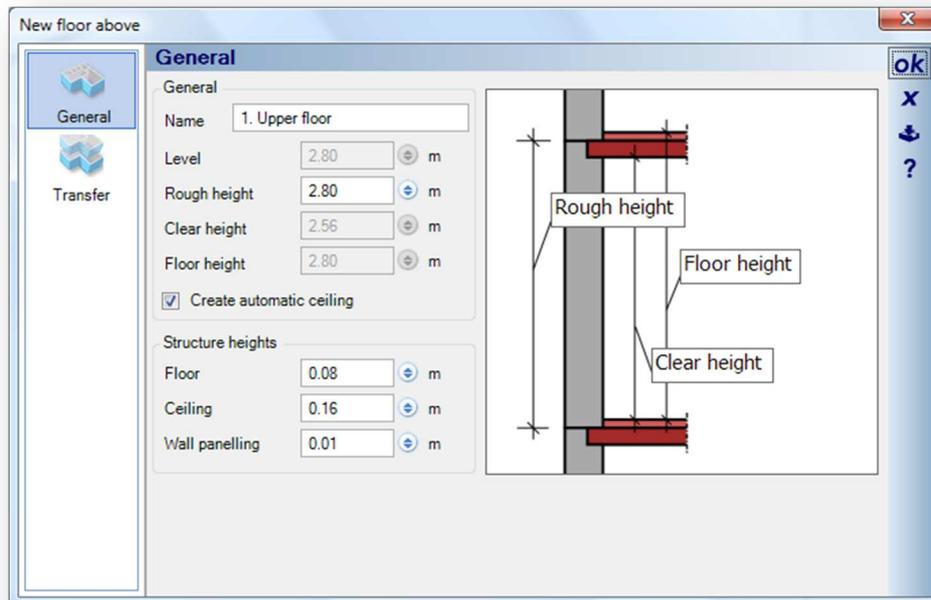
13.3 BUILDINGS

 You can create new buildings for the active 'Project' level in the tree structure. With the button 'New Building', or from the context menu of the same name, you can open a dialog, in which a name can be specified for the building.

13.4 FLOORS / CREATING NEW FLOORS

 You can create new floors and apartments for the active 'Building' level in the tree structure. A new floor is created either above or below the current floor i.e. the one shown in red in the tree, depending on the option chosen, and begins with the 'New floor above' dialog.

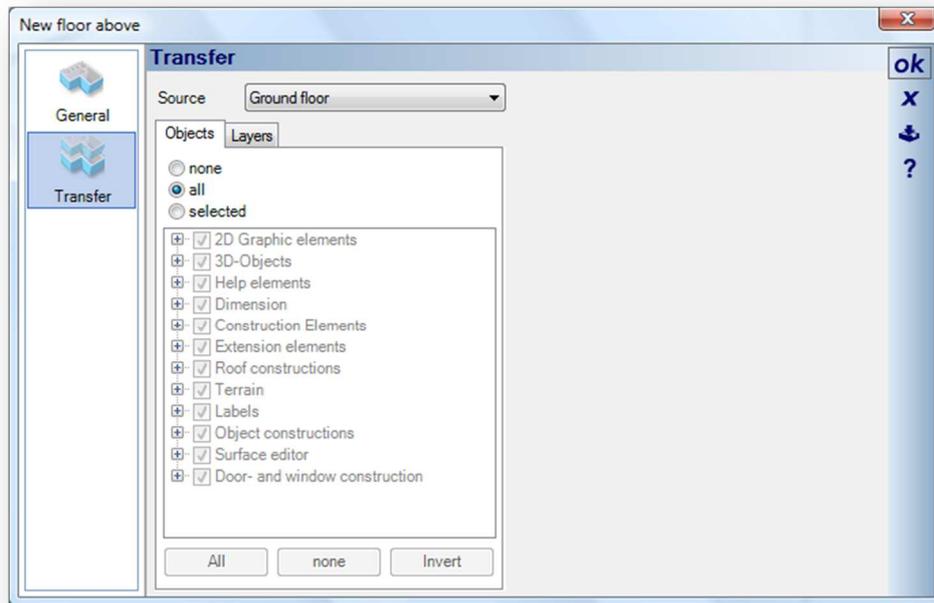




The name of the new floor, its height, as well as the thickness of the flooring and the ceiling structure are specified in the first part of the dialog.

The setting for 'Wall Panelling' has no visible effect in the plan. However, it is taken into account in the calculation of areas and for project reports. The default value entered here can be changed later in the wall properties for each wall.

The 'Transfer' part of the dialog defines which elements of the original floor should be copied or ignored. In the 'Objects' area, you can specify in detail the objects that are to be copied. The options 'all' or 'none' can be used, apart from their obvious usage, to assist object selection. If you only want to copy a small number of objects, first select the option 'none', which deactivates all the objects listed in the tree. Only four mouse-clicks are then needed to copy walls, flooring and ceilings, and all other objects do not have to be excluded first.

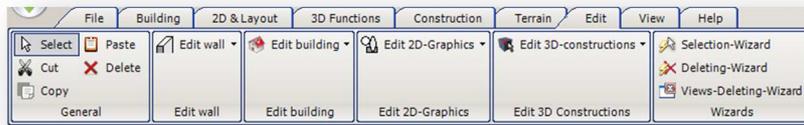


13.4.1 Lengthen, Rotate, Mirror, Copy Buildings

The 'Edit' toolbar also contains a category with various tools for editing buildings and floors. From left to right:



- Lengthen current floor
- Lengthen current building
- Lengthen all buildings
- Rotate current building
- Rotate current building about a reference point
- Mirror building
- Move building
- Copy building

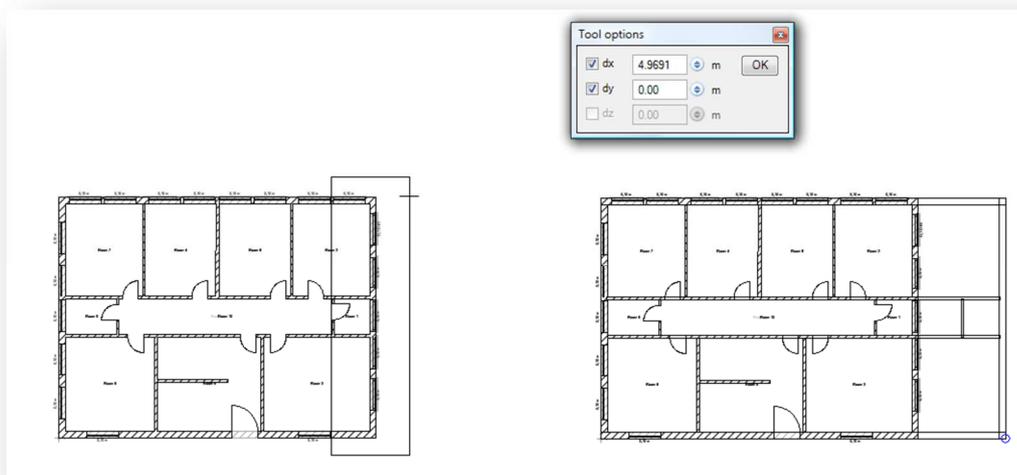


If using the Ribbon bar, these tools are located in the Ribbon bar – Edit tab – Edit building group:

After activation, some operations require various steps on input. To lengthen a building for instance, the area whose contents are to be lengthened must first be defined, or for rotation a reference point must be entered. The necessary steps are described in the status bar at the bottom of the window and in the following sections.

Lengthen Buildings/Floors

To lengthen a floor or building the first step is to define the area to be modified, by drawing a rectangle. Next, a reference point is defined with a further mouse click. All elements or points of elements (e.g the ends of walls), which are located within the rectangle are now moved. First of all a preview is shown and the action can then be terminated with the mouse or numerically in the tool options dialog. In the following illustration the main steps are shown one after the other to demonstrate input.

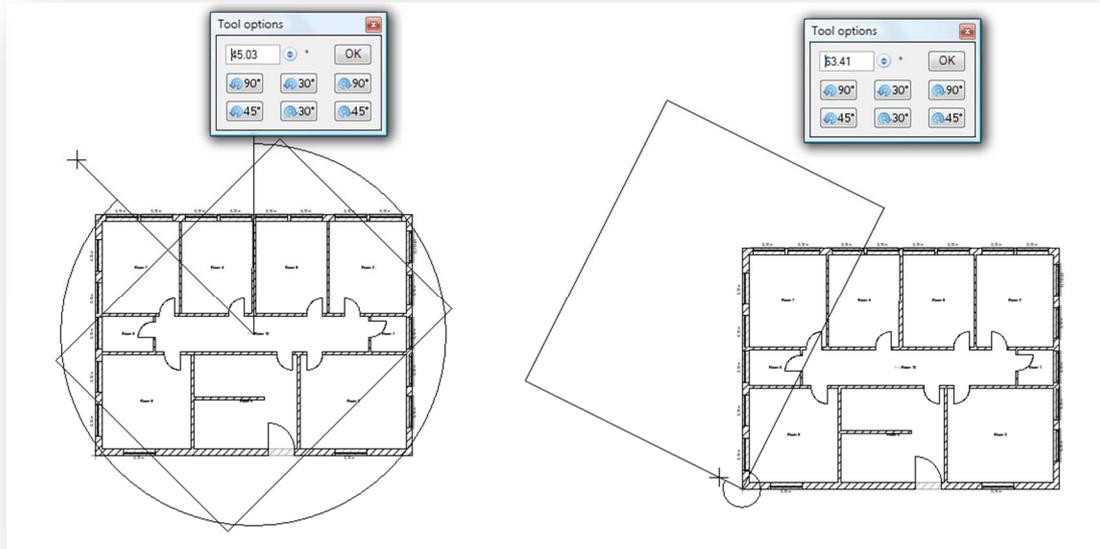


Rotate Buildings

Two functions are provided to rotate buildings, a general function, that rotates about the centre of the building, and a version using a reference point.

In both cases a preview is shown, and the angle of rotation can be specified with the mouse or numerically.

Tip: The angle grid function can also be used here with the 'Cntl' key held pressed.
The following illustration shows general rotation and rotation about a reference point as an example next to each other:



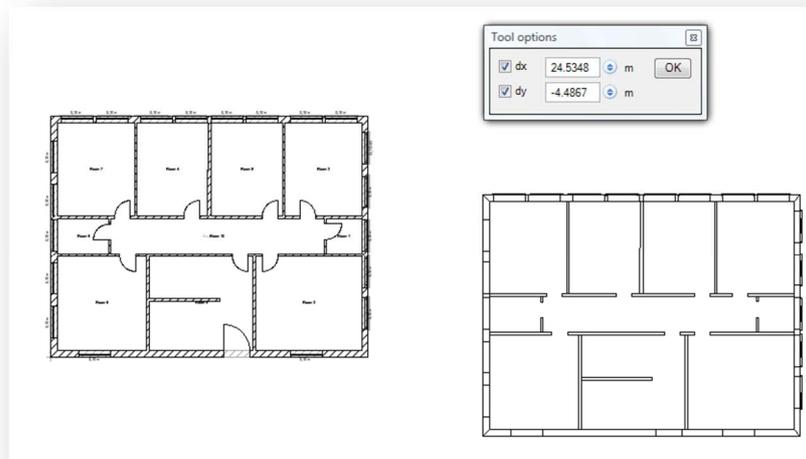
Mirror Buildings

To mirror a building the mirror axis must be entered with the mouse. As soon as this has been defined the action is carried out immediately.

It should be noted that when a building is mirrored, roofs are not mirrored. Therefore to construct a semi-detached house by entering one half and then mirroring it, first a copy of the building must be created and this then mirrored.

Move or Copy Buildings

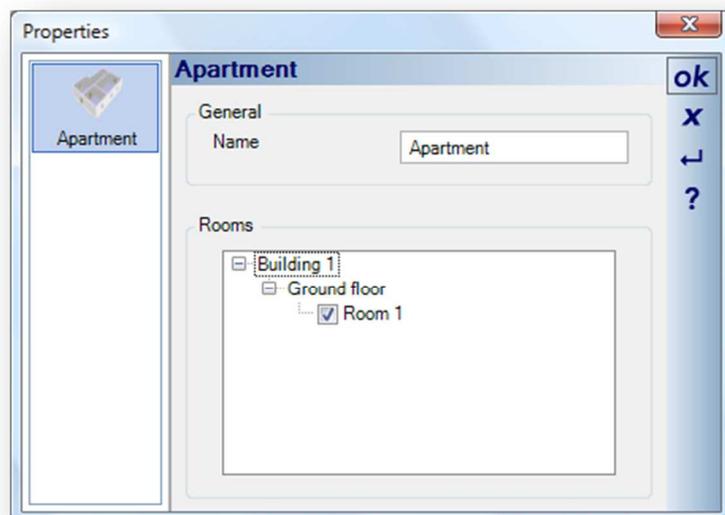
A building is always moved using a reference point, which must first be entered with the mouse. Next, a preview of the building is shown with the reference point attached to the mouse. A further mouse-click concludes the operation.



13.5 APARTMENTS

 For the calculation of areas, the software provides the grouping of rooms to form apartments. Apartments are not really layers as such, so they cannot be set to visible or invisible using the project viewer, although the tree structure appears to allow such a function.

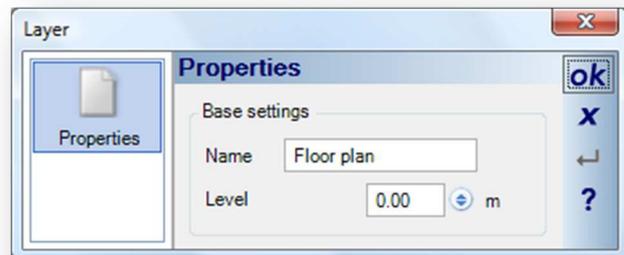
Apartments can consist of rooms from different floors but not from different buildings. The properties dialog for apartments can be activated when a building is selected in the tree structure in the same way as for creating new floors. The dialog presents all rooms in the current building, with their names and the floor they belong to, and they can then be assigned to an existing apartment or used to create a new one. Newly created rooms can also be assigned to an existing apartment using the 'Room' dialog.



A room cannot be assigned to more than one apartment, and if you attempt to make such an assignment an error message is displayed

13.6 LAYERS

 Layers are a vital feature for grouping objects. They not only have an effect on visibility and selection, but also serve to structure projects. As a user you can create new layers at the floor level. The properties of layers are restricted to the name and the level.



13.6.1 Levels of Layers

The 'Level' of a layer is relative to the level of the floor in which the layer is created, and can deviate positively or negatively from the floor level. If you change the level to 0.50 m when creating a new layer in the first upper floor, all elements inserted on this layer, such as walls, supports, furniture and fittings etc., are inserted 0.50 m above the floor. For elements such as walls, which automatically adjust their height to the height of the floor, the result is that the walls assume a height given by: Height of floor – Level of layer = Height of element.

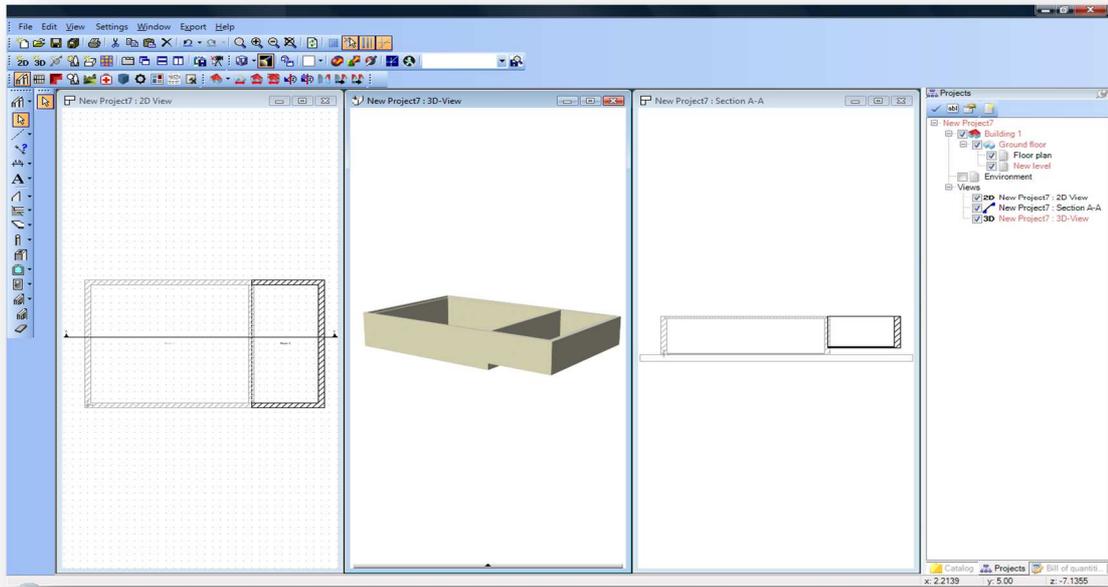
For example, if the upper floor is 2.8 m high and the level of the layer 0.5 m, the walls are created with a height of 2.3 m.

13.6.2 Floors/Rooms with Split Levels

The characteristics of layers as described above also form the basis for creating floors whose rooms are on different levels.

Whenever a floor is created, a 'Floor plan' layer with a level 0 relative to the level of the floor is generated. If you wish to create a room within this floor which is not at level 0, proceed as follows:

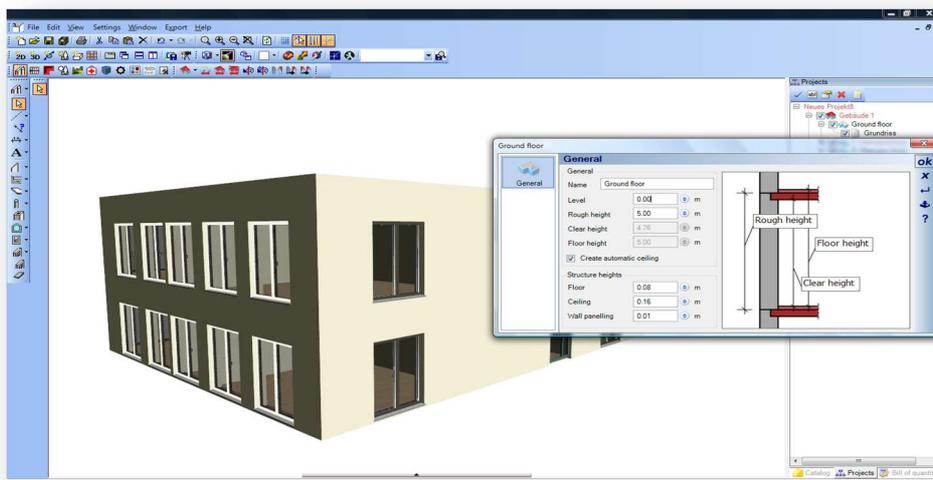
- create a new layer in the floor
- in the dialog that appears set the level that is required
- now enter on the new layer (see project viewer) the walls for the new room
- it is important that walls on different layers do not connect to form new rooms. To close the room use the 'Room boundary' wall type, which does not represent a 'Floor plan' wall but only serves to close a room. Without a closed room no floor would be generated for the room.
- As a rule the ceiling must now be input manually, since the automatic ceiling does cover the new room.. However, first the automatic ceilings option must be deactivated in the properties dialog for the floor.



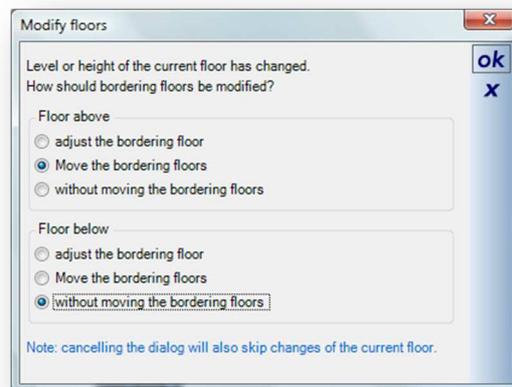
13.6.3 Changing the Height or Level of Floors

If the height of a floor has to be subsequently changed, it naturally has effects on the other levels of the building. Shown here are examples, in which exaggerated values are used for clarity, of the various options available.

In the example, the height of the ground floor is changed from 2.80 m to 5.0 m



After the dialog has been closed with 'OK', the following options are presented to the user:



First, the dialog differentiates between floors which are situated above or below the current floor. The options available have the following effects:

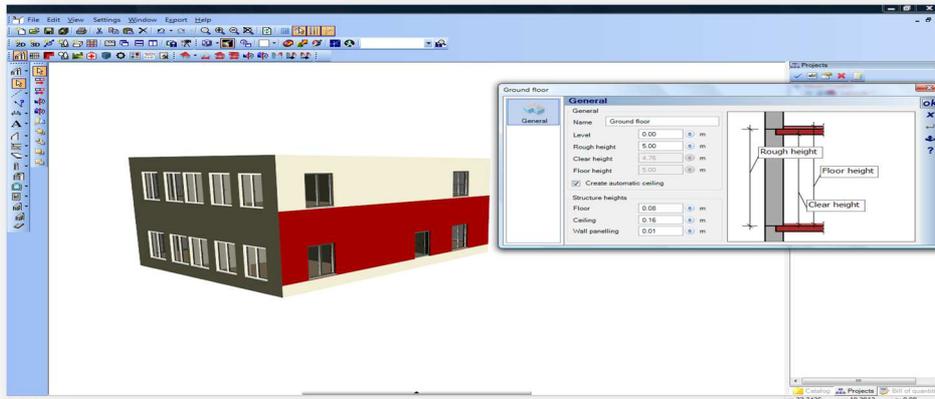
- **Adjust the bordering floor:** changes the height of the floor. In the example shown this would have the following effect: The ground floor and the upper floor were both 2.80 m high, therefore together 5.60 m. The ground floor is changed to have a height of 5.0 m. When the upper floor has been adjusted it has a height of only 0.6 m
- **Move the bordering floors:** moves the upper floors and changes their level. The level of the first floor was previously 2.80 m. After the adjustment the level of the floor is changed to 5.0 m, the new height of the ground floor, but retains its original height of 2.80 m.
- **No adjustment:** the bordering floors are not changed. In the example this would result in the ground floor penetrating the upper floor, not a good idea. Nevertheless, there are certain applications for this option.

We select the following options:

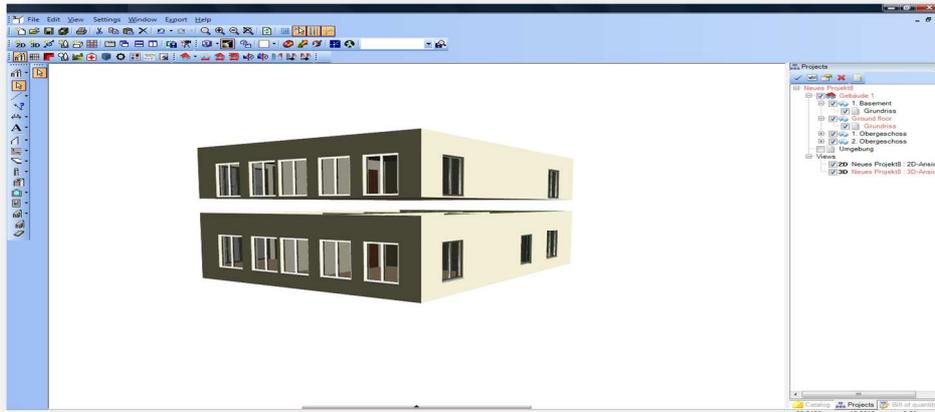
Above: Move the bordering floors.

Below: No adjustment. This would only make sense if the level of the ground floor had been changed downwards.

Here the results:



Another example: We reduce the height of the ground floor from 5.0 m to 4.0 m, and select the following options:
Above: No adjustment
Below: No adjustment



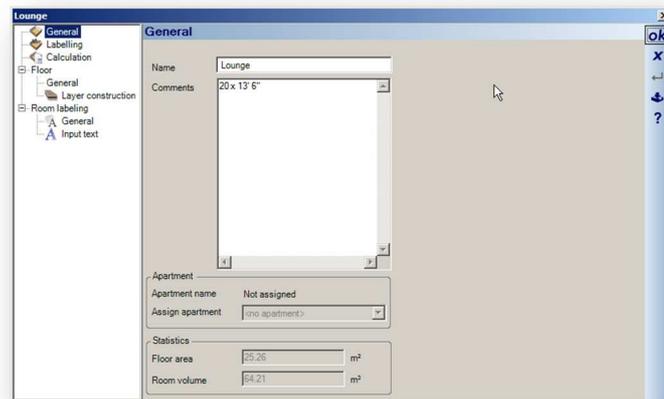
This results in a gap of 1.0 m between the upper floor and the ground floor, since neither the height nor the level of upper floor has changed. To close this gap the level of the upper floor would have to be subsequently adjusted.

13.7 ROOMS

Rooms are automatically created with a default text, a numbered room name and a floor, as soon as the walls form a closed space. Rooms are selected by clicking on the floor in the 2D, 3D or cross-section views.

13.7.1 Properties of Rooms

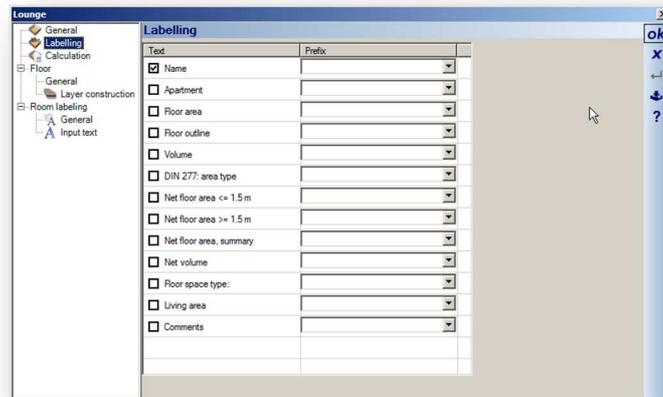
You can open the room properties dialog with a double click on the selected room or using the corresponding context menu.



Under 'General' you can specify a name for room. Allocating rooms to an apartment can be done either directly when an apartment is created in the project viewer, or here in the room dialog, where an apartment must already exist, otherwise the corresponding area is deactivated.

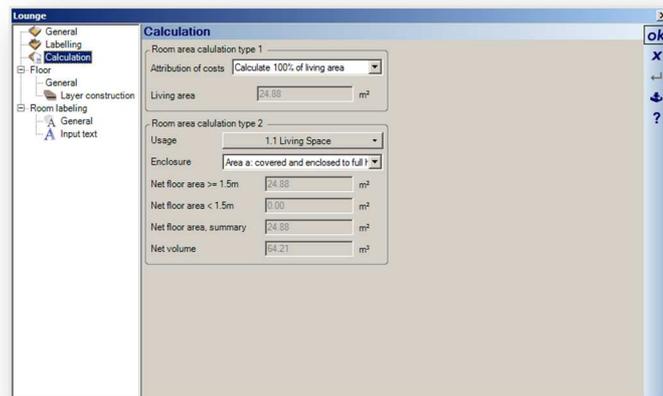
13.7.2 Labelling Rooms

A special text can be generated separately for each room. The contents of the text are defined in the dialog under 'Text'. Predefined terms and values are provided, which correspond to the procedures supported for calculating areas. The text which is to be displayed can be activated using a check box. Additionally, you can assign each value a predefined prefix, a text preceding the value, or enter your own text in the field provided. The text may be associated with a room, i.e. it is removed when the room no longer exists, but it can be formatted and positioned independently. When in the Room properties if you click on the Labelling entry, the Labelling dialog is displayed:



13.7.3 Calculating Areas

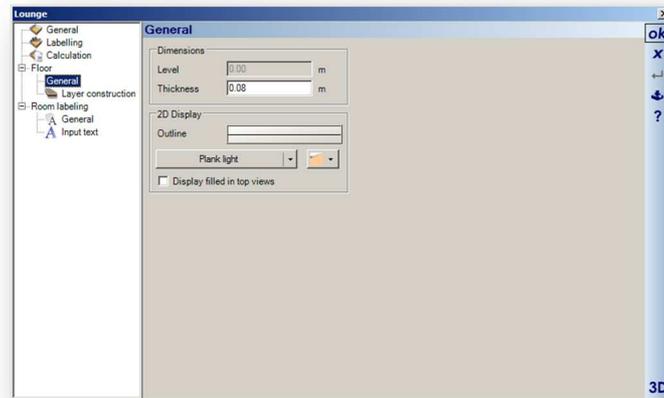
Under 'Calculation' in the dialog, you can specify the desired settings for an analysis of the rooms according to DIN 277 and the living space ordinance. The values, which are calculated using the specified settings, are available on the one hand for labelling rooms, and on the other as output for other plug-ins, such as Quantities. An attribution of costs of the resultant values is not made automatically based on the defined usage. If you define a usage using the tree structure, which should result in a attribution of costs, you have to make the required setting manually.



13.7.4 The Floor, Material and structural Layers

As with other elements, the floor consists of a building material, which also affects the way it is represented in views. Changes to visualization materials and texture coordinates can be

made under 'Room>General'. The 2D representation of the building material in 2D plan views is deactivated by default, but can be set for each room using the option for 'Filled in representation in plan views'.

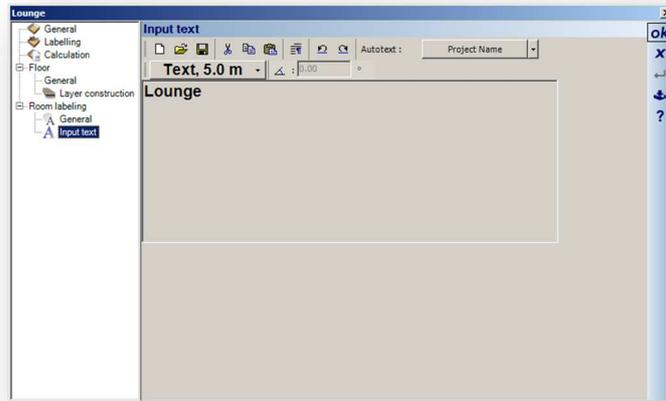


13.7.5 Room Labelling

The Room Labelling – General dialog allows you to use automatic text and positioning.

13.7.6 Input Text

If Automatic text (see above) is disabled you can enter your own text using the text editor.

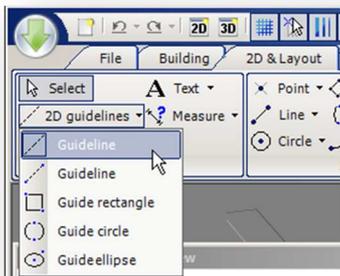


14 GENERAL FUNCTIONS

14.1 GUIDELINES

14.1.1 2D Guidelines

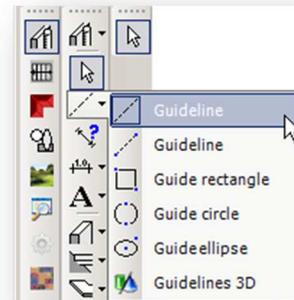
The 2D guideline tool is located in the **Ribbon bar – 2D & layout tab – General group**.



It is also located within the **What toolbar**.

Different types of guidelines, and methods of creating them, are provided for 2D plan views and 2D elevations/cross-sections. The main difference in the types of views is that guidelines, as with several other 2D elements, are present in all plan views, but in cross-sections are only present in the view

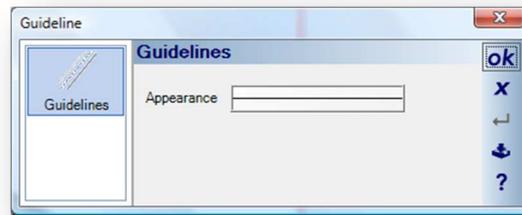
in which they were entered. The reason for this is that cross-section views do in fact also represent the model, but from different angles depending on the placement of the symbol for the line of cut of the cross-section. Therefore, there is no point in showing 2D elements, such as guidelines, in all views.



With lines there is a difference between a straight line and a straight length. Straight lines are 'infinite', whereas a straight length has a start and end point, which is noticeable in the different methods for entering them.

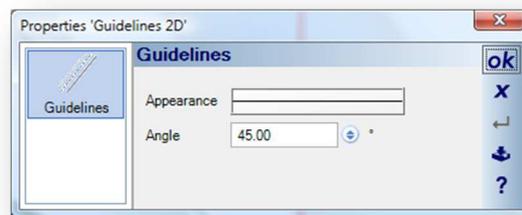
All types of guidelines can be suppressed for each view using the visibility option for the construction aids category.

The properties for colour and style can be set for all types of guidelines. These properties can be changed later, and can also be specified when the guidelines are being created in the properties dialog, which is activated using the context menu opened with a right mouse click. The advantage of doing this when they are being created, is that the guidelines then have the right properties immediately, and do not have to be modified later.



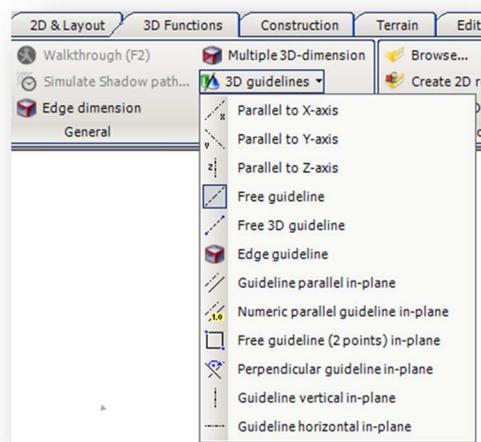
Angled Guidelines

For angled guidelines, the software assumes by default an angle of 45 degrees. You can specify other values **when guidelines are being created** in the properties dialog, which is activated using the context menu, opened with a right mouse click. Once the guideline has been created, it is not possible to change the angle.

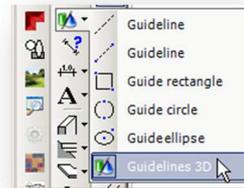


14.1.2 3D Guidelines

The 3D Guideline tool is located in the Ribbon bar **3D Functions** tab – **General** group



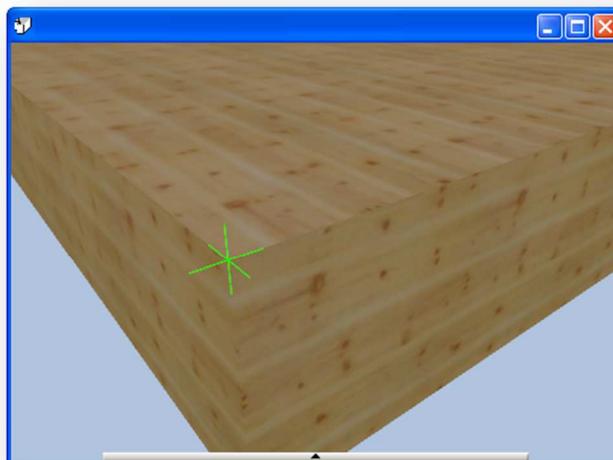
It is also located in the What toolbar.



The various types of 3D guidelines are from top to bottom:

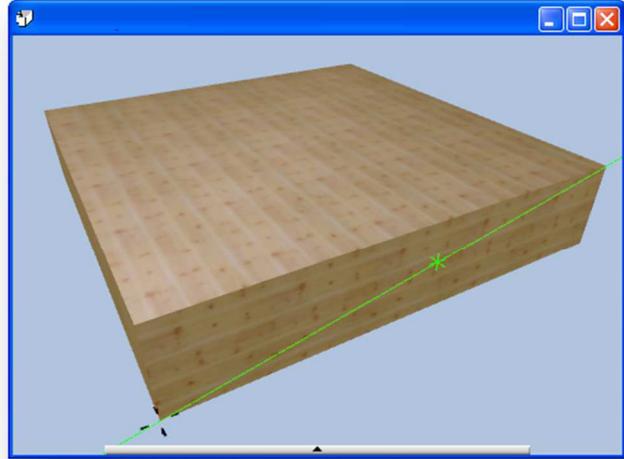
- Guideline parallel to the x-axis
- Guideline parallel to the y-axis
- Guideline parallel to the z-axis
- Any straight length
- Any straight line
- Edge guideline
- Guideline parallel in a plane
- Guideline parallel in a plane at a distance
- Any guideline (2 points) in a plane
- Perpendicular guideline in a plane
- Vertical guideline in a plane
- Horizontal guideline in a plane

When creating 3D guidelines, the current position is shown by a 3D cursor, which snaps to surfaces/faces, edges and corners. To help in creating guidelines relative to axes and all straight guidelines, the line itself is shown. The edge guideline and guidelines in a plane are explained further in the following sections.



Edge Guideline

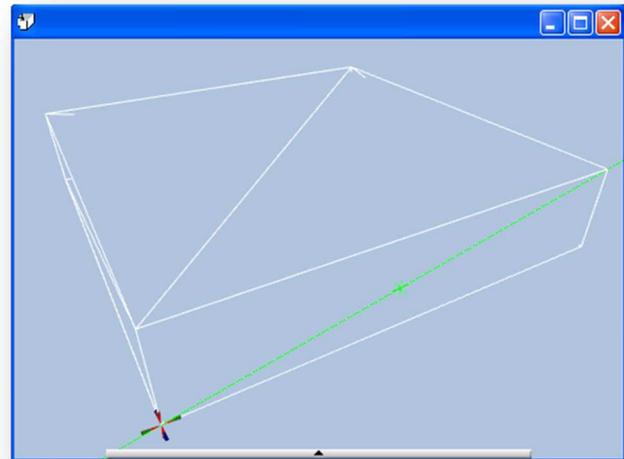
The edge guideline aids construction by automatically determining the edges present in a 3D view, and shows a preview of the guideline as soon as the 3D cursor comes within snap radius of one of the edges. A left mouse click then creates the guideline. Edges are not only the 'proper' edges of a 3D solid, but also the edges of the triangles, which define a 3D solid in visualisation. An exact rectangular surface is made up of two triangles, which means that with the edge guideline you can also automatically enter a diagonal guideline.

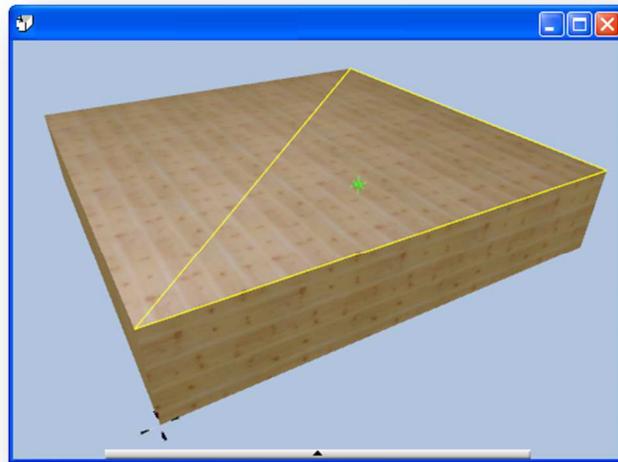


You can work with the edge guideline much more accurately, especially with complex bodies, if you switch the representation mode of the 3D view to wire frame.

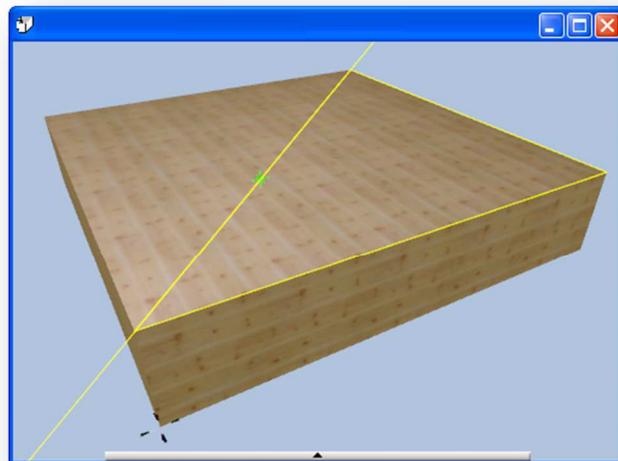
3D Guidelines in Planes

Working with 3D guidelines within a referenced plane is particularly important for bodies and their surfaces whose slope could not, or not easily, be determined without these aids. When you have activated one of these construction aids, in our example 'Guideline parallel in a plane at distance', and you move the cursor over the 3D view, the software detects any triangles which are located under the cursor and outlines them in yellow. A left mouse click then sets the reference plane defined by the triangle.

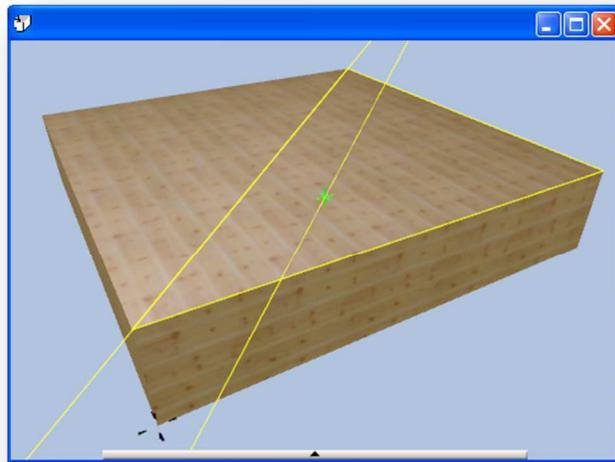




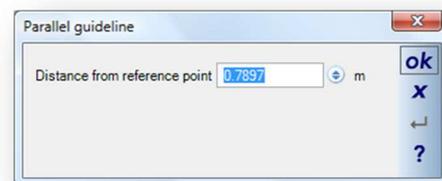
The next step is to select one of the three sides of the triangle as a reference side, parallel to which the guideline can then be positioned. The reference side is highlighted in yellow when it is within the snap radius.



Another left mouse click sets the side detected as the reference line, and the actual guideline can now be positioned parallel to the reference line.



With the final mouse click a dialog is opened, in which a value for the distance from the object can be specified for this type of guideline. For other types of guidelines the 3D guideline would be created immediately and the process terminated.



14.2 MEASUREMENT

There are several kinds of measuring functions:

14.2.1 Measure Distance



User-defined value

14.2.2 Measure Distance between line and a point

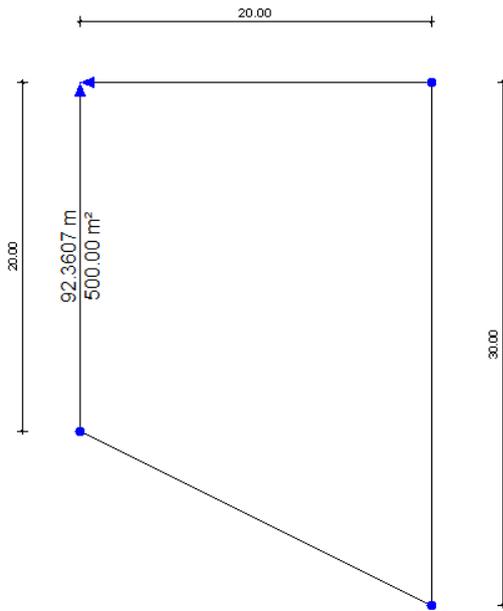


Perpendicular measurement from a selected component e.g. the side of a wall.

During input the current values, such as angle and distance, are continuously updated on the measurement line. A left mouse click terminates the measurement process and the result is shown in the plan, until another measurement is carried out, or the measurement function is terminated with **Esc** or using the context menu.

14.2.3 Measure Polygon Length

You can measure length of a polygon, for example the perimeter of a property. The first click sets the start point and successive clicks will display the total length being measured from the start up to that point.



When you close the polygon, the final measure displayed, shows the total perimeter and the area enclosed by the polygon.

14.2.4 Measure Angle

An angle measurement is defined with three points. First, set the vertex of the angle to be measured and then with the next click select the first reference point. Moving the mouse will now draw a second reference line and the resulting angle between the two reference lines.

14.3 DIMENSIONS

14.3.1 General

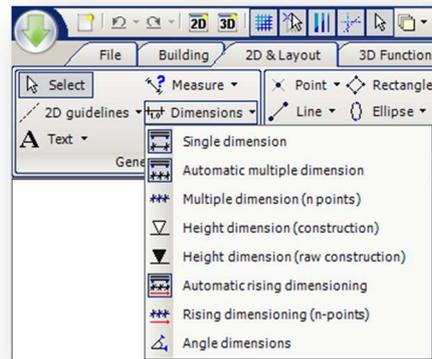
Basically, the software differentiates between single, multiple and height dimensions (for cross-sections and views). The type selected determines the way it can be entered.

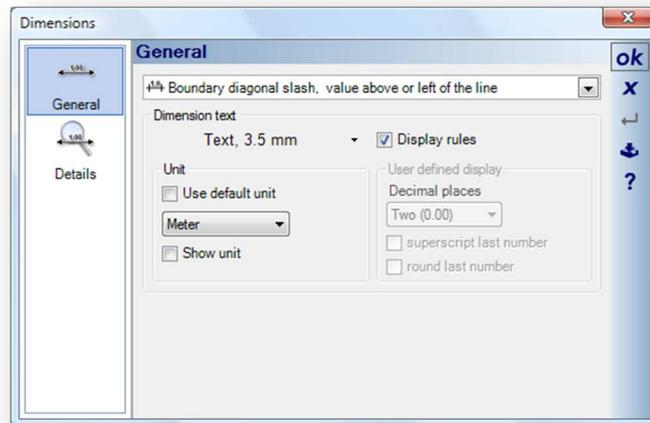
Toolbar:



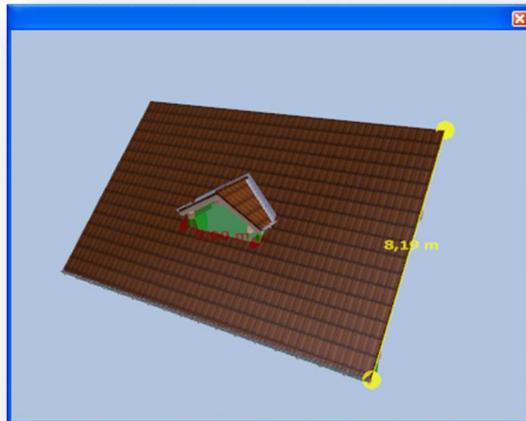
Ribbon bar:

The settings for a dimension, as regards type, style and text, can be changed for an existing dimension, or for all dimensions which are entered subsequently, in the properties dialog for 'Dimensions', which is opened using the context menu activated with a right mouse click.





The 3D dimension types are available, using the context menu opened with a right mouse click, in all 3D previews shown in dialogs. However, here they have more of a measuring function, since the dimension is lost when the preview or the dialog is closed.



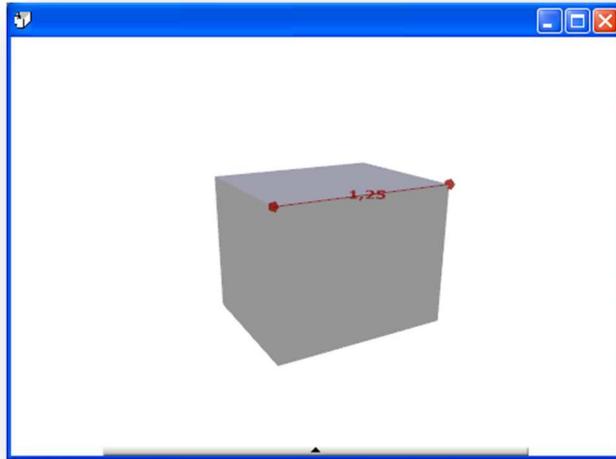
14.3.2 2D and 3D Single Dimensions

Single dimensions can be entered for 2D and 3D views in the following ways:

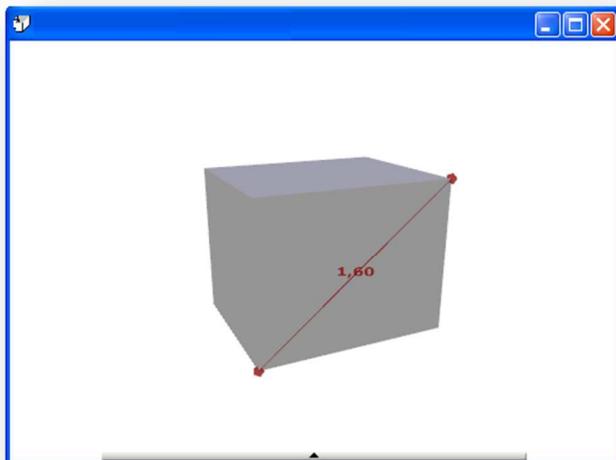


Single Dimension 2D: Input is using a start and end point, which determine the length and direction of the dimension line. Subsequently, the dimension line can be placed in its final position with the mouse, using drag and drop.

 Single Dimension 3D: Input is using a start and end point, which are highlighted in red in the 3D views. The current distance between the points is displayed directly on input. Input is aided by the snap function for edges and corners.



 Edge Dimension: Input is with a mouse click, since the edges of triangles contained in the view, are automatically calculated, and their dimensions previewed. Edges of triangles also means in the example shown, that the two triangles of which the rectangle is comprised, are automatically recognized, so that the dimension for the diagonal can also be set with a mouse click. For more complex bodies, more accurate input is possible in the wire frame mode for 3D views.



14.3.3 2D and 3D Multiple Dimensions

 Automatic Multiple Dimensions: Input is using a start and end point, which determine the length and direction of the chained dimensions. Subsequently, the chained dimensions can be placed in their final position with the mouse, using drag and drop. Dimensions are created for all elements which are located under the measurement line during input, and for which automatic dimensioning is provided. For standard elements such as wall, supports, windows etc., this is generally the case, but depending on the plug-in and its objects, the object itself determines whether automatic dimensioning is possible or not.

There is a link between the dimensioned elements and their dimensions in the chain, i.e. the chained dimensions react to changes to the elements to which they apply. If you change the position or the size of an object with automatic dimensioning, there is an overall change in the chained dimensions. However, this does not apply to components inserted later, even if they are located under the original measurement line. If you create dimensions automatically for a wall with several windows, and then subsequently insert a new window in the wall, this has no effect on the chained dimensions.

 Multiple Dimensions using n-Points: With this option, the first dimension of the chain defines the direction for all dimensions which follow. With further mouse clicks you can then create new dimensions, until input is terminated with 'Enter'. Only then, can the complete chain be positioned.

 3D Multiple Dimensions: This option does not create chained dimensions as such, but rather a series of individual dimensions. The end point of the last dimension is always the start point for the next one. Otherwise, they behave on input in the same way as a single 3D dimension.

14.3.4 Height Dimensions

The two different types of dimensions, for finished buildings and for the shell of a building, differ only in their representation. Both provide in views and cross-sections the absolute height relative to the origin of the project.

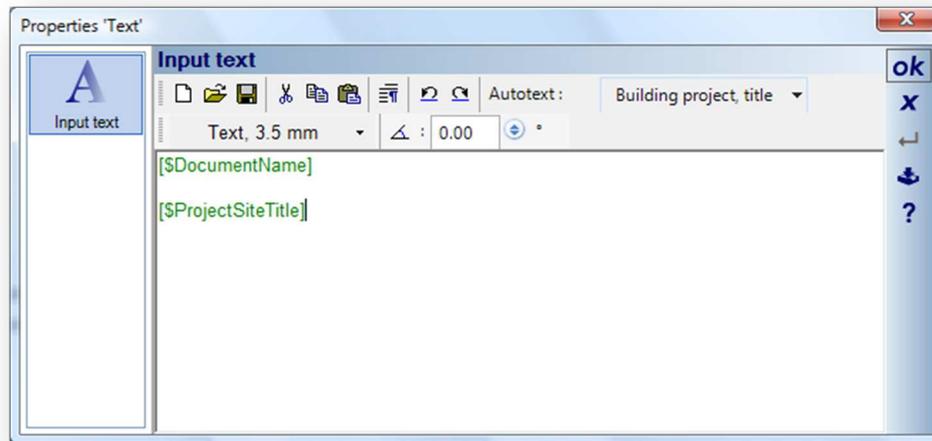
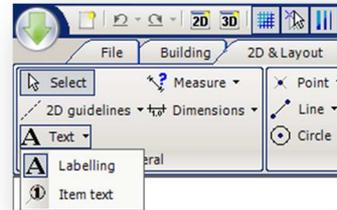
14.3.5 Angle Dimensions

An angle dimension is defined with three points. First, set the vertex of the angle and then the two lines defining the angle. The angle measured is displayed immediately.

14.4 TEXT

The Text tool is located in the Ribbon bar's 2D&Layout tab in the General group.

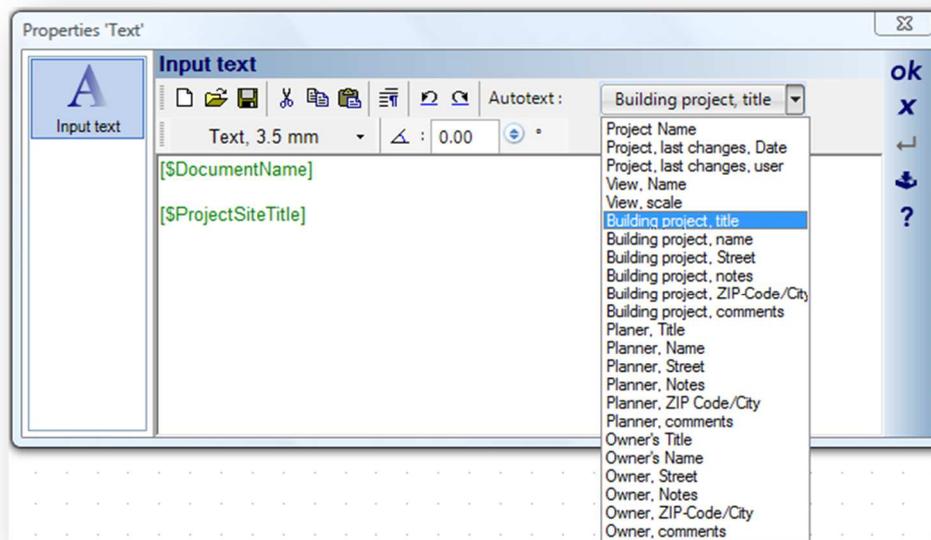
A To enter text, select the Text tool, then click in the 2D plan the position for the text and the Text properties dialog will activate:



Here you have the possibility to load and save text files, or to enter and format your own text. Formatting functions always apply to the total content of the input area. Apart from the frequently used text properties, the 'Text properties' dialog also has certain special features. A line break can be created with the  button or with the key combination **Ctrl + Enter**. Also, an angle can be specified for the complete text block. However, the change is only shown in the views after the dialog has been terminated with 'OK'.

14.4.1 Autotext

Autotext provides placeholders for values which change from project to project, such as project name, name of planner, etc. The placeholder is selected using the tree structure, which is opened with the arrow to the right of the 'Autotext' button. Autotext is input in two steps. First, select the placeholder and then, when the cursor is positioned at the appropriate place in the text, click on the 'Autotext' button.



The Autotext placeholders provided are derived from the properties of the views, such as name and scale, and the project properties such as names, addresses and remarks, for the planned building, the planner and the owner. In order for them to be distinguishable from normal text, placeholders are defined with square brackets and a \$ sign. Changes to a placeholder, for example deleting a bracket by mistake, can mean it is no longer recognized as such and is displayed as normal text in the plan.

As soon as you insert a placeholder, it is immediately set to a value from the current project or view and is substituted in the actual text. For instance, if the name of the current project is 'New Project 1', then this appears instead of [\$DocumentName].

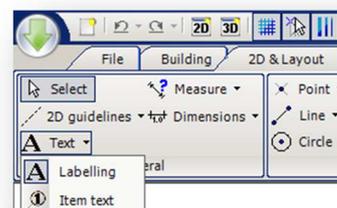
Using the autotext feature and the save text function, you can create text blocks for use in future projects, without having to change project related values manually. Using 2D symbols and the graphic functions, other applications, such as titles and legends, are also possible.

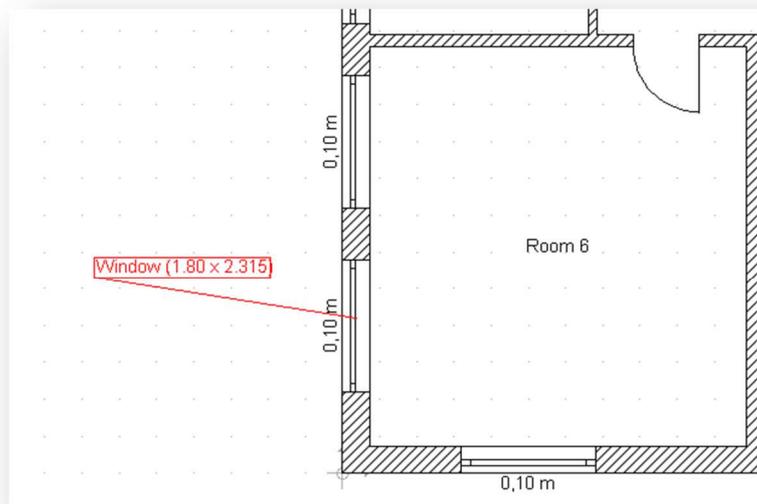
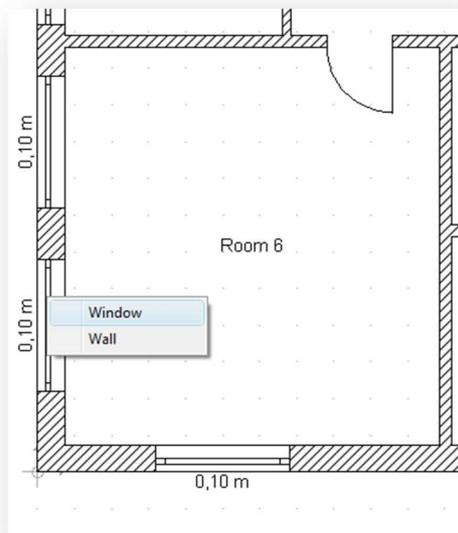
14.5 ITEM TEXT

To create an item text for an element, first select this function using the text type button.

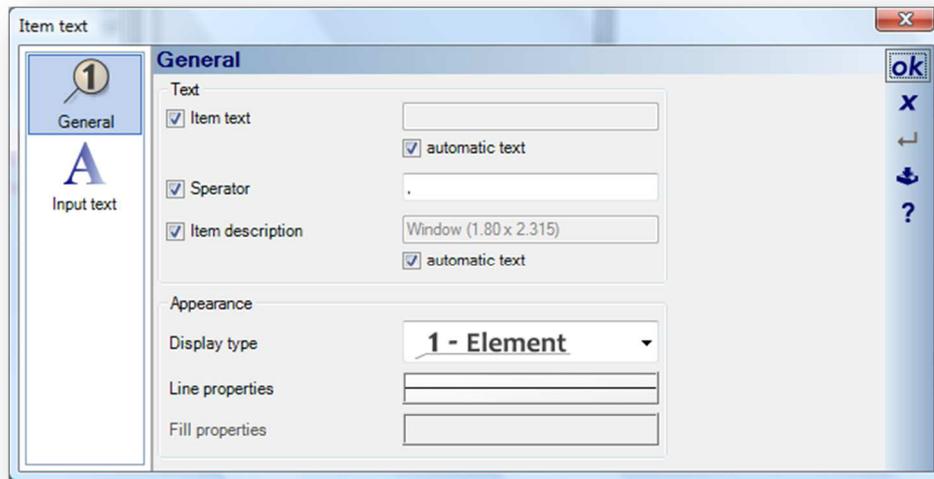
Then position the mouse cursor in a 2D view over the element for which the item text is to be created. A left mouse-click now selects the element and at the same times defines the position of the line connecting the text to the element. If the element can be uniquely identified, for example a support, the text is immediately positioned. If several elements overlap, for instance a window in a wall, a context menu is provided with which the desired element can be selected.

The text is positioned only after an element has been selected.





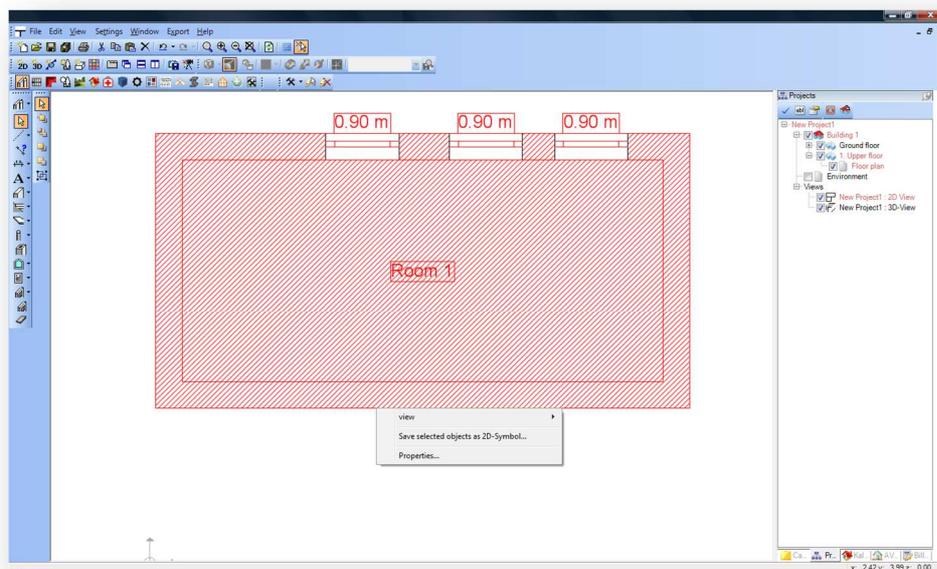
All properties of an item text, such as the content and style of the text, can be changed if necessary in the dialog, which is activated by a double-click on the item text or using the properties context menu available for a selected item text.



14.6 2D SYMBOLS

 In 2D views you can use and create 2D symbols in our own format (*.cys). Existing symbols can be selected from the 2D category of the catalogue and placed in the view using drag and drop.

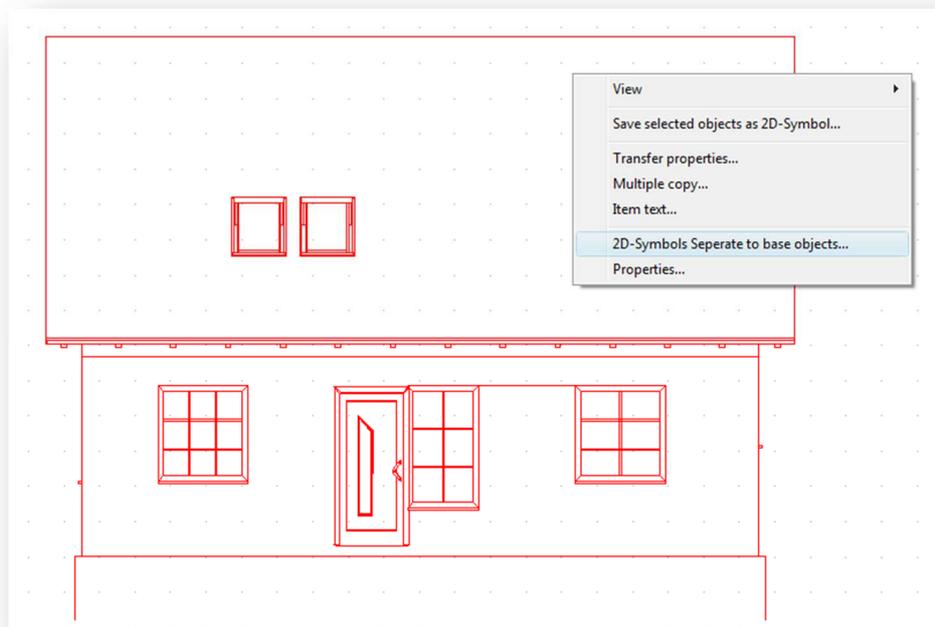
You can produce and save your own 2D symbols by selecting the desired contents in a 2D view, either with multiple selections by holding down the shift key, or with a selection rectangle.



Using the context menu, opened with a right mouse click, you can save your selection with a click on 'Save selected objects as 2D-symbol'.

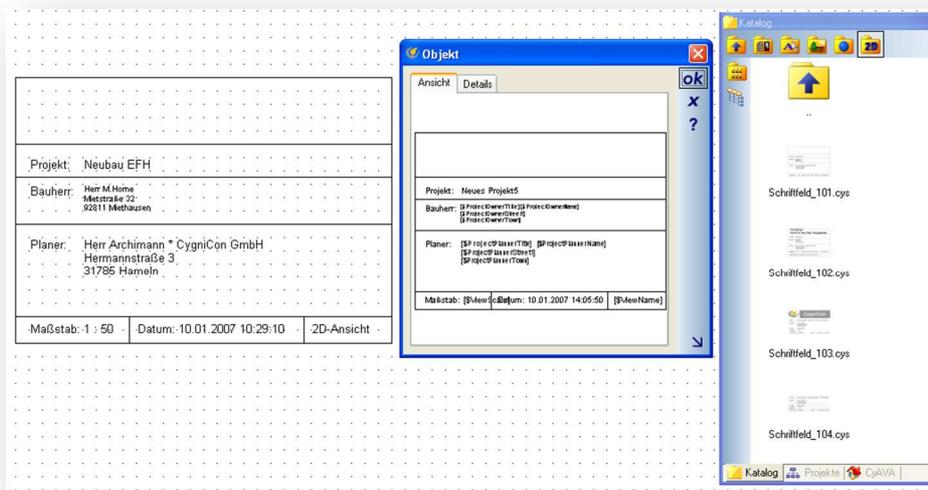
The dialog 'Save 2D graphic file as' is opened with the default path 'Installation\Graphics2D' and a file name is requested. The symbols in the 'Graphics2D' directory are automatically shown in the catalogue and can be used directly.

When 2D symbols that are contained in the plan are selected, they can be resolved into their 2D graphic elements using the context menu. They then no longer exist as Symbols, but as the individual elements from which they were created. This allows existing symbols to be dismantled, changed and then saved as a new symbol in the user's catalogue for further usage.



14.7 TITLE BLOCKS, AUTOTEXT IN 2D SYMBOLS

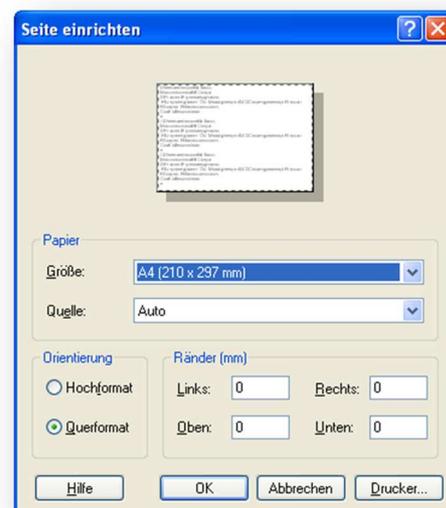
Title blocks and other mixed forms of graphic elements, text and autotext can be created freely and as required. To do this, open a project and draw a frame or lines using the functions of the 2D graphic plug-in. Then enter text and/or autotext in the boxes drawn. When the title block is complete, select all elements with a rectangle, and save it using the context menu as a 2D symbol in the catalogue. In order to assist you at the start, we have prepared several examples, both in the form of projects in the directory called 'Projects', and as finished symbols in the catalogue of 2D symbols in the 'Title blocks' directory. In the preview of the 2D symbol you can see how the different types of text have been combined. There are also additional examples available for download from the Visual Building forum.

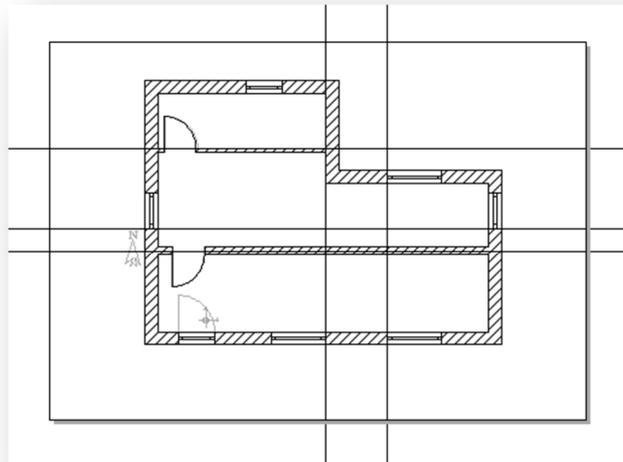


14.8 PRINTING 2D VIEW

 To print a 2D click on the **Print 2D view** tool in the File tab General group. This opens the 'Page setup' dialog, with which the printer, format and page margins can be specified. The margins are settings which restrict the printable area on a page, in addition to the non-printable area for your printer.

After the dialog has been terminated with 'OK', the printable area is attached to the cursor in the form of a page with the specified values, and can be positioned in the active view, whereby the reference point can be changed with 'Ctrl+w'. The printing process always refers to the view that was active at the start of the process.



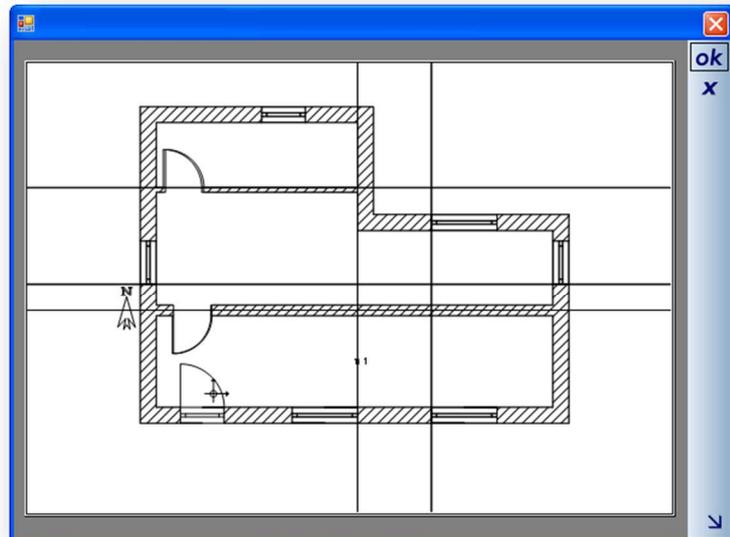


The need to position the area to be printed does not apply if all visible elements in the view fit to scale on the page. In this case, the print preview is opened directly.

Note: the software creates an environment layer for each project, with an environment block size of 50 x 50 m, which is visible by default in 2D plan views. With a scale of 1:100, a paper format greater than 1 x 1 m would be needed, in order to avoid having to position the area to be printed. Therefore if necessary, first set the plot to invisible.

If you wish to print the complete contents of the view, without regard to scale, you can skip setting the printable area with **Esc**, using 'Cancel with' in the context menu, or with 'Enter'. In this case, the print preview is also opened immediately.

Note: To print a 3D view it is best to use the Save view tool in the Views toolbar and then print the file. You can then print raytraced views using this method



14.9 GROUPS

 If more than one element is selected, a button is provided in the toolbar with which to form a group. Grouped elements are always selected and edited, e.g. positioned, collectively. A double click on the grouped elements opens the multiple selection dialogs.

When grouped elements are selected, a click on the button ungroups the grouping.

14.10 DISPLAY LAYER PRIORITY

 Basically, the order in which elements are inserted also determines the order in which they are displayed in your software. For instance a filled rectangle which is drawn over text that was inserted previously, will cover the text, which is then no longer visible. This default can be changed subsequently with the button for display priority, which is always shown in the toolbar when an element is selected. This enables you to specify the order in which elements are displayed to meet the particular requirements, e.g. inserting text over a filled rectangle when creating a title block.

14.11 NORTH ARROW AND ORIGIN

In order to modify the North Arrow the 'environment layer', in which it is defined, must first be activated in the project viewer. The North Arrow can be set as invisible in each view using 'Visibilities'. The same applies to the origin of the project, which however cannot be repositioned.

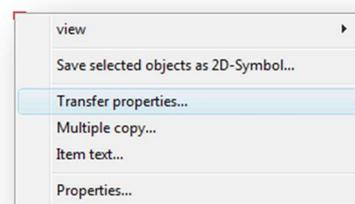


14.12 TRANSFER PROPERTIES

The properties of a selected element can be copied to elements of the same type. The assistant to do this is opened with the  button or using the context menu activated with a right mouse click, when an element has been selected in the plan.

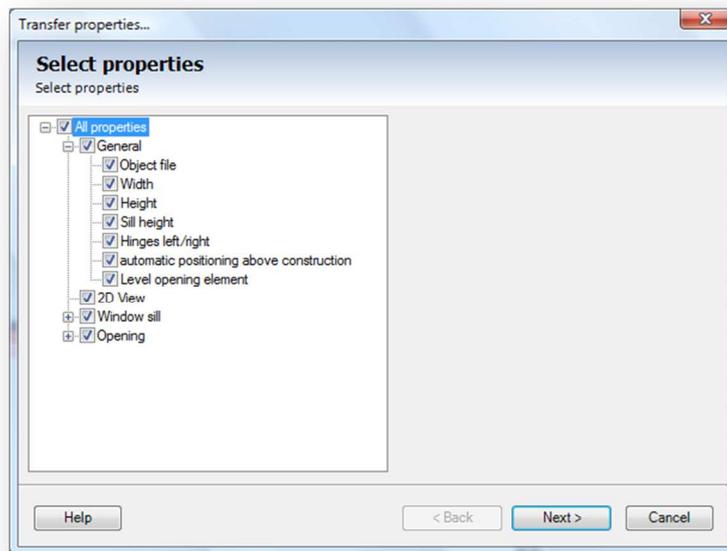
Copying properties is performed in two steps. First the properties which are to be copied are selected, and then the target objects.

Each element defines itself whether it has properties which can be copied, and if so which ones. If there are no properties provided for the selected element, the message 'The selected object has no properties which can be copied' appears and the process is terminated.



14.12.1 Selecting Properties

Since each element defines itself which of its properties can be copied, the content of the 'Select Properties' dialog varies. The following illustration shows the properties of a window.

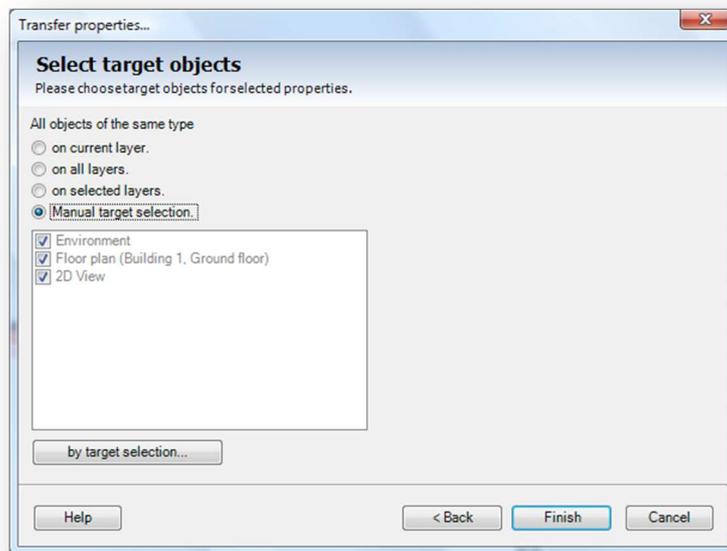


By default all properties are activated. If you wish make a more precise selection you can make use of the usual characteristics of the tree structure. If you wish to copy only the object file, deactivate first the topmost entry 'All Properties', and then subsequently activate only the object file. This way you need only two mouse clicks to select the desired properties, and all other properties do not have to be deactivated individually.

With the 'Continue' button you can proceed to the next step.

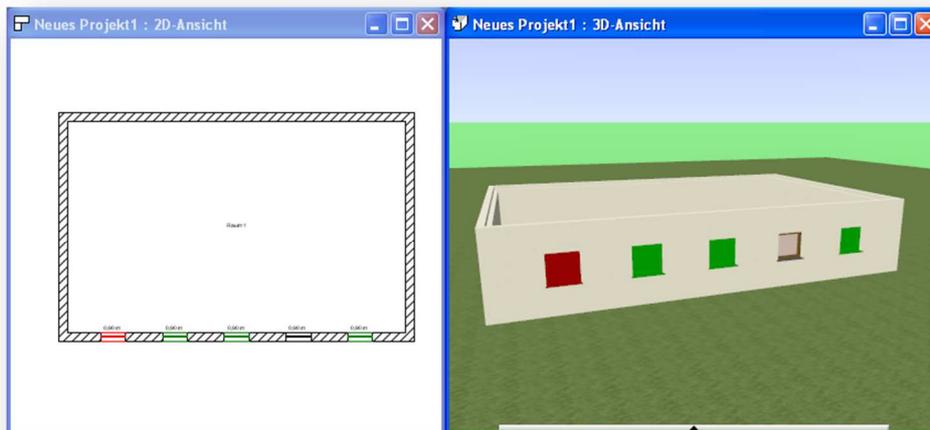
14.12.2 Selecting target Objects.

The choice of objects which are to receive the selected properties, is performed either with reference to one or more layers, or by selecting an individual object manually, if this option is activated, using the 'Manual target selection' button.



14.12.3 Selecting Objects manually

A click on the 'by target selection' button first closes the 'Select target Objects' dialog, in order to show the plan again and to allow access to the individual objects. The objects are then selected with a mouse click. 'Target objects' are highlighted in green in all views. A further mouse click on a selected object revokes its selection.



Manual selection must be terminated with 'Enter'. The previous dialog 'Select target objects' then reappears. The process is terminated with the 'Finish' button and the properties are copied

15 BUILDING COMPONENTS

Most of the Plug-ins components are now supplied as standard features, and are no longer supplied as separate tools. If the version you have lacks the features of one of the plug-ins then you simply upgrade to a version with that plug-in feature. In Most cases it's now more economical to upgrade than it was to purchase the plug-ins separately.

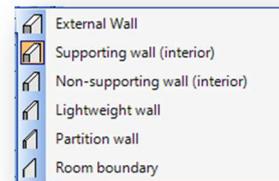
15.1 WALLS

This is applicable to all versions of Visual Building.

15.1.1 Wall Types



The software offers six predefined types of wall, which can be selected for insertion with the respective button.



Basically, walls only differ in the properties assigned to them, generally the thickness. By default, the following values are defined for the thickness of walls:

- External wall: 36.5 cm
- Supporting wall (interior): 17.5 cm
- Non Supporting wall (interior): 11.5 cm
- Lightweight wall: 10 cm
- Partition wall: 10 cm
- Room boundary (without a thickness)

The first 4 wall types can be applied in much the same way, however the last 2 wall types are special types of wall:

Partition Wall

The **Partition wall** should be used in cases where you do not want the wall to create a separate room.

Room Boundary Wall

The **Room boundary** wall is a virtual wall that will divide an area into two rooms, but not display a solid wall, as do the other wall types.

Right clicking on the Room Boundary tool will activate the Room Boundary properties dialog where you can change the line style and colour used in the 2D view to define a room boundary.

In the 3D View the room boundary is shown as an opaque surface. This can be hidden using the 3D view visibility options. Right click in the 3D view and select View – Visibility. Scroll down the tree and in the Construction elements section locate and disable Room Boundary, and it will no longer be visible in the 3D View.

The boundary wall can also be hidden in the 2D view in the same way, but this can lead to difficulties if you forget it's location, so it's advisable to leave it visible in the 2D view.

The Room Boundary wall tool is also a useful tool that allows you to raise the floor section of an area defined by the room boundary. You can achieve this by using the Room Boundary to define a floor section. Then in the new room created with the room boundary activate the Floor properties dialog (right click and select **Properties**). In the tree locate **Floor-General - Layer construction**.

In the **Edit selected layer** section, you can then raise the floor level using the **Thickness** field. The floor level will then raise by the value entered.

15.1.2 Insertion Modes

There are four different ways to insert walls:



Multiple insertions between two points. The input forms a polygon, whereby the end point of one wall represents the start point for the next wall. The tool also allows multiple insertions of individual walls without having to restart it. After creating a wall using a start and end point, you can return with **Esc** to enter a new start point, which does not necessarily have to coincide with the end point of the last wall. Only when **Esc** is pressed twice is the tool finally terminated.



Insertion between two points. Creates a single wall using a start and end point:



Multiple insertion with numerical editing: Polygonal input, which allows numerical editing, after the polygon has been defined and completed with **Esc**,. For further information see the section titled **Input Aids**.

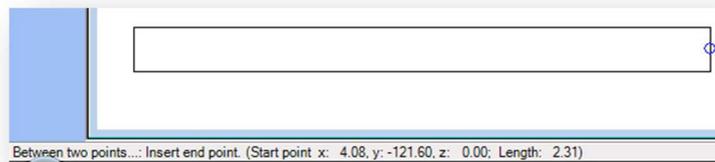


Insertion of a parallel wall: Creates a wall parallel to the face of an existing wall, which must first be selected.

You can create other walls, which differ from the standard types, if you change the properties using the context menu opened with a right mouse click, before the wall is inserted. This saves having to edit the individual elements later.

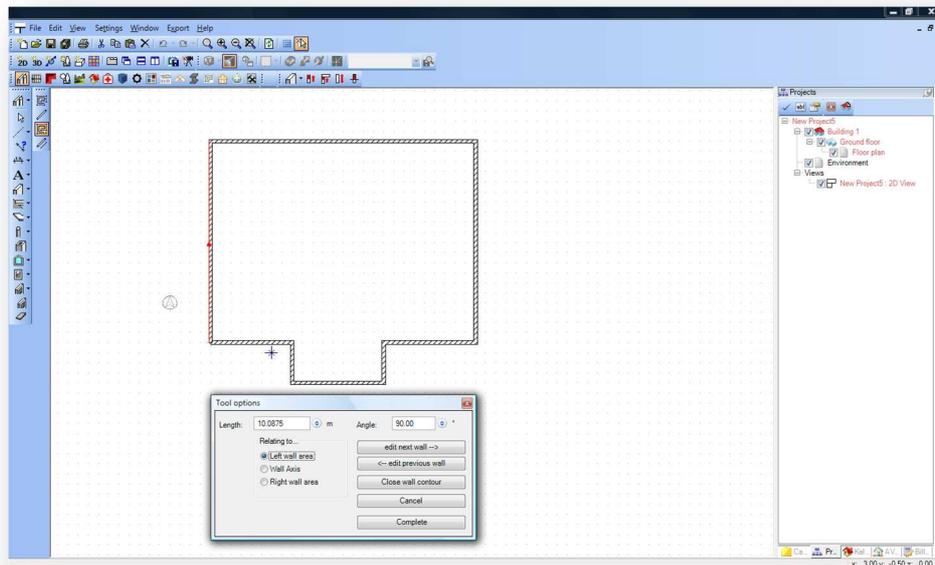
15.1.3 Input Aids

As with all elements, construction aids are available at any time using the context menu. Tips for each tool and the current insertion values, such as length of the wall, are shown in the status bar. Using this information together with 'Ctrl+w' to change the reference points of elements, and aided by the grid or other construction aids, you can for example define exact values for the interior or exterior measurements of the contour of the building.



The option for 'Multiple insertion with numerical editing' also allows numerical input, in particular for the exterior contours of the building. The process consists of the following steps:

- Input of the contours of the building as a polygon with the mouse, without consideration to length and angle of the walls.
- After input has been terminated with **Esc**, numerical values can be specified for the walls. As opposed to the option to create the contours as a closed polygon, the numerical values option does not initially create a room. The room is only created, if the subsequent editing results in a closed contour. Up to this point you only see a kind of preview of the current wall being inserted.
- Each wall which has been created is edited using the tool parameter dialog. In doing so, the software automatically switches to the first wall inserted, and the remaining walls are edited in the order in which they were initially inserted.



When the length of a wall is entered, you can specify for each wall the face to which the measurement refers. The values are set by pressing the Tab key or by clicking on the button 'edit next wall' or 'edit previous wall', to switch to another element. The polygonal outline of the wall then changes automatically, but still only as a preview. You can return to a previous wall at any time and correct its values. A click on 'cancel' deletes all walls and returns to the start of numerical input.

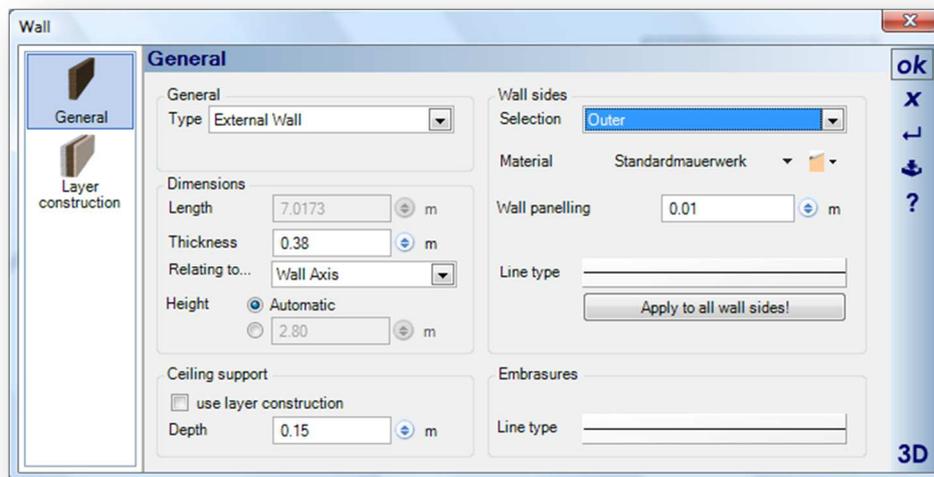
The 'close wall contour' button is only active for the last wall of the polygon and otherwise appears grey. With this button you can automatically connect the end point of the last wall entered with the start point of the first one entered, and thus created a closed outline, without having to worry about the angle and length of the final wall.

All walls are only finally created with the current values, when insertion is terminated with the 'Complete' button, with **Esc** or by terminating the tool parameter dialog.

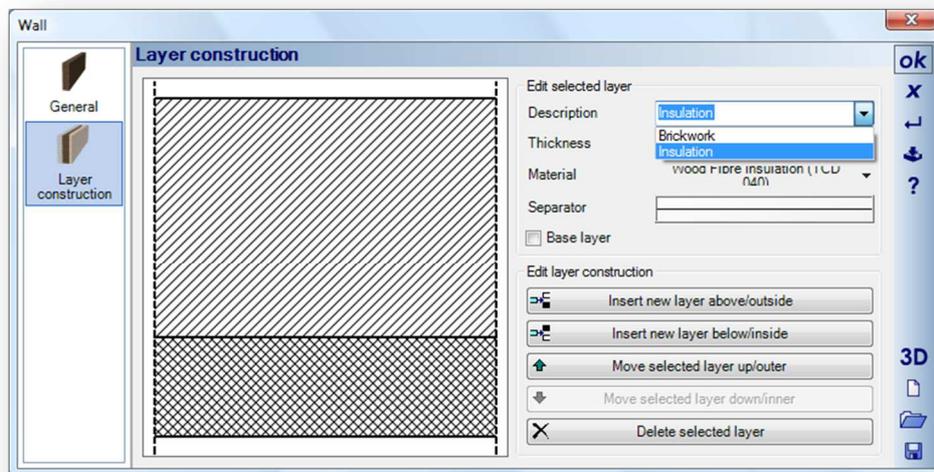
15.1.4 Wall Properties

Walls are by default as high as the floor of the building in which they are inserted. A different value can be specified in the 'Dimensions' part of the dialog.

Each wall has a default value for the depth of the ceiling support that is used when creating ceilings automatically with the exterior contours of the building. The depth of the ceiling support can be manually specified for each wall, or be made dependant on the structure of the wall. With the option for 'use layer construction', the ceiling is generated such that it completely rests on the layer of the wall marked as load-bearing. To generate the ceiling support for multi-layered walls, the thickness of all layers up to the top load-bearing layer are added from bottom to top, in the order defined in the 'Layer construction' dialog.



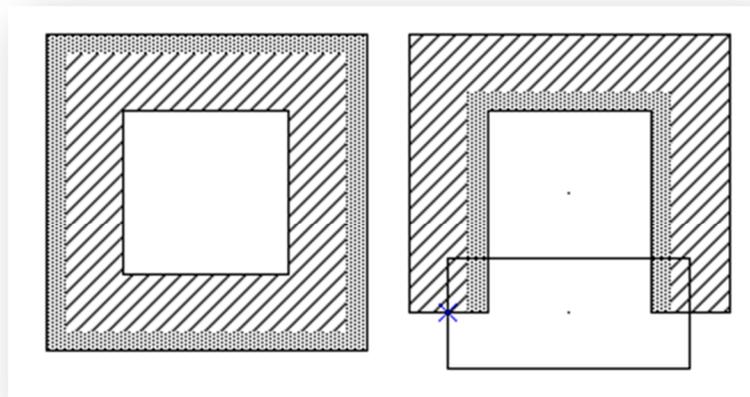
15.1.5 Layer construction / Multi-layer walls



When walls are being inserted, the top layer is always created on the right in the direction of insertion. For walls which do not form or change the contour of a building, the user must therefore decide by the direction of input, on which side the layers should be shown.

If a wall consists of multiple layers, the software proceeds from bottom to top for the layers defined in the 'layer construction' dialog. The top layer is therefore treated as the outside layer of the wall or building. When walls are being inserted, it is not always known in advance whether the individual walls, which create a polygon, form the exterior contour of the building when input is completed, if this is the case, the order of the layers is reversed automatically if necessary.

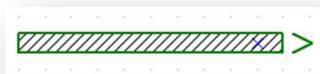
Example: In the following illustration we see a room and to the right of it a further room, which is being inserted as a polygon and which will be completed with the next mouse-click. Both rooms were created in a clockwise direction, therefore we see on the right that the insulation is on the 'inside', i.e. on the right in the direction of input. For the room on the left the insulation is on the 'outside', because if it formed its own exterior contour and the order of the layers in the walls was reversed when the room was completed. The same will happen for the room on the right as soon as input is completed.



15.1.6 Edit walls

Extend / shorten walls

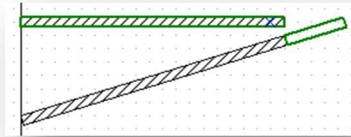
 While the tool is active you can move the cursor in the plan. As soon as a wall is located under the cursor it is outlined in green. The direction in which the wall will be extended depends on the position of the cursor in relation to the midpoint of the wall, and changes if you move the cursor along the wall. With a left mouse click you can now begin to lengthen or also shorten the wall. The current length is shown in the preview in 2D and 3D.



The tool remains active until it is terminated with ESC, so that several walls can be processed in succession.

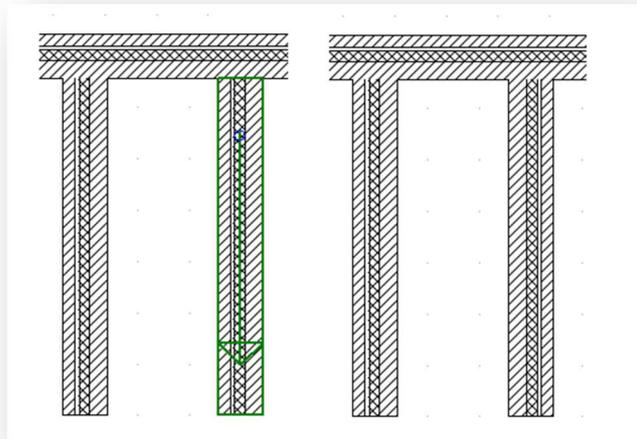
Trim walls

 With this tool only adjoining walls can be trimmed. Firstly move the cursor to the wall to be lengthened or shortened and activate the function with a left mouse click as soon as the wall is outlined in green. Next select the second wall, again by positioning the cursor over it. As soon as a second wall is detected the length of the first wall is shown in the preview, and thus signals that the process can be completed with a left mouse click. The tool remains active until it is terminated with ESC, so that several walls can be processed in succession.



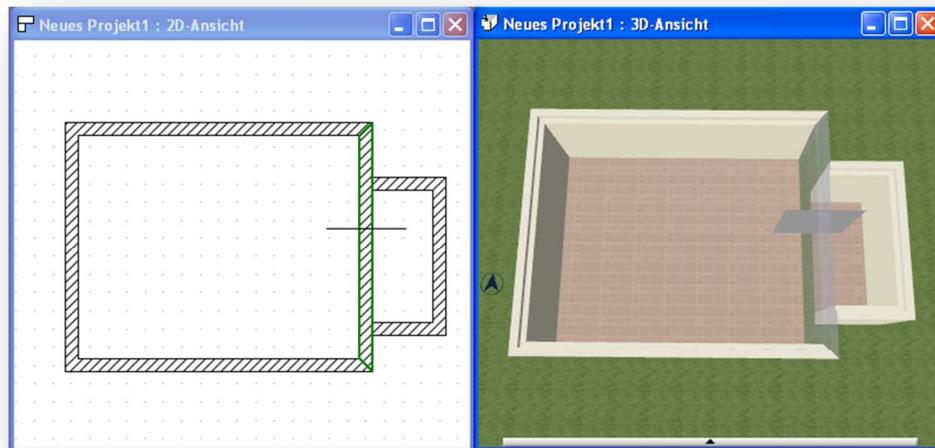
Change wall direction

 Changing the direction of a wall can be of interest for walls with a layered structure. As described in the chapter 'Walls' the representation of the structure of exterior walls depends on the order in which the layers are defined, and of interior walls on their orientation when being inserted. With the tool 'Wall orientation' the orientation of the wall can be subsequently reversed. The following illustration shows on the left two walls which were inserted with the same orientation, the right-hand wall is selected and already outlined in green. The arrow shows the new orientation. The process is completed with a left mouse-click. The result is shown on the right.



Split walls

 In some cases it is more effective to split a wall and then delete parts of it, rather than deleting the complete wall and inserting a new one. While the tool is active walls are outlined in green as soon as the cursor is positioned over them. A line in the 2D and a plane in the 3D preview mark the point at which the wall will be split to create two walls instead of one.

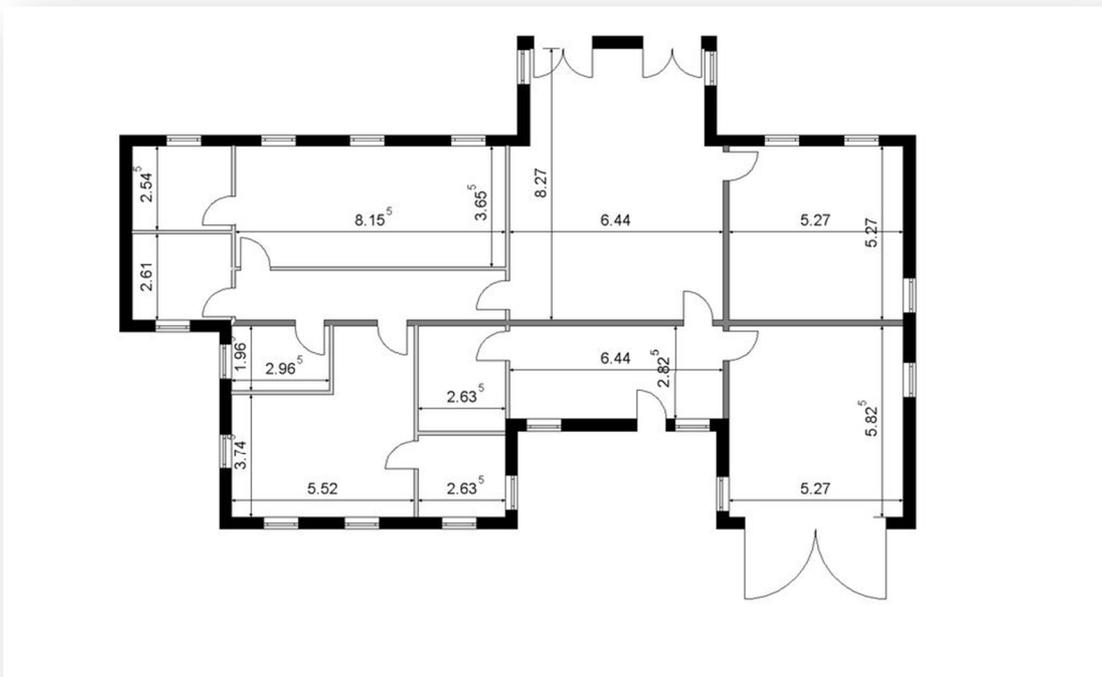
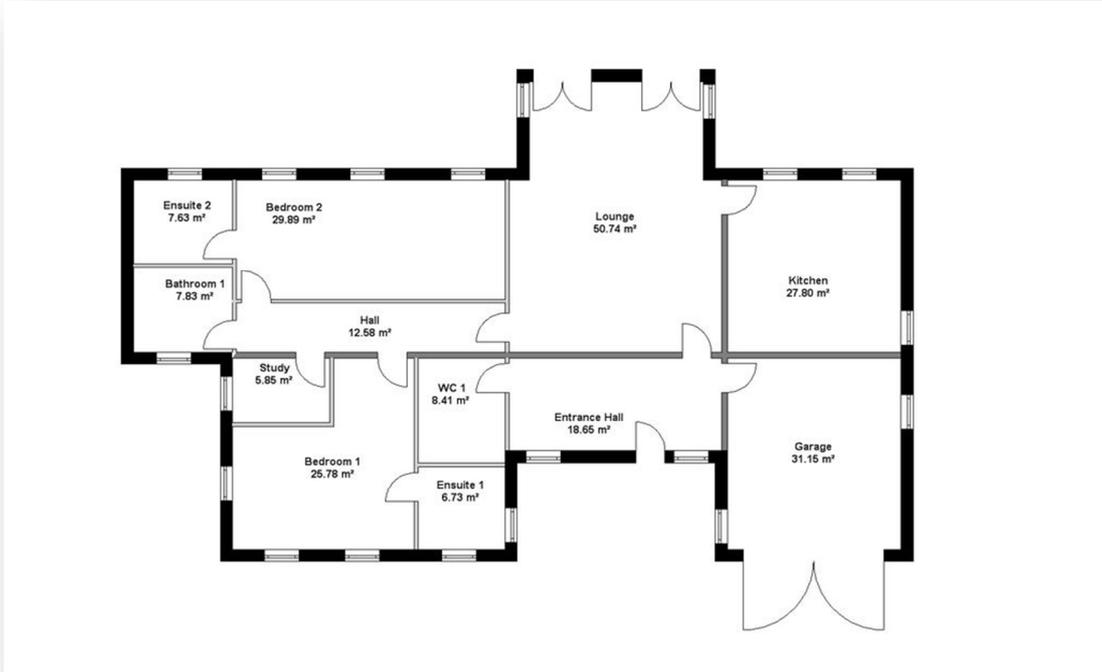


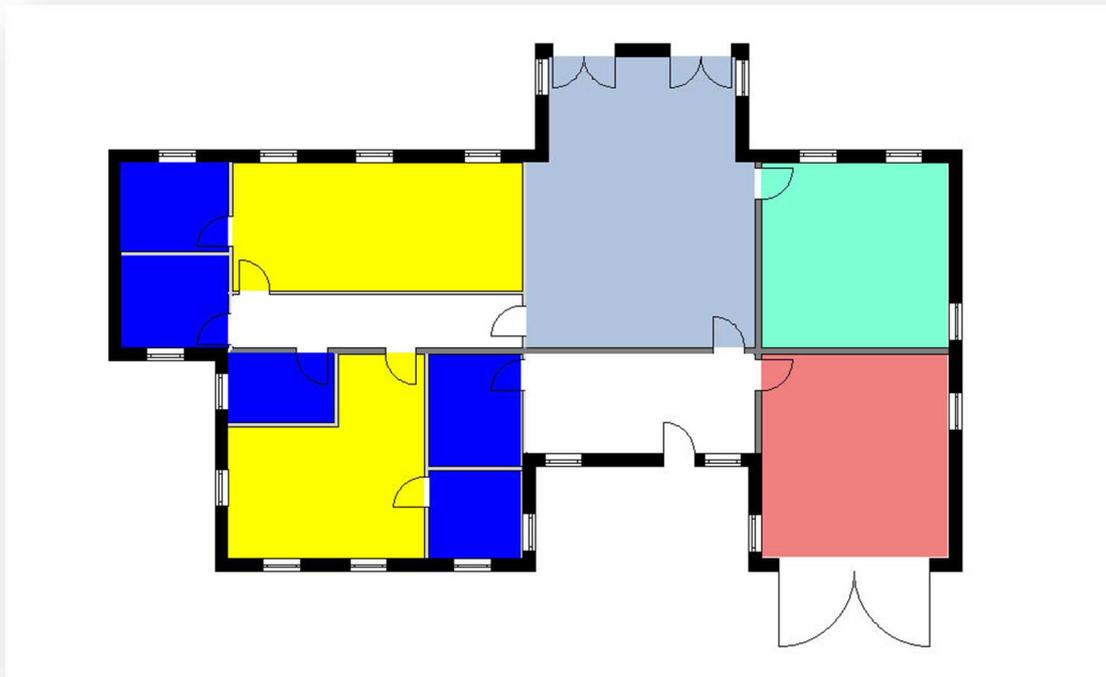
15.2 WALL STYLES FOR ESTATE AGENT USE

An estate agent is unlikely to be interested in showing the wall construction and more interested in the plan presentation, using different wall styles to represent interior and exterior walls.



Some additional floor plan styles that can easily be achieved:





15.2.1 Create External Wall for Floor plan

Select the **External Wall** style as the current wall type.

Right click on the **External Wall** icon to activate the Wall Properties dialog

Set the wall **Thickness** to your desired thickness (eg 0.3m)

Select the **Layer Construction** tab

Delete all the current layers (if any)

Click on the Material button. This activates the **Building Material General** dialog

Select the **2D Display** tab

In the **Fill Style** region select the **Monochrome** radio button

Select the **Fill colour eg Black**

You can make this the default style for this wall type by clicking on the **Save As Default** icon on the right hand side of the dialog.

Click OK to exit the dialog

Click OK to exit the **Layer Construction** Dialog

15.2.2 Create Internal Wall for Floor plan

Repeat the above but using another wall style, eg **Supporting Wall**

Right click on the **Supporting Wall** icon to activate the Wall Properties dialog
Set the wall **Thickness** to your desired thickness (eg 0.1m)
Select the **Layer Construction** tab
Delete all the current layers (if any)
Click on the Material button. This activates the **Building Material General** dialog
Select the **2D Display** tab
In the **Fill Style** region select the **Monochrome** radio button
Select the **Fill colour eg Grey**

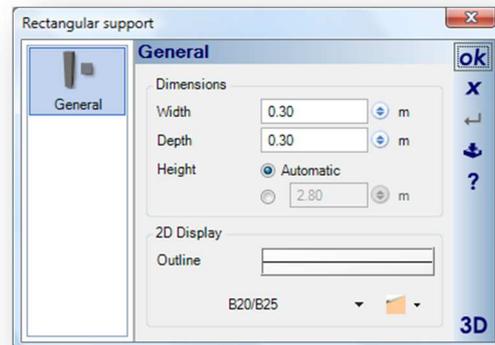
You can make this the default style for this wall type by clicking on the **Save As Default** icon on the right hand side of the dialog.

Click OK to exit the dialog
Click OK to exit the **Layer Construction** Dialog

You can repeat the above for all the wall types, giving you up to 5 different wall styles.

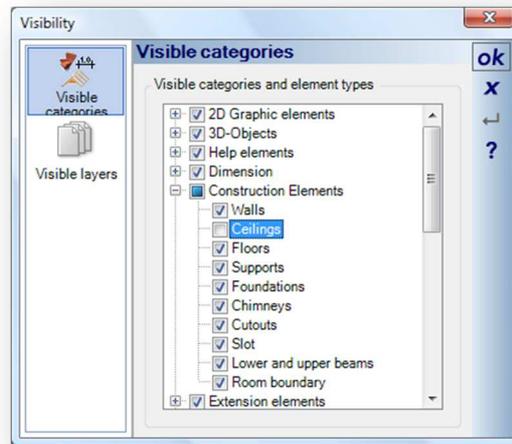
15.3 SUPPORTS

 Supports can have a round or rectangular profile. Both forms can be positioned freely with a mouse click. The dimensions, the representation of the outline and the building material with its characteristics, can be specified in the 'Properties' dialog. Supports assume by default automatically the height of floor of the building and the level of the layer in which they are being inserted.



15.4 CEILINGS

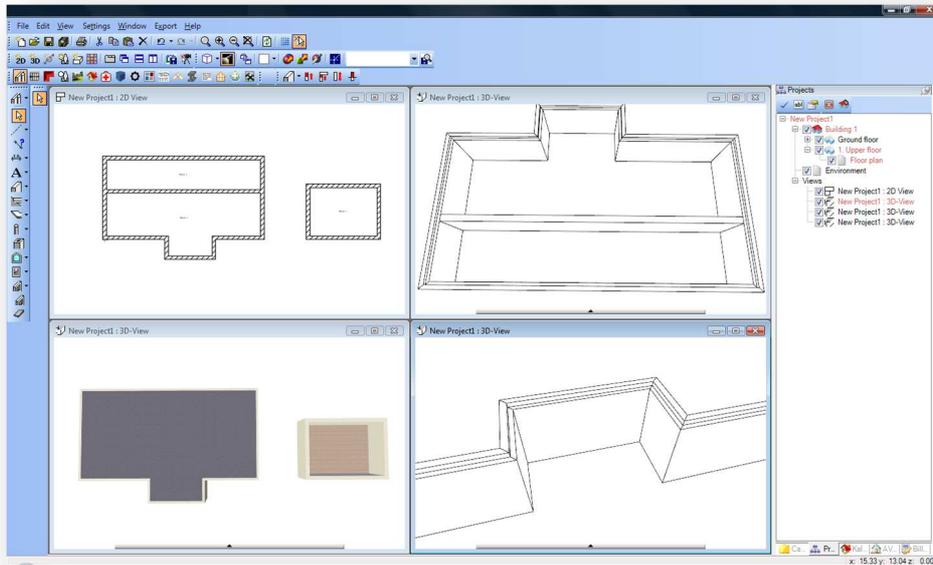
 In 2D plan views and 3D views ceilings are set as invisible by default, in order to be able to see into the rooms in the 3D views. If you therefore wish to see or edit ceilings, activate the 'Visibilities' dialog for the view and check the box for ceilings in the construction elements category.



15.4.1 Automatic Ceilings

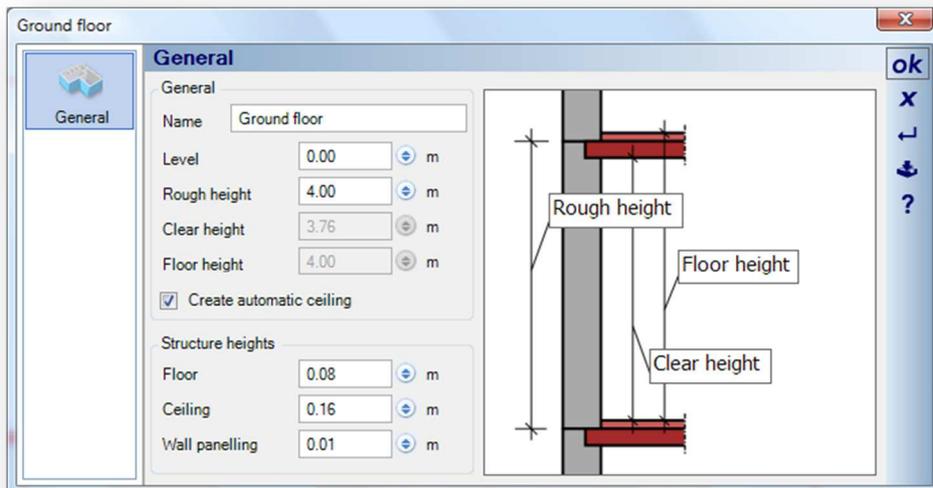
For each floor of the building the software automatically creates a ceiling over the first exterior contour of connected rooms. In the example shown, the software proceeds as follows:

- Room 1 and Room 2 together form a contour; therefore an automatic ceiling is generated for them.
- Room 3 was input later and is not connected to the first contour, therefore it has no ceiling. So if a ceiling is required here, it must be inserted manually.
- The ceilings are visible in the 3D view with textures.
- In the bottom two 3D views the presence of a ceiling can be recognized by the top edge of the walls. The recesses in the top of the walls are caused by the ceiling which they support, and can be specified for each wall in its properties dialog.



15.4.2 Deactivating Automatic Ceilings

In some cases automatic ceilings are not necessary or desirable. Therefore they can be deactivated for a floor in the properties dialog of the particular floor, which can be activated using the project viewer. Additionally, the creation of an automatic ceiling can be suppressed when a floor is copied.

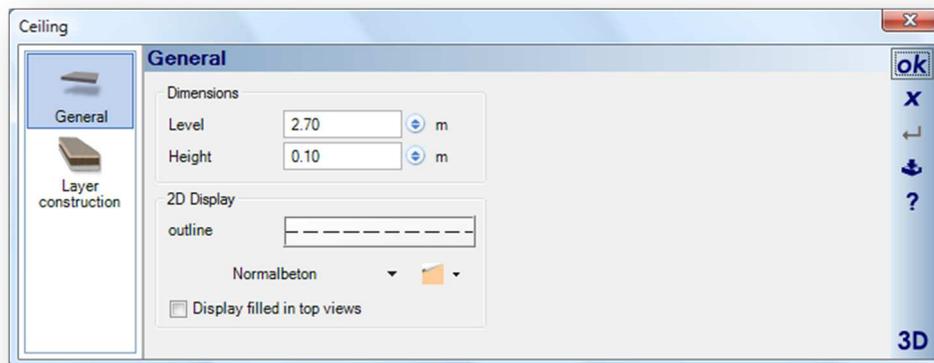


15.4.3 Manual Ceilings

In addition to automatic ceilings, ceiling slabs can also be inserted using a rectangle or polygon. Here it is important to consider the visibility in the corresponding 2D plan view. If ceilings are not set explicitly as visible in the view, ceiling slabs can be inserted but the results will not be shown in the view.

15.4.4 Properties of Ceilings

For the possibilities for defining various structural layers please refer to the chapter titled 'Layer constructions' of Building Components'. Apart from representation and building material, you can only change the height or thickness of ceilings. The ceiling level/height is the result of the height of the floor of the building minus the thickness of the ceiling.



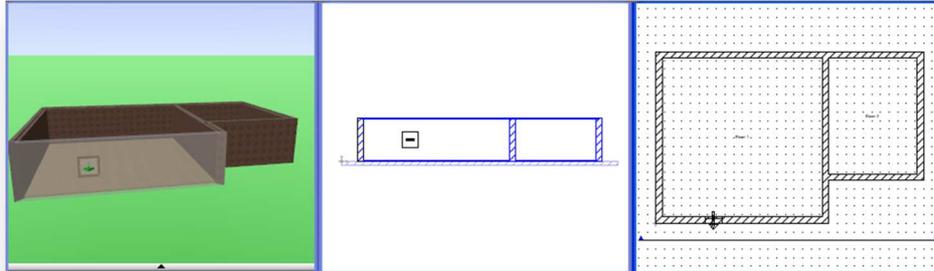
15.5 WINDOWS AND DOORS



There are two types of Windows behind the Window icon: The standard **Window** type and the **Window construction** type. The former standard Window type is supplied to maintain compatibility with older projects. Wherever possible you should always use the **Window construction** type window. This window is more advanced and flexible than the former type. **Window construction** type windows are created using the Windows Construction tool (available with **Visual Building Premium**). The windows created with the Windows Construction tool can be used in all versions of Visual Building.

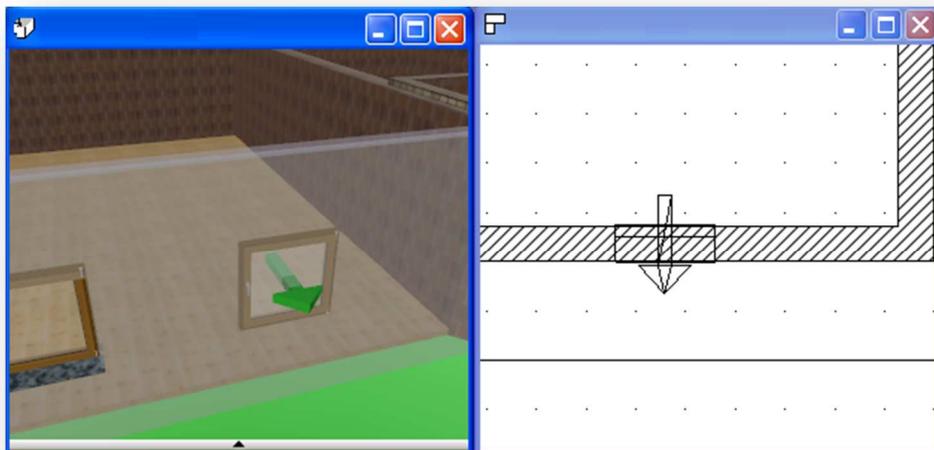
Windows and doors can be positioned freely in all views. On input, their reference points can be changed using 'Ctrl+w', and of course the construction aids can also be used. The software automatically recognizes in views / sections the first visible wall within the depth of the section,

and offers the element for insertion here. In 3D views, the wall in which the window or door is being positioned appears transparent, to allow a view of the rooms and furnishings behind it.



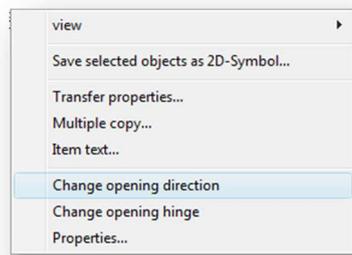
15.5.1 Setting Direction of Opening on Insertion

The direction of opening is indicated by an arrow during insertion in 2D and 3D views. The direction of opening changes in 3D depending on the side of the wall to which the cursor is pointed, and in 2D plan views depending on the position of the cursor in relation to the axis of the wall. In cross-sections the direction of opening does not change on insertion and is always in the direction of the cutting line.



15.5.2 Changing the Direction of Opening

In all views, if a window or door is selected, the direction of opening can be changed using the context menu activated with the right mouse button.



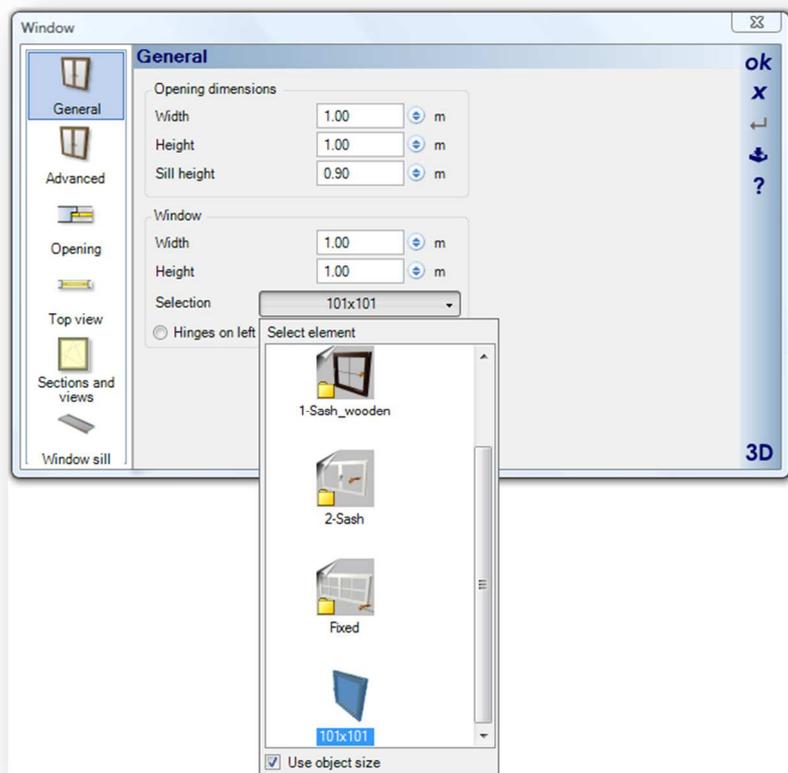
15.5.3 Selecting or Changing Windows and Doors on Insertion

You can position several windows or doors, until the input is terminated with **Esc** key or by using the context menu. It is therefore recommended that on insertion, or before you insert the first of several elements, the correct object with the correct properties is used, to avoid subsequent changes. As with other elements, while the input tool is active the 'Properties' dialog can be opened using 'Properties' in the context menu activated with the right mouse-button.

You can select another object from the catalogue, change its properties, terminate the dialog with **OK** and then continue the insertion procedure.

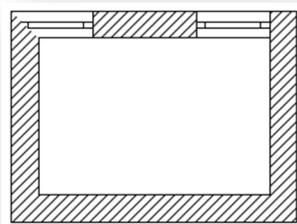
15.5.4 Selecting Windows and Doors from the Catalogue

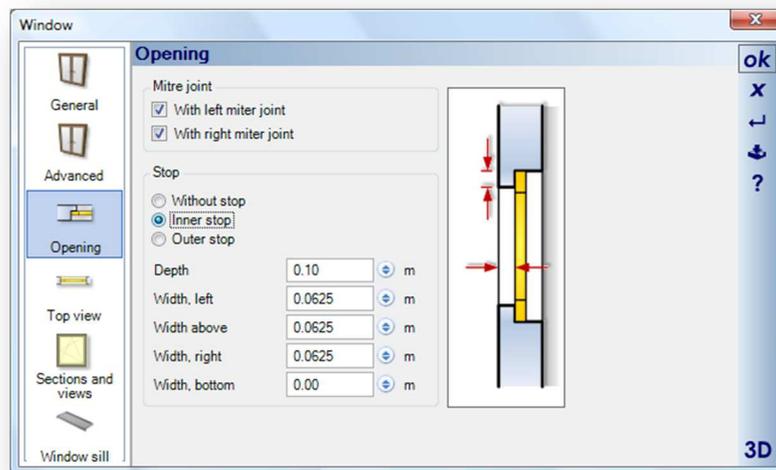
3D objects for windows and doors can be selected directly from the appropriate window or door catalogue. A double mouse click selects an object or switches to a sub-directory. The 'Use object size' option at the bottom of the selection window specifies whether the current values for the dimensions of the opening should be retained, or whether they should be overwritten by the dimensions of the 3D object. If you accept the values of the 3D object, the size of the opening is changed, unless the current opening and the 3D object already have identical values. If instead you retain the values for the current opening, the size of the object is modified to fit the opening.



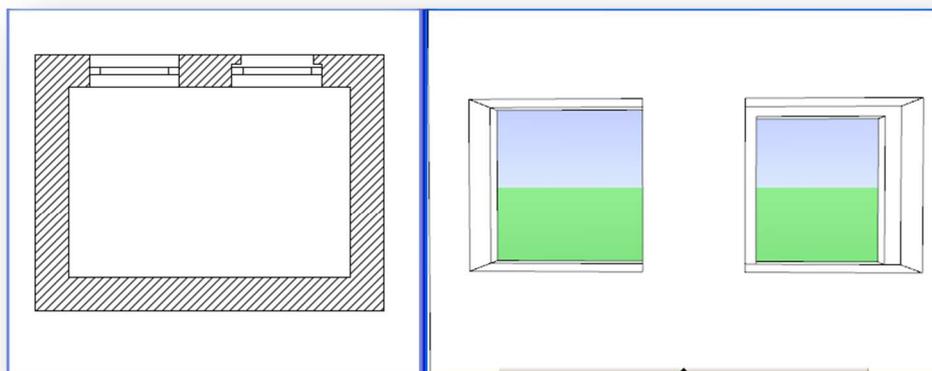
15.5.5 Opening, Hinges

The 'Mitres' part of the dialog enables windows and doors to be placed at the intersection of walls, and to create a corresponding opening there. On the left you see a window where a mitre is allowed, and on the right where one is not allowed.





The 'stop' part of the dialog also changes the settings for the (invisible) 3D body which surrounds the window and is deducted from the 3D body of the wall. The results can not only be seen in the 2D views, but also in 3D. In the 3D view the window objects are set as invisible, so that the stop can be seen.



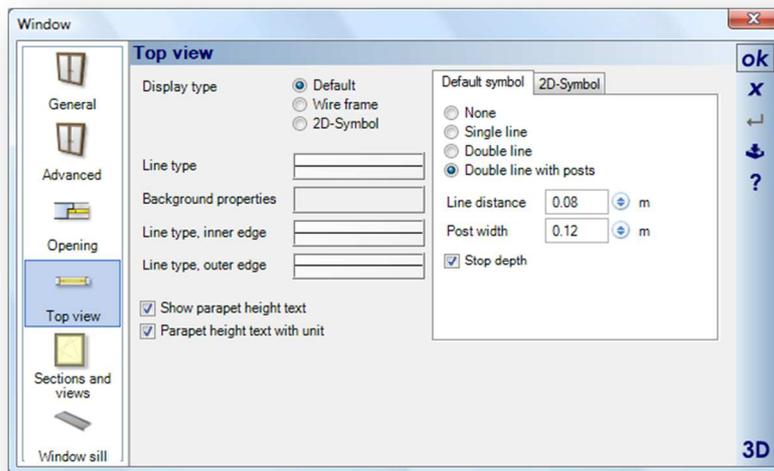
15.5.6 Representation in 2D Plan Views

The options for the representation of windows and doors in 2D plan views may differ in detail, but the basic options are identical. Both objects offer the options 'Standard', 'Wire frame' and 'Symbol file'. For the 'Standard' option you can specify, using the properties available together with line- and fill-in styles, the settings which it uses to draw the alternative representation of the object in the plan.

The 'Wire frame' option provides a wire frame representation of the 3D door or window object, in exactly the same way as for furnishings from the catalogue.

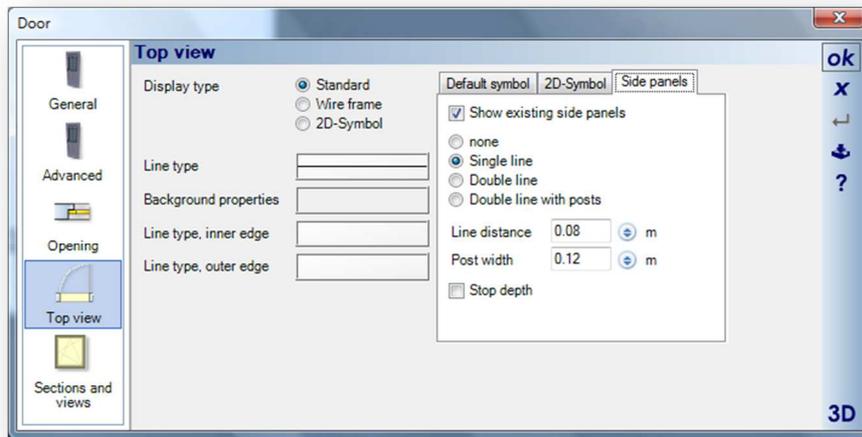
If the 3D object has an integrated symbol file available, which can be allocated using the chunk editor (see chapter 'Alternative 2D Representation of 3D Objects, Chunk Type 2D Alternative Representation'), then this file is used with the specified scaling options.

It should be noted for doors with the representation option set to 'none' that you can no longer select these doors, or see that a door has been selected, in 2D plan views, since the alternative representation of the object, which is normally highlighted in a specified colour on selection, is missing.

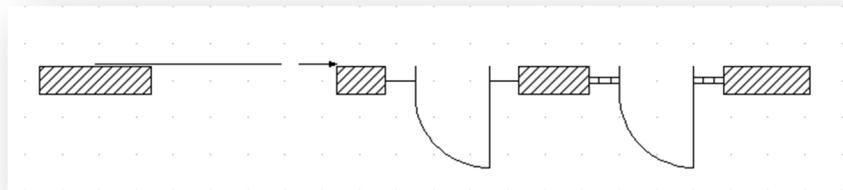


15.5.7 2D Representation of Doors, Side Panels, Folding and Sliding Doors

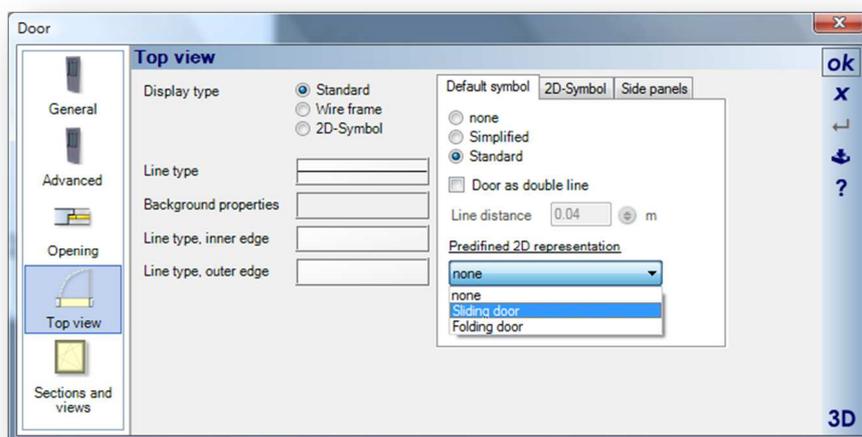
Using the chunk editor, door objects can be allocated additional properties with regard to their representation when used in planning. This includes the allocation of user-drawn 2D symbols, the definition of side panels, and properties for the representation of folding and sliding doors. Further settings for the representation of side panels can be specified using the 'Side panels' tab in the door dialog.



The following illustration shows, from left to right, a sliding door, and a front door with side panels represented by a single line and by a double line with posts.

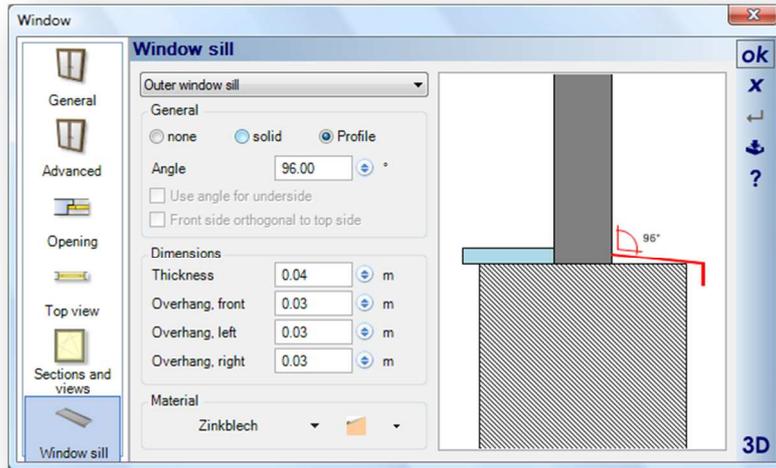


The predefined alternative representations can be used to change the representation from a standard door to a sliding or a folding door.



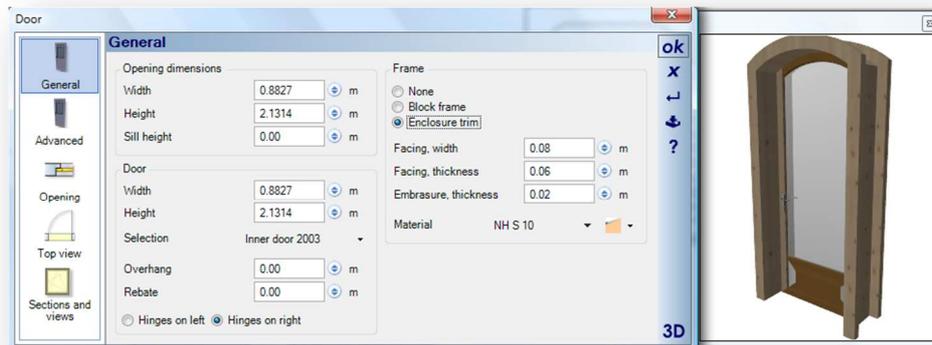
15.5.8 Window Sills

Windows sills are not derived from 3D objects, but are generated by the program itself based on values which are specified in the dialog. This is done separately for exterior and interior sills. In addition to the 3D preview, a drawing shows the profile of the window sill, so that the effects of the values entered can be checked immediately.



15.5.9 Door Frames

As with window sills, door frames are also generated as a 3D model with specified values. For each door leaf object you can create an internally-fitted or closed frame.



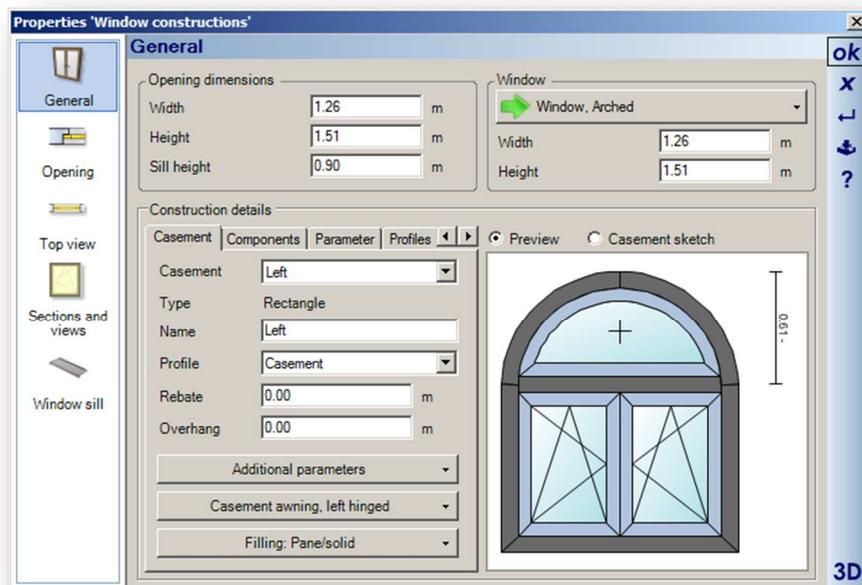
15.6 WINDOW CONSTRUCTIONS

15.6.1 General

 Standard windows have the advantage that they can be entered directly, and since they are predefined 3D objects, no further details need be specified. On the other hand, their dimensions can only be altered realistically within certain limits. If the size of a window selected from the 3D objects is changed, then the object itself, including all sub-objects, is scaled to reflect the new dimensions. For instance, if a window measures 1 x 1 m and its frame is 10 cm wide, then if its dimensions are changed to 2 x 2m the frame is 'widened' to 20 cm.

Window constructions avoid this problem, since all component parts are defined individually and the 3D object for the 'finished' window is automatically reconstructed when any details of the component parts are changed. The 'Window construction' dialog caters for all necessary modifications to windows.

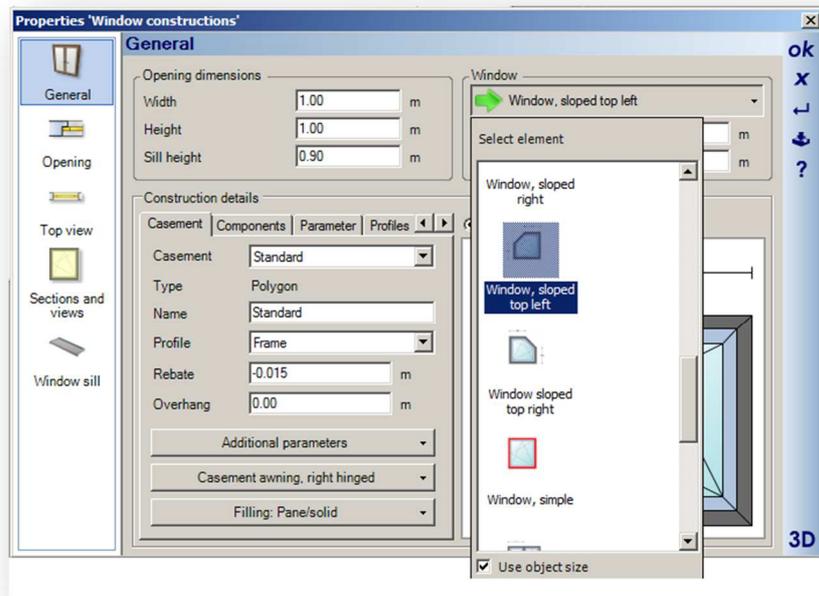
Note: If any of the window construction dialogs contain German text, you need to apply the UK localisation update. This update installs the UK window templates.



15.6.2 Catalogue of Window Constructions

The most common types of window construction required are contained in a catalogue, which can be opened in the 'Window' section, and from which a basic window design can be selected and then modified.

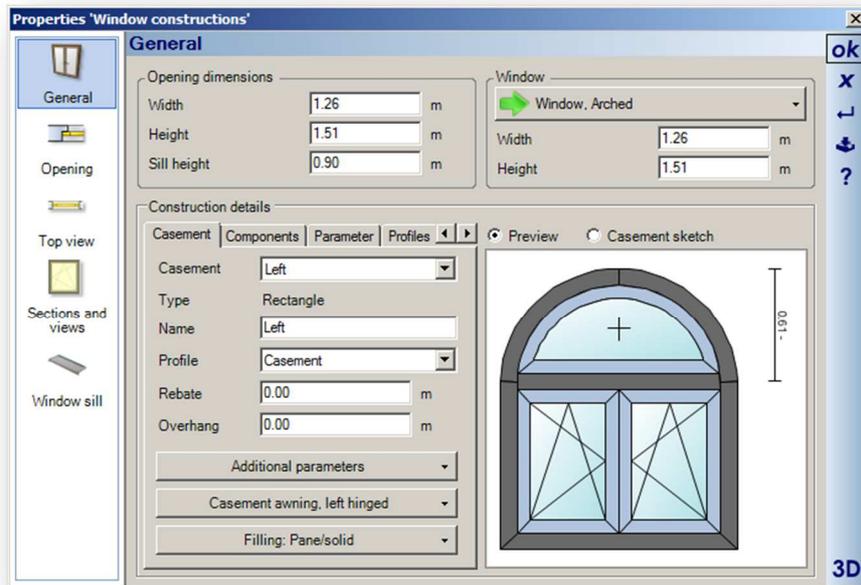
The catalogue itself can be extended with the aid of a separate plug-in that contains functions to enable you to design your own windows.



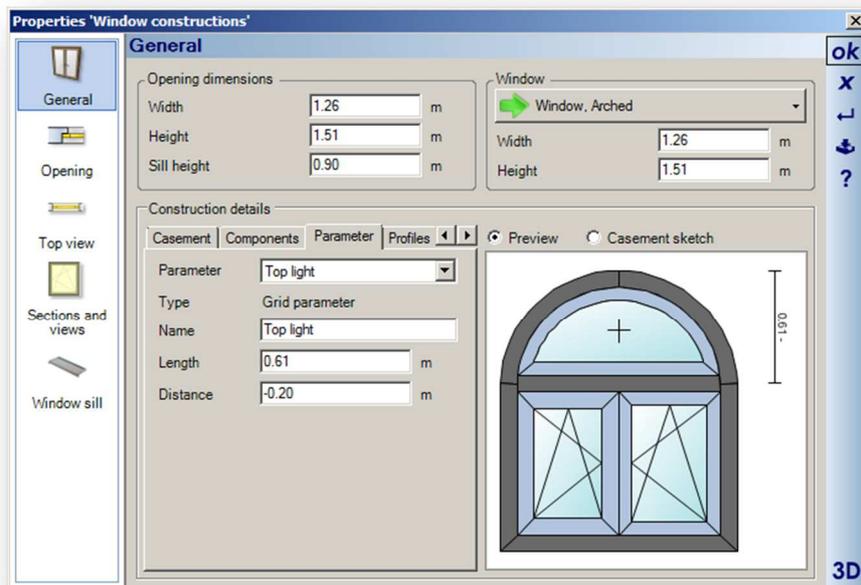
15.6.3 Editing Window Constructions

Window constructions consist of one or more casements. To alter the properties of a casement, first the casement has to be selected. This can be performed with the mouse in the dynamic preview with a click on the desired casement, or by selection from the list in the 'casement' tab.

In the preview the active casement is highlighted in red.

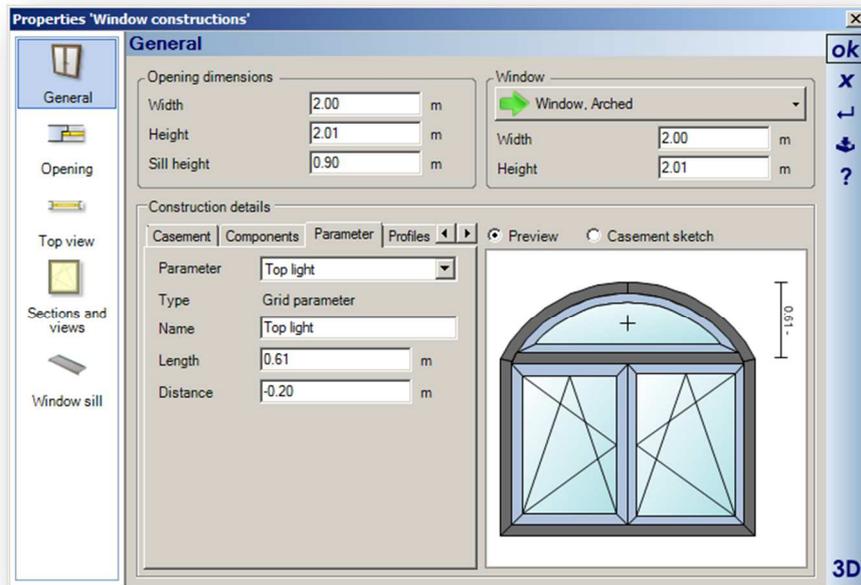


Window constructions can contain one or more additional dimensions, which are shown in the preview. These additional dimensions and the grid dimension can be changed by clicking on the dimension in the preview, or manually switching to the 'Parameter' tab. In the example shown, the only parameter is for the skylight in the arched window, as can be seen in the preview. The 'Length' field specifies the value for the grid dimension, 'Distance' refers to the distance from the window to the measurement line drawn in the preview, and has no relevance for the construction itself.

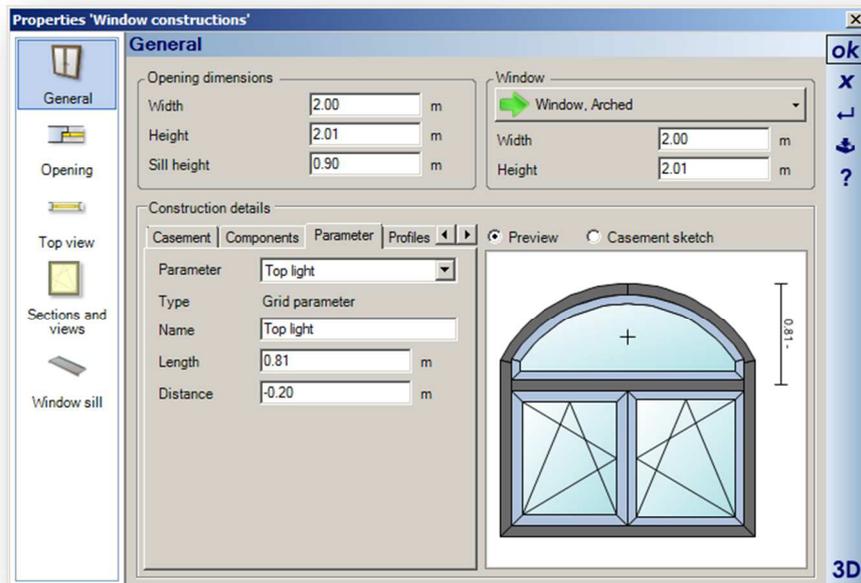


In window constructions there are dependencies between the absolute window dimensions and the additional dimensions and grid dimension. In the example shown, the absolute height of the window is 1,51m and the height of the parametric skylight is 0,61m. The height of the casements below the skylight is calculated automatically and is thus set to 90 cm. The height the casements is automatically recalculated if the absolute height of the window or the height of the skylight is changed.

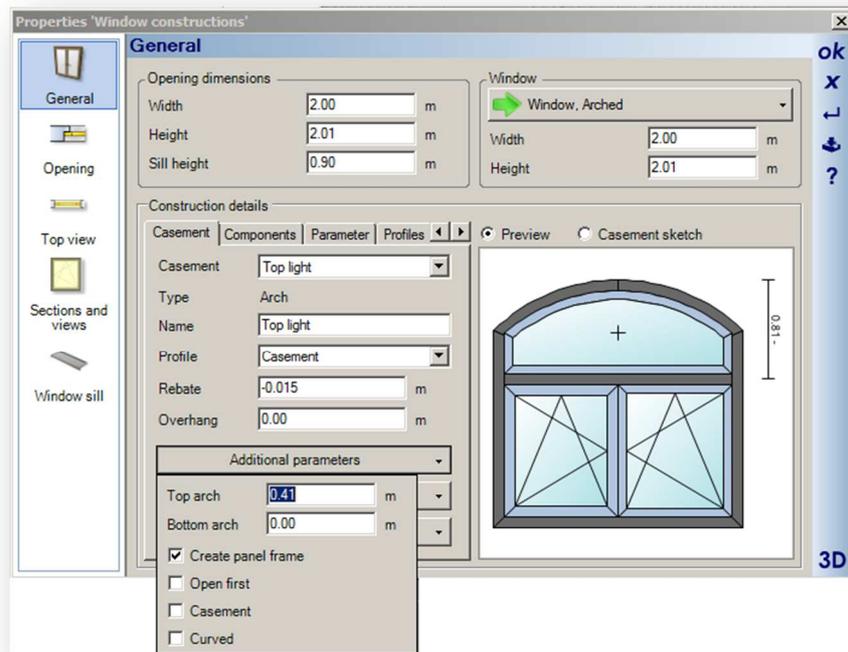
An example: You would like to create a version of the existing arched window which is 2.01 m high and 2 m wide. The overall height of the skylight is to be 81cm, the height of the arch 41cm. First change the absolute dimensions of the window to the values given above. The following result should be seen:



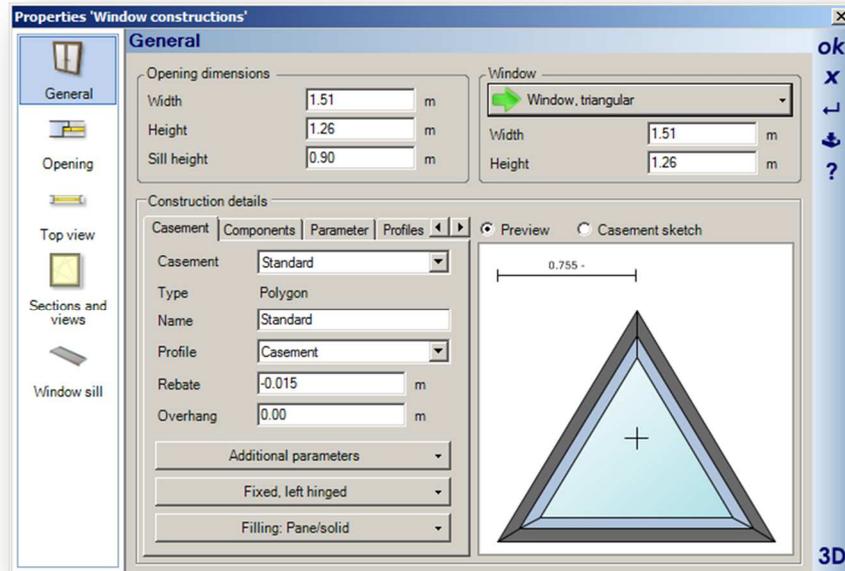
As a result of the changes the casements have now been enlarged accordingly. Only the height of the skylight, which is determined by the additional dimension, remains unchanged. The height of the casements is now automatically 1.40 m. The skylight can now be altered using the additional dimension by clicking on the dimension in the preview and changing the 'Length' value to 0.81 m in the 'Parameter' tab .



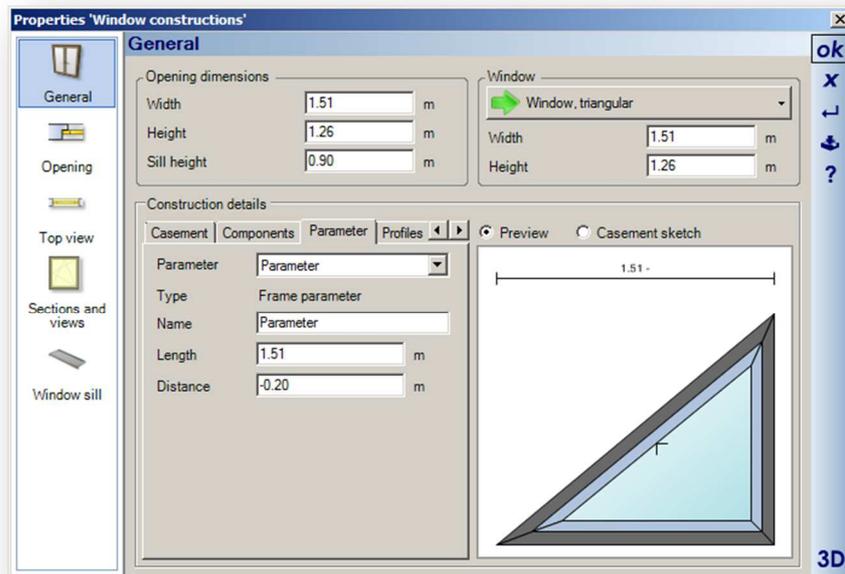
Because of the change made to the additional dimension, the casements are now only 1.20 m high, since the absolute dimensions of the window was left unchanged. Finally, in the example, the height of the arch has to be adjusted, which can be performed in the 'Casement' tab in the section 'Additional parameters'.



With the aid of the additional dimensions, the examples provided can be modified and different versions created. A triangular window, for instance, can be changed from its original form in

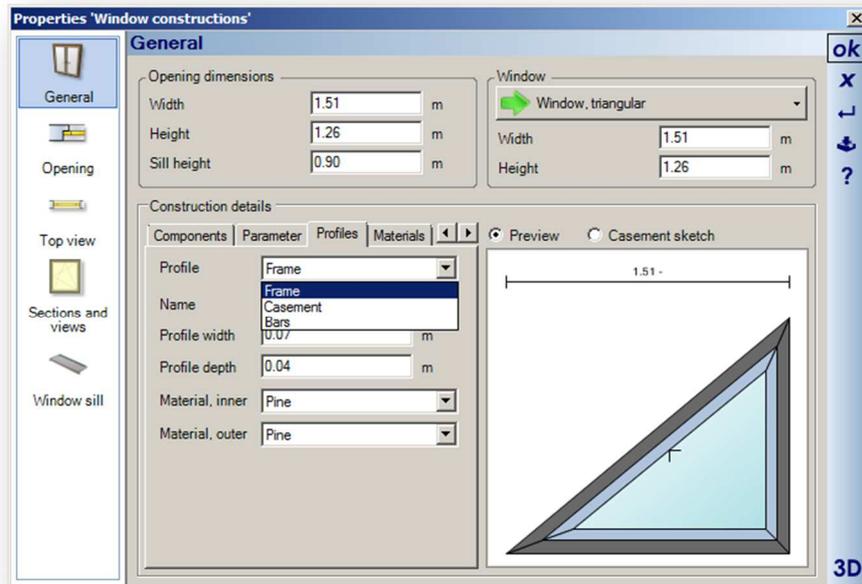


order to fit into the corner of a gable wall, as in the following example:

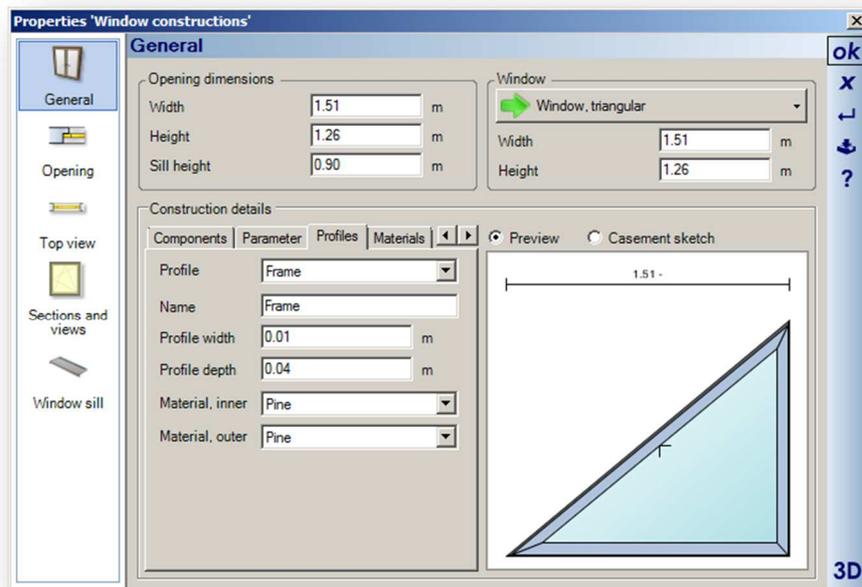


15.6.4 Modifying Profiles

Any window construction can contain one or more profiles, which determine the dimensions of the window frame or the casements' frames. Profiles can be selected in the tab of the same name.



Each profile contains values for width and depth, with which frames and frame components can be modified.

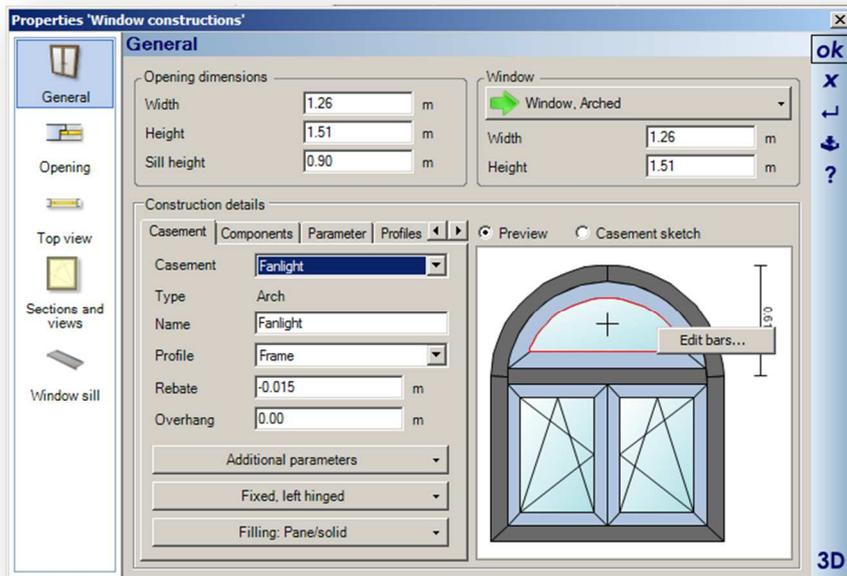


15.6.5 Bars for Window Constructions

The subject 'Bars' can be divided basically into two areas:

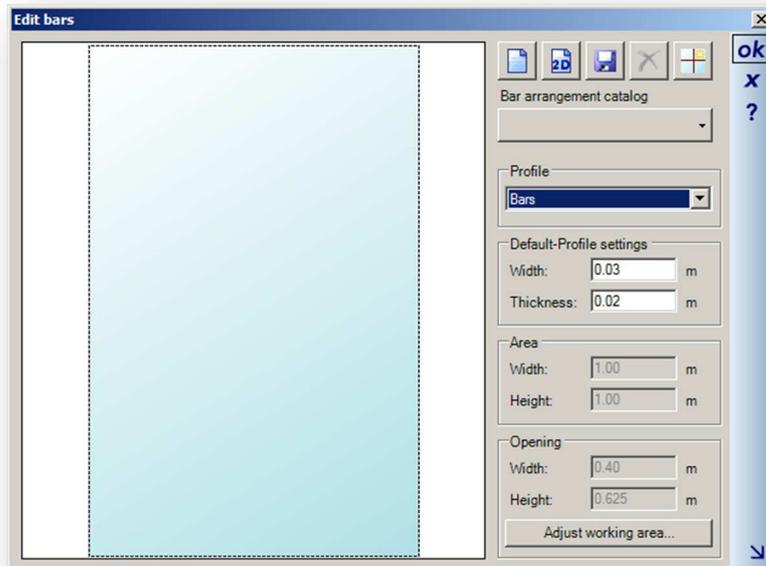
- Creating and saving bars and bar arrangements
- Allocating and using bars

Bars are always allocated to a casement. The allocation is performed in a selected casement using the context menu activated with a right mouse-click.



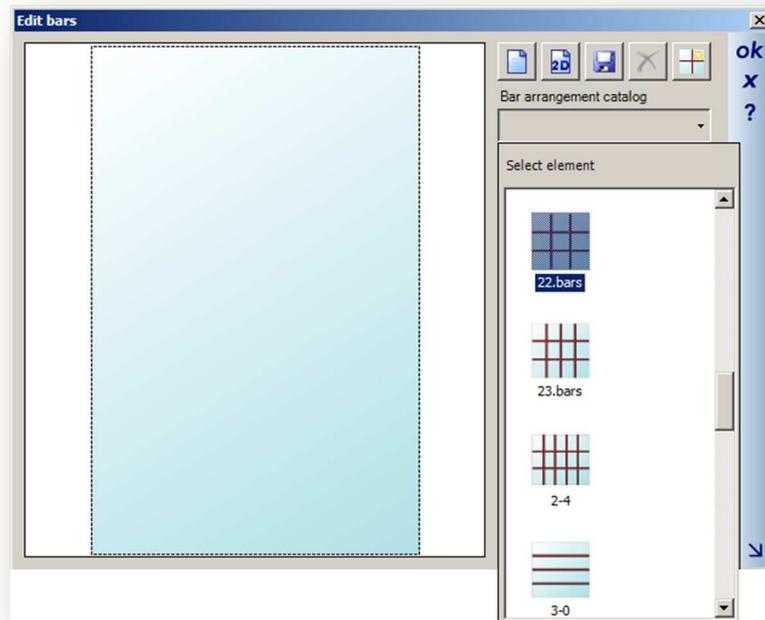
15.6.6 Editing Bars

When the 'Edit Bars' dialog is activated, it first shows a preview of the working area.



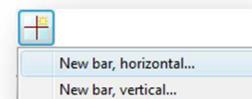
There are three possible ways to create bar arrangements in the working area:

- Load a bar arrangement from the catalogue
- Create a bar arrangement from a 2D symbol
- Enter individual bars



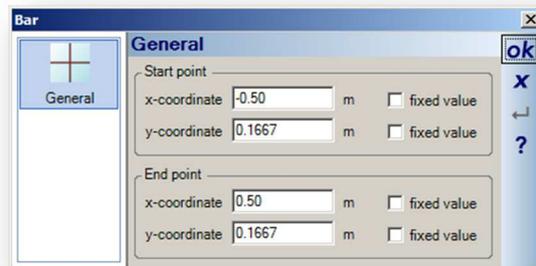
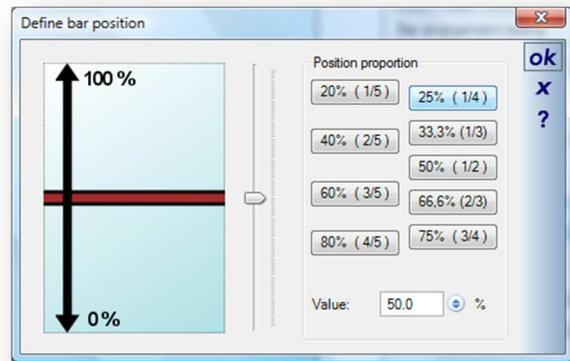
Selection from the catalogue is performed in the same way as for other elements. User-created bar arrangements are also available in the catalogue if they are saved in the directory Installation\AEC\Bars. This can be performed directly in the dialog with the  button.

Single bars can be added using the following button and the corresponding context menu:



Positioning of the bars is performed in the dialog which then appears.

When a bar has been positioned, you can change its position numerically in the following dialog and at the same time specify whether the value is fixed. If a value is not defined as fixed, the position of the bar will change accordingly when the casement size is changed.



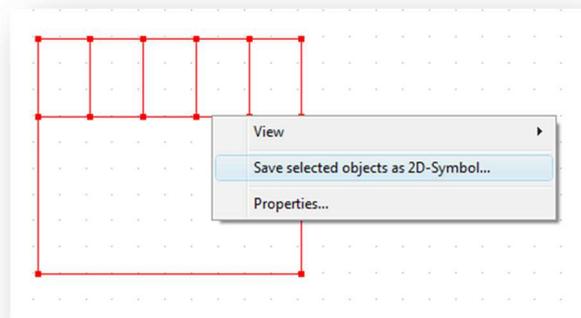
15.6.7 Drawing Bar Arrangements

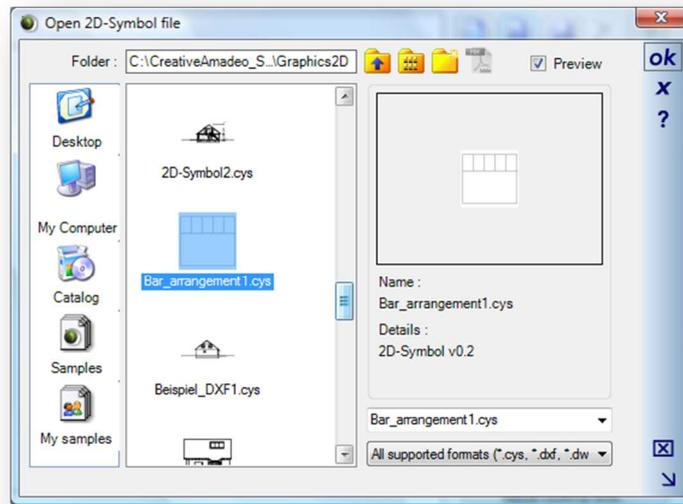
Another way to create bar arrangements is by drawing a 2D symbol using the graphic functions of the 2D graphic plug-in.

First draw a rectangle. Within the rectangle draw the 'bars' as lines. Select the rectangle and lines using a selection frame and save the elements as a 2D symbol in the catalogue.

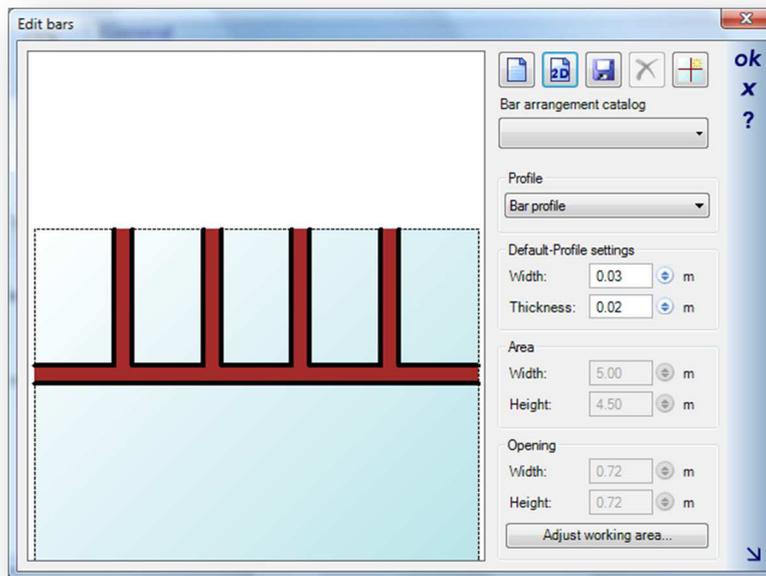
Drawing a bar arrangement and saving it as a 2D symbol:

The 2D symbol drawn can be imported using the '2D' button. The surrounding rectangle is then removed and only the lines will be imported as bars.





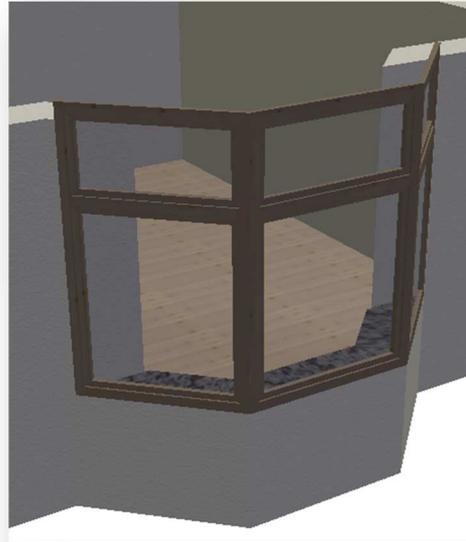
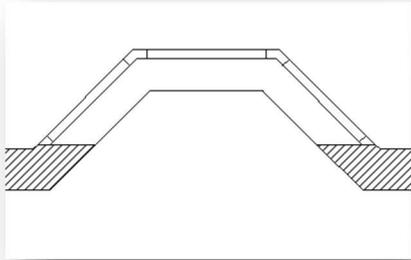
The imported result:



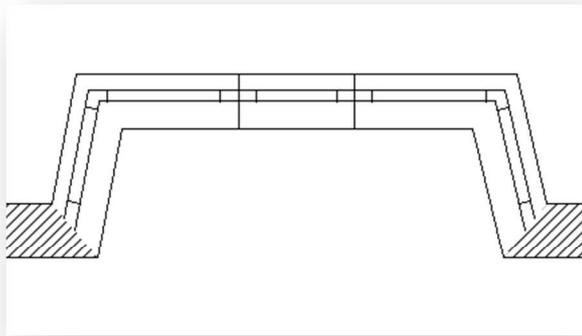
The dimensions of the bars can be modified as usual in the corresponding profile. Every window construction always contains automatically a profile for bars.

15.7 BAY WINDOW

Creating a bay window depends upon how the bay window is constructed. The following bay window consists of a flush window casement.



This is achieved by specifying within the window properties **Without stop** and 0m **stop depth**.



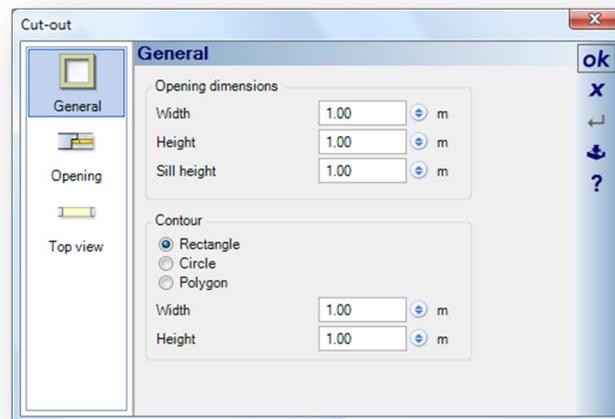
The above bay window has a **Stop depth** of 0.10 m

15.8 OPENINGS

 Openings also known as cut-outs, can be inserted into walls and ceilings. When they are being inserted into ceilings, it should be noted that these elements are by default invisible and must be set as visible before inserting an opening. An attempt to insert an opening in an invisible or non-existent ceiling will, depending on the input tool, either be ignored or a message is displayed indicating that there is no appropriate object at this position into which the opening can be inserted.



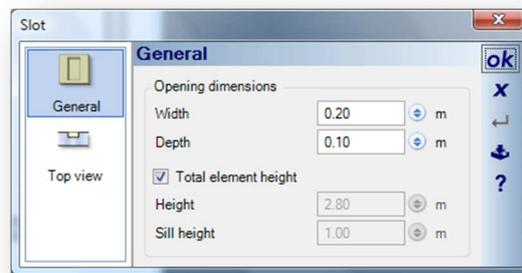
Openings can be created freely or entered using rectangles, circles or polygons. On free input, the opening is defined in the 'Properties' dialog, which is opened using the 'Properties' entry in the context menu activated with the a right mouse click - in this way changes to the opening can also be made during input.



The other types of input are used for walls in cross-sections and views, and for ceiling openings in 2D plan views. In this case the 'Properties' dialog is not available on input, since the dimensions, sill height and contour are already determined by the choice of input tool.

15.9 SLOTS

 Slots are recesses which do not fully penetrate walls to form a opening, unless you specify a depth which exceeds the thickness off the wall. The option for 'Total element height' ensures that on input the slit created assumes the full height of the wall into which it is being inserted. Alternatively, the height and the sill height can be entered manually to create recesses in walls.

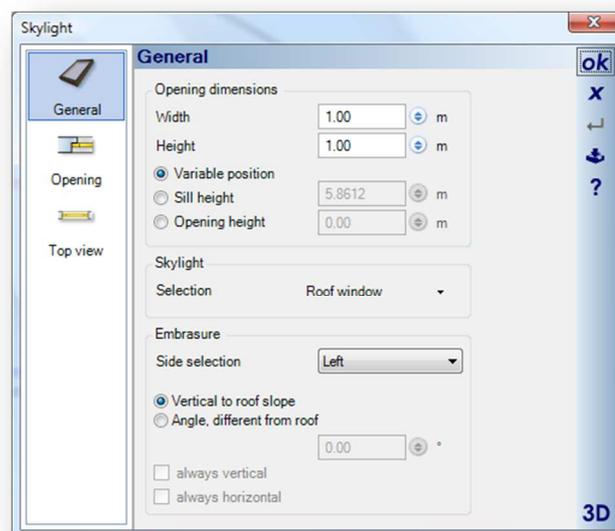


15.10 SKYLIGHTS

 Skylights can be inserted into roof planes in both 2D and in 3D views. On switching roof planes, the skylight is automatically turned to face the outside of the roof if necessary. In 3D views the roof planes, in which the skylight is situated, appear transparent to allow a view of the rooms and the timber construction beneath.

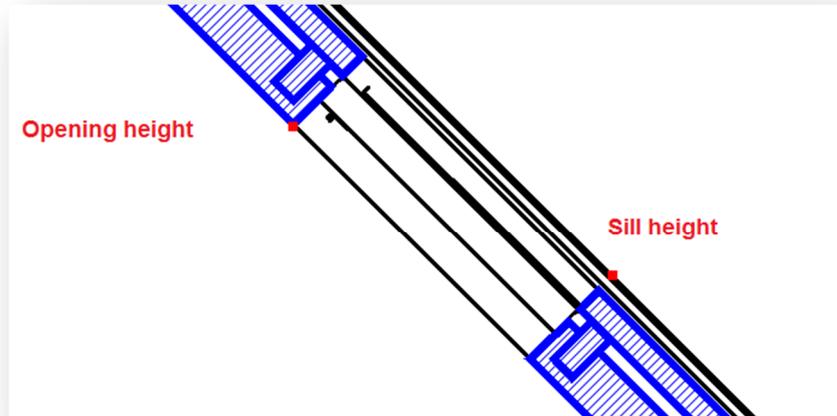
When skylights are inserted, matching openings in the timber construction are created automatically. The dimensions of the timber for the openings are identical to the dimensions of the rafters specified in the 'Roof' dialog.

Skylights can be positioned freely within a roof plane using the mouse. The calculated position of the skylight can be numerically adjusted, with regard to the sill height and the Opening height, in the 'Properties' dialog for the skylight.



The values for sill height and opening height are taken from the deduction body surrounding the skylight, i.e. the invisible body which determines the opening in the roof and roof covering.

The following sketch shows the positions to which the values refer, measured from the top of the ceiling structure.

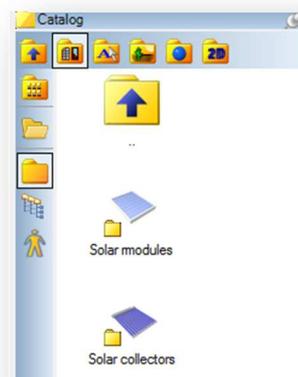


Additionally, the embrasure for each side of the skylight can be specified if it differs from the default setting, which is perpendicular to the slope of the roof. The values for the embrasure also change the deduction body, and the lining of the roof starting from the inside edge of the skylight's 3D object.

15.11 SOLAR ELEMENT

 Solar elements can be placed in or on roofs using the appropriate button, or directly via drag and drop from the catalogue of construction elements.

Solar elements behave in a similar way to windows, but in addition also have options in the properties dialog for roof-mounting or roof integrated mounting. For roof integrated mounting the solar elements create openings in the roofing, but not in the roof paneling.



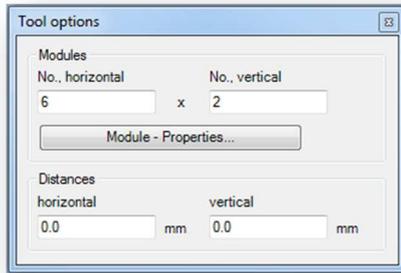
The Solar element tool has two options:

Free position

You can place individual panels anywhere on a roof area.

Insert on Grid

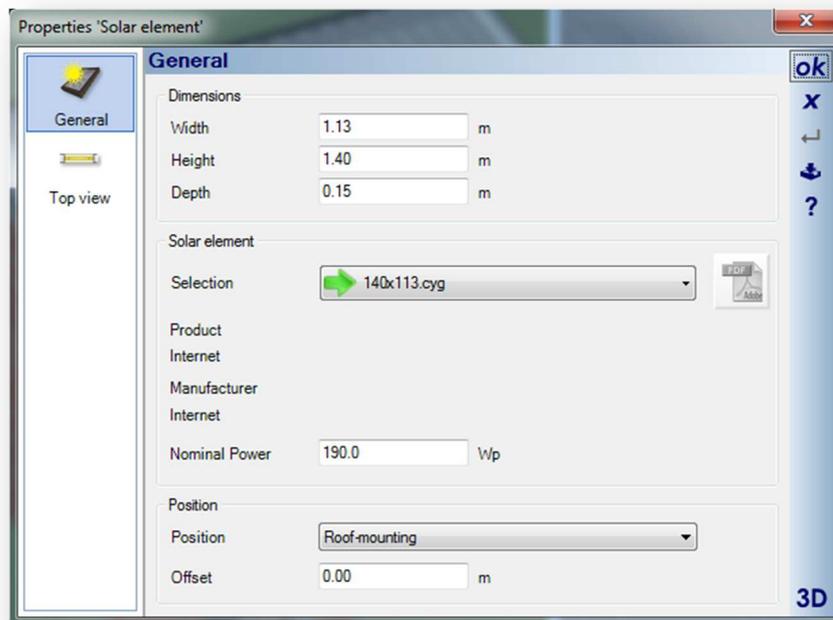
This activates a dialog allowing you to specify a grid array of panels. You can specify the grid size by specifying the number of horizontal and the number of vertical panels.



You can also specify the spacing between the panels.

Clicking on Module Properties will activate the Solar element properties dialog.

You can specify the size of your solar panel or select from a range of predefined sizes from the Solar Panel catalogue.



You can specify the Nominal Power and mounting system.

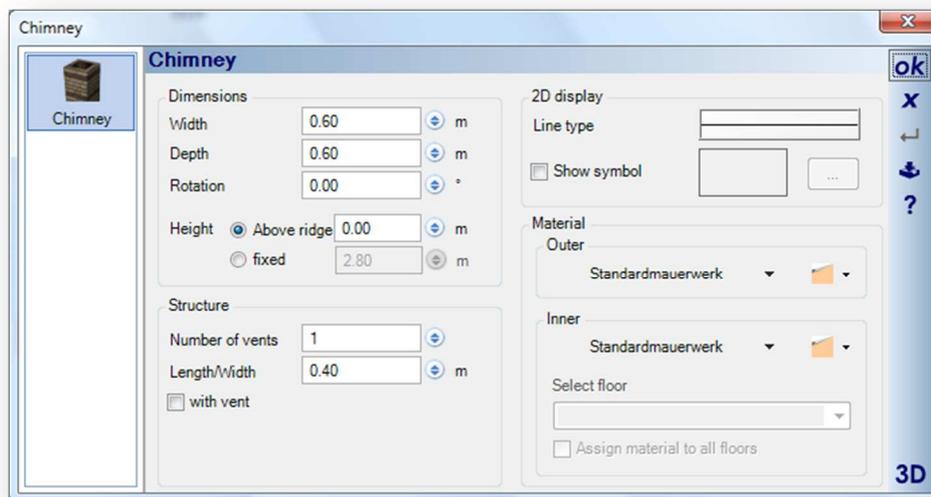
Note: Using normal input, solar elements can only be placed on roof planes. However, if the 'Ctrl' key is kept pressed on drag and drop from the catalogue, the elements are treated as normal 3D objects and can be used anywhere.

Note that this is a basic feature that allows you to place and examine the visual effect of solar panels on a roof.

Version note: Only the **Visual Building Solar Planner add-on** version will use the Nominal Power option to calculate the power generated and **Feed In Tariff (FIT)**

15.12 CHIMNEYS

 Basically, the software assumes that chimneys begin on the floor in which they are inserted and extend upwards through all upper floors and the roof. Therefore, when floors are copied, a new chimney is not created, instead the existing chimney in the floor of origin is extended by the height of the additional floor. A chimney is treated as a single object, but is split into sections, with a section for each floor and a section above the roofing, so that the various sections can be allocated different visualisation materials or textures.



The options for height set either an absolute height in relation to the floor in which the chimney is situated, or a relative height above the highest ridge of the roof defined for the current building. If a roof has several ridges and you do not want the highest one to determine the height of the chimney, then an absolute height has to be specified. Under structure you can specify the number and the dimensions of the vents, as well as an option for ventilation. Here it is important that the absolute dimensions of the chimney match the number and the length of the vents.

The 2D representation of the chimney in 2D plan views depends by default on the shape of the 3D model. Other representations can be allocated using 2D symbols from the catalogue. A representation using a symbol file is automatically scaled to match the absolute dimensions of the chimney.

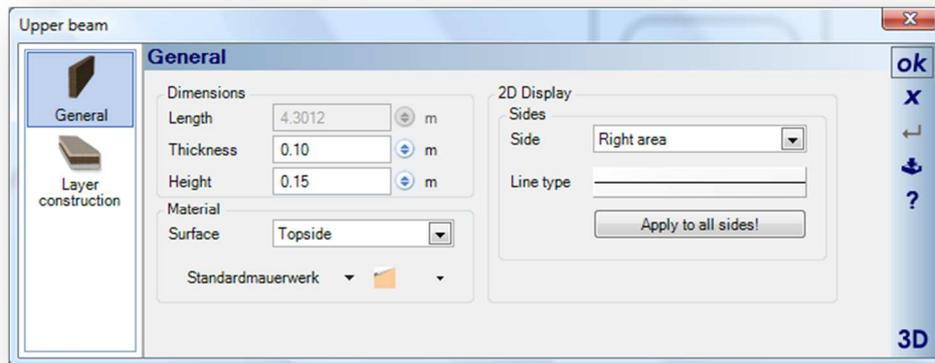
15.13 BEAMS – LOWER/UPPER BEAMS



Beams above or below a ceiling behave on input similar to walls, i.e. they join up on input, and can be inserted as a polygon or individually between two points.

Beams below a ceiling are automatically placed on the underside of the ceiling, whereas beams above are placed on the ceiling structure and modify the floor of the room.

Their properties are also similar to those of walls, so refer to those chapters for further options if necessary.



16 ROOF-CONSTRUCTION

This was originally the Roof construction plug-in and is now a standard feature to all versions of Visual Building. However some of the more advanced features are limited to the Visual Building Premium version.

16.1 ROOFS

16.1.1 Inserting Roofs

There are three different ways to insert roofs:

Insert Rectangular Roof

Input is performed by drawing a rectangle. The first click defines the first corner of the rectangle and the second click will define the opposite corner. A rectangle is displayed and at the same time the rectangle dimensions are displayed in the status bar at the bottom left of the screen. If the grid is enabled, your rectangle will snap to the grid. If there are guidelines, the rectangle will snap to the guidelines (if enabled within the snap properties). The rectangle will also snap to other objects such as walls.

On the second click the Roof Construction properties dialog will activate.

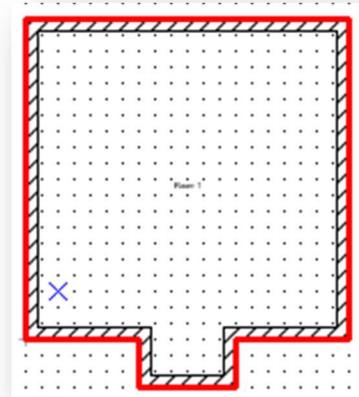
Insert Roof on polygonal contour

Input is performed using a polygon and is terminated with pressing the 'Enter' key, or using the entry 'Complete with Enter' in the context menu activated with a right mouse click. The polygon is then automatically closed, i.e. the last point is connected to the first. On input, each point of the polygon defines a roof plane, whereby points on the same line are merged together.

On completion of the polygon the Roof Construction properties dialog will activate.

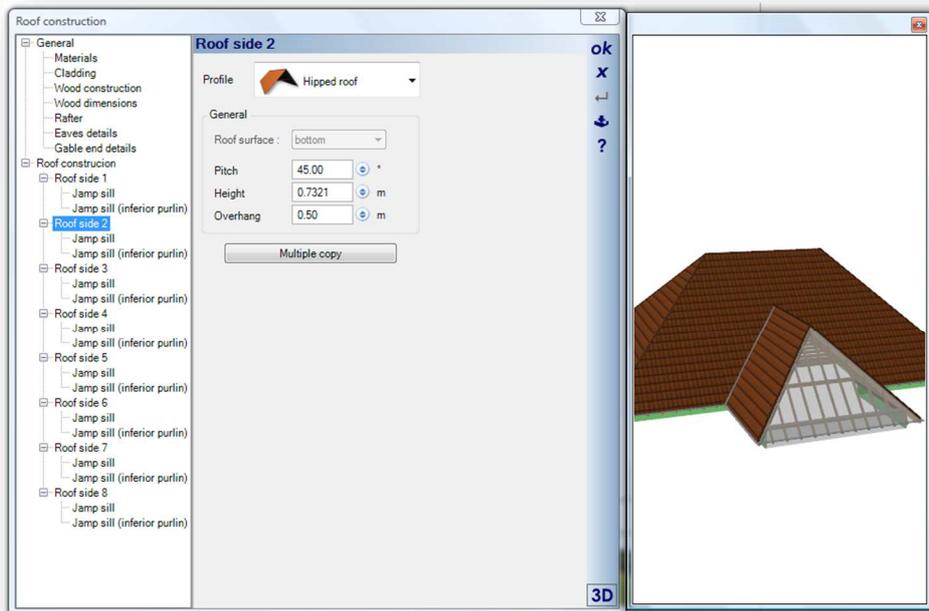
Insert Roof on selected contour

Input is performed by moving the cursor over the 2D plan of the building for which a roof is to be created. The exterior contour of the building is recognized automatically and highlighted. A left mouse click terminates input and the Roof Construction properties dialog will activate.

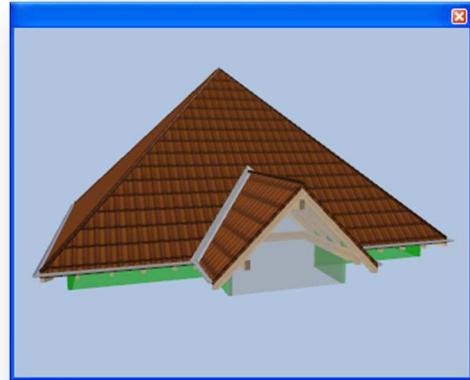


16.1.2 The Roof Construction Dialog

The dialog consists of a tree structure for each of the sections named 'General', and 'Roof structure', under which you can specify settings for the individual roof planes. Changes under 'General' apply to the roof as a whole. Also for each point the 'Properties' dialog is available, and on the right a 3D preview can be optionally displayed, which has special features in the roof dialog. Roof planes can be selected either using the tree structure or with a mouse click in the 3D preview, whereby the entry in the tree is then highlighted in blue and the roofing of the active roof plane becomes transparent in the preview.



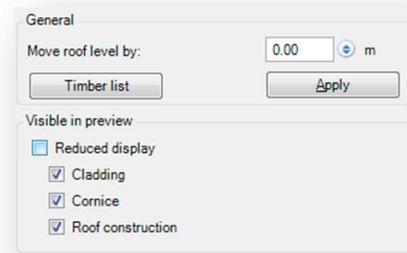
The green areas below the roof are a schematic representation of the walls, which form the contour of the building. They serve in particular to select the sides of the roof on which there are no further roof planes because of the type of profile, e.g. gable. A roof plane in the 3D preview can be selected either by a mouse click on the roof plane itself, or by a mouse click on the part of the schematic contour below it.



General

The 'Roof construction' dialog always starts with the 'General' section. Here the height of the complete roof can be adjusted, without having to edit each individual roof plane. A value for the adjustment relative to the lower edge of the rafters can be entered and the roof adjusted with a click on the 'Apply' button.

The options for 'Visible in Preview' change the representation of the roof, and have an effect on the speed of calculation of roofs with a large number of roof planes. Each change in the 'Roof construction' dialog results in a complete recalculation of the whole roof and its 3D preview. If you do without certain details in the representation, such as the ridge, valley gutters, guttering and cornices, the time required to calculate the roof is reduced. The 'reduced display' option is automatically activated when the dialog is opened for a roof with more than 10 roof planes.



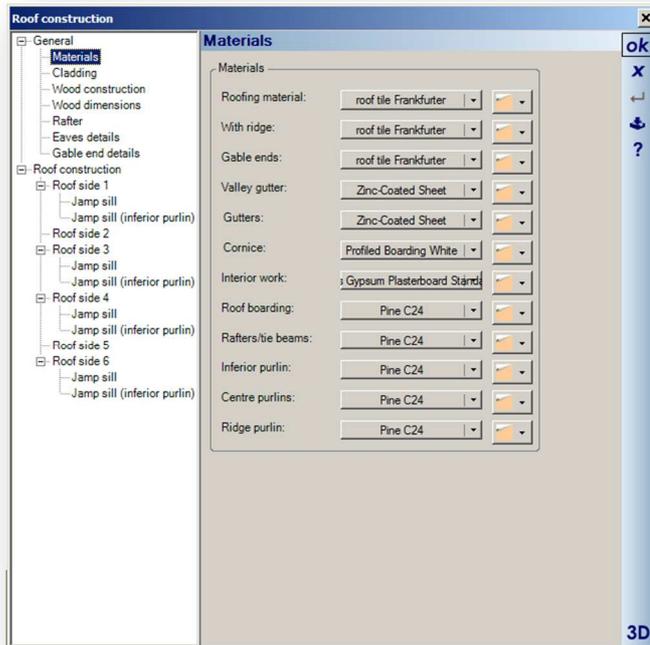
The 'Timber list' dialog provides a summary of the amount, dimensions, lengths and volume of the timber required to construct the current roof. The timber list can be exported in various formats, e.g. PDF, RTF, or Excel, using the 'Export>Reports/ >Timber list' menu, independent of the dialog.

Pos	Bezeichnung	Anzahl	Breite[...]	Dicke[...]	Länge[m]	L-Gesamt[m]	Oberfläche[m2]	Volumen[m3]
1	Fußpfette	4	12	22	9,6	38,4	26,32	1,014
2	Mittelpfette	4	22	28	5,26	21,04	21,53	1,296
3	Fußpfette	2	12	22	1,5	3	2,15	0,079
4	Firspfette	1	12	22	1,7	1,7	1,21	0,045
5	Fußpfette	1	12	22	2,6	2,6	1,82	0,069
6	Gratsparren	4	12	24	9,58	38,32	27,83	1,104
7	Kehlsparren	1	12	24	3,67	3,67	2,7	0,106
8	Kehlsparren	1	12	20,5	3,62	3,62	2,4	0,089
9	Gratsparren	2	12	24	3,57	7,14	5,26	0,206
10	Sparren	10	8	16	1,11	11,1	5,56	0,142
11	Sparren	10	8	16	2,13	21,3	10,5	0,273
12	Sparren	8	8	16	3,16	25,28	12,34	0,324
13	Sparren	8	8	16	4,19	33,52	16,29	0,429
14	Sparren	6	8	16	5,22	31,32	15,18	0,401
15	Sparren	6	8	16	6,24	37,44	18,14	0,48
16	Sparren	6	8	16	7,27	43,62	21,1	0,558
17	Sparren	6	8	16	4,98	29,88	14,5	0,383
18	Sparren	2	8	16	2	4	1,97	0,051
19	Sparren	4	8	16	1,04	4,16	2,1	0,053
20	Sparren	2	8	16	1,92	3,84	1,89	0,049
21	Sparren	1	8	16	2,84	2,84	1,39	0,036
	GESAMT					367,79	212,18	7,187

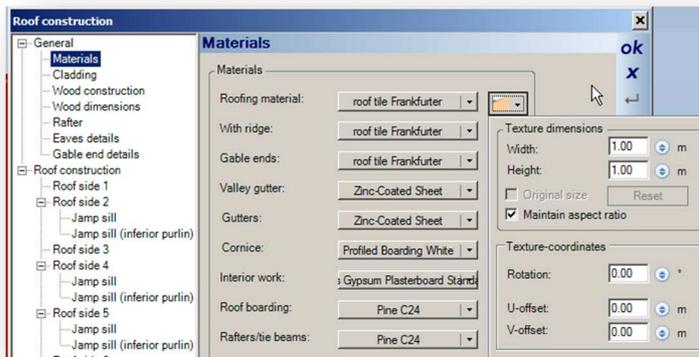
Please note that this report is only an estimation of timber quantity and sizes and should be checked if used for the basis of any quantity or costing calculations.

Materials

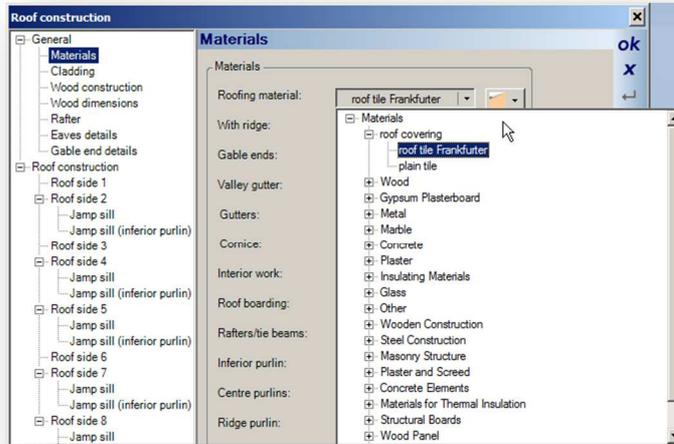
Under 'Materials', you can select the desired building material for each component of the roof, and modify it to meet your requirements as regards 2D and 3D representation, and texture coordinates. Further information on this can be found in the section 'Properties and Representation of Building Materials'.



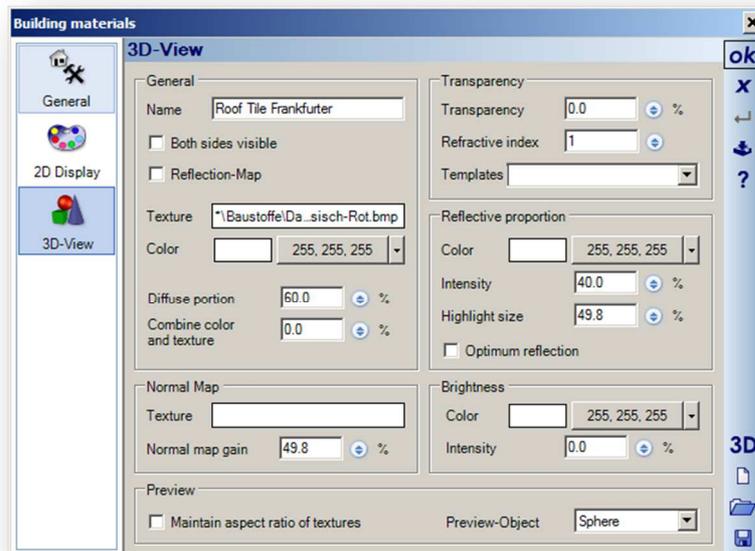
You can apply the texture size and coordinates for each component using the drop down:



Also each component has its own dropdown list of materials to be applied:



You can also override the selected material by clicking on the material button. And then selecting the 3D view tab, and selecting your own texture:



Each roof component can have its material applied individually (marked in yellow):



Roofing Material



Ridge



Gable Ends



Valley Gutter



Gutters



Cornice



Rafters / Tie Beams



Inferior Purlin

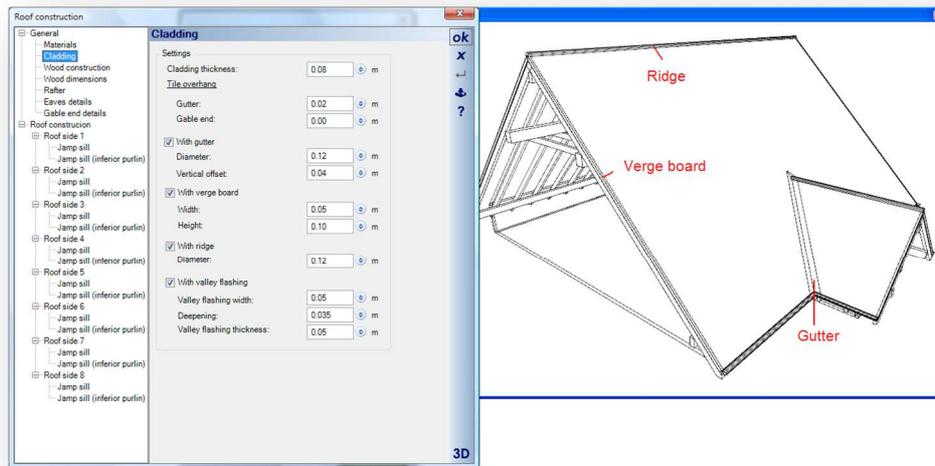


Centre Purlin

Ridge Purlin

Cladding

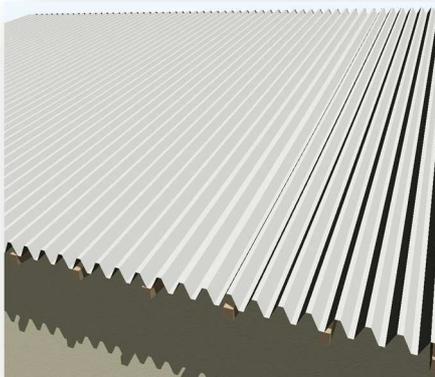
Under 'Cladding' you can specify the dimensions of the cladding and the elements allocated to it. The two values for 'Tile overhang' do not have any effect on the plan view or on the visualisation, and are only provided for the calculation of areas and volumes.



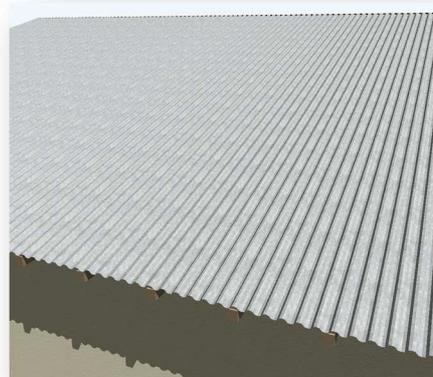
Corrugated Cladding

Visual Building Professional and Premium have an additional section within the Cladding section, allowing you to specify 3 different styles of corrugated cladding

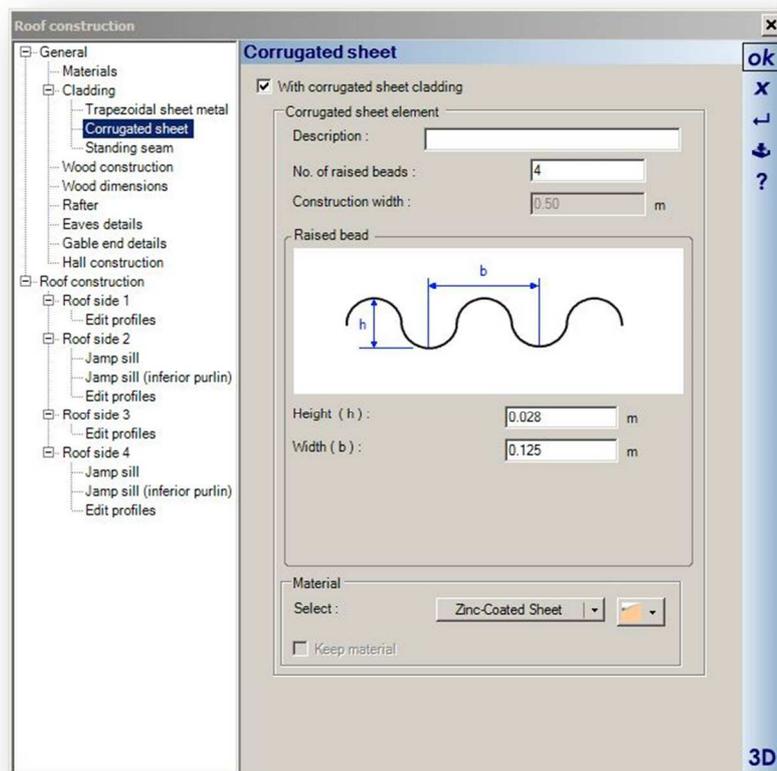
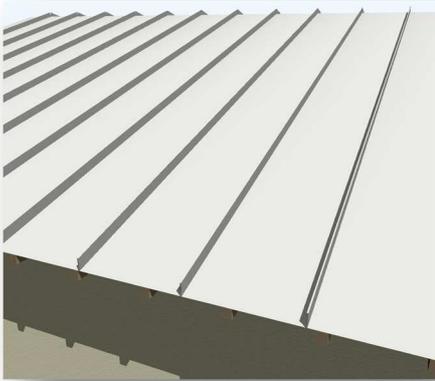
Trapezoidal Metal Cladding



Corrugated Sheet



Standing Seam



Timber

Construction

The settings under 'Timber Construction' define the usage and position of the various timbers required for the complete roof.

You can also define which purlins are to be used in the roof construction. In addition, the position of the centre purlin, the position and type of collar beams, and the spacing of rafters can be specified.

Purlins

With Inferior purlin

With centre purlin Height Upper edge: m

With Ridge purlin

Collar beams, tie beams

with Collar beams, tie beams

left center right both sides

Height at collar beam (upper edge): m

Spacing

Max. Rafter spacing: m

Timber Dimensions

The dimensions of the individual timbers of the roof can be specified under 'Timber Dimensions'. The depth of the grooving at the intersection of rafter/purlin is measured at right-angles to the slope of the roof.

Wood dimensions

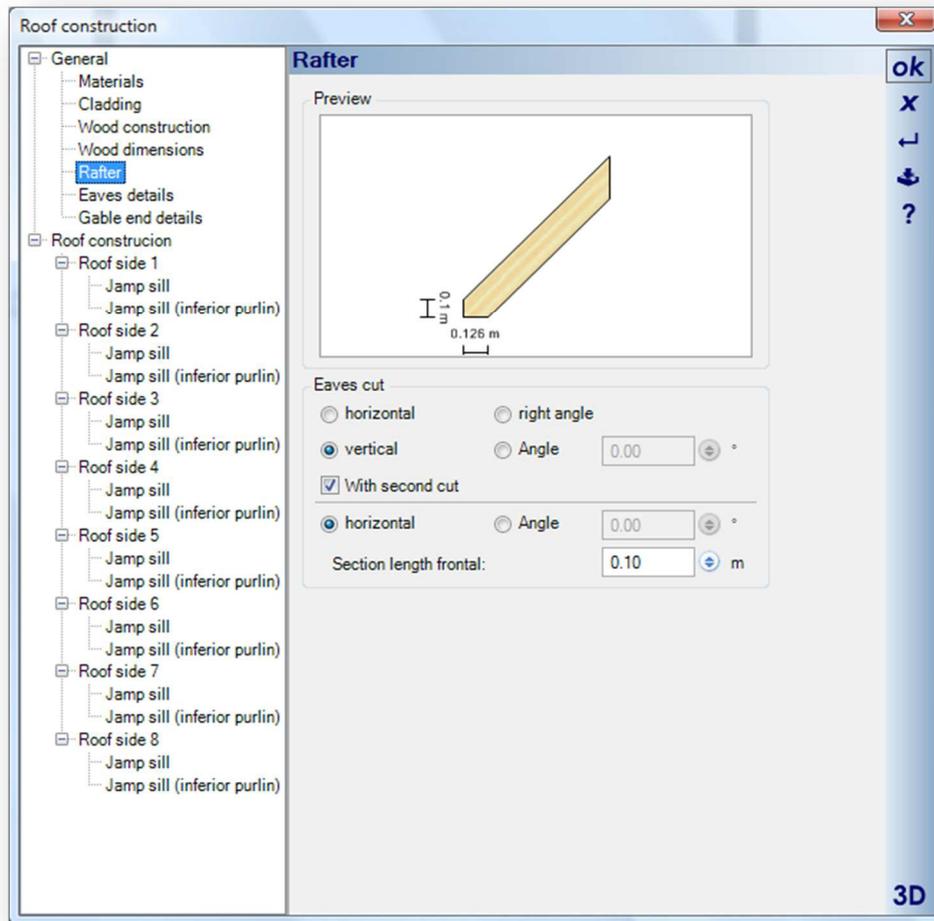
<u>Component</u>	<u>Width</u>	<u>Height</u>
Rafters / Jack rafters	<input type="text" value="0.08"/> m	<input type="text" value="0.16"/> m
Collar/ Tie beams	<input type="text" value="0.08"/> m	<input type="text" value="0.16"/> m
Inferior purlin	<input type="text" value="0.12"/> m	<input type="text" value="0.22"/> m
Common purlin	<input type="text" value="0.12"/> m	<input type="text" value="0.22"/> m
Ridge purlin	<input type="text" value="0.12"/> m	<input type="text" value="0.22"/> m
Ridge / Valley rafters	<input type="text" value="0.12"/> m	<input type="text" value="0.24"/> m
Collar board	<input type="text" value="0.30"/> m	<input type="text" value="0.06"/> m

Rafters / Purlins

Grooving depth: m

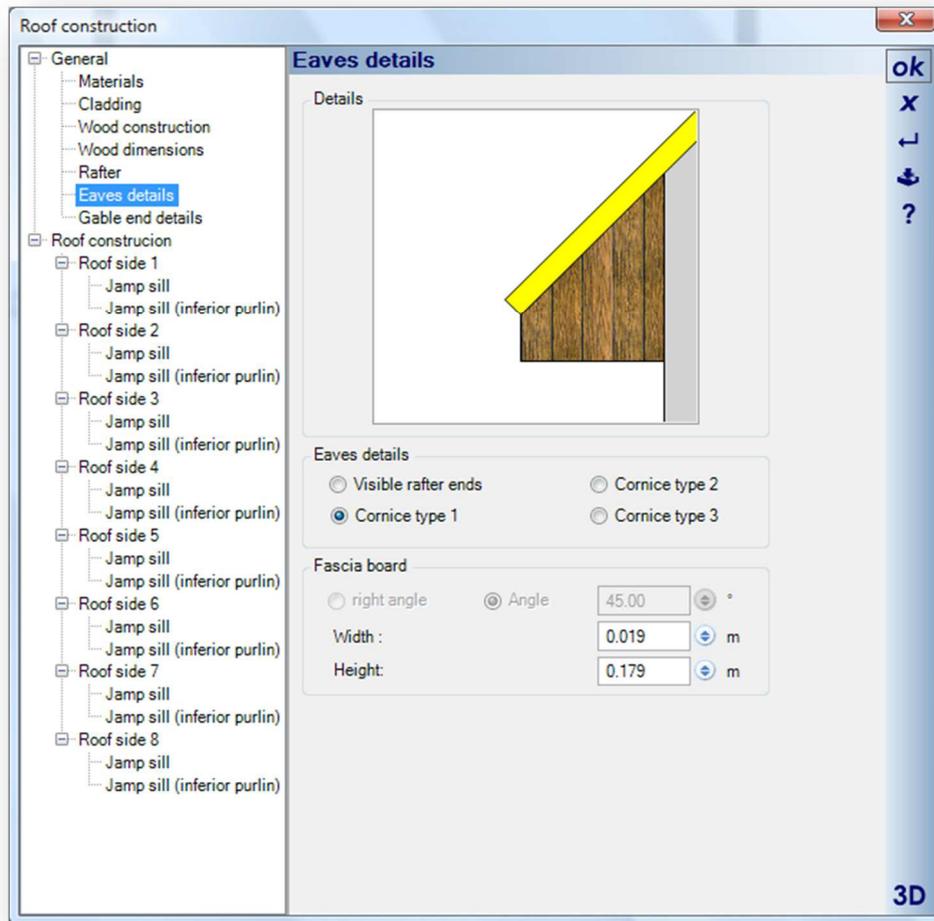
Rafters

Under 'Rafters' the shape of the eaves cut can be defined with the aid of various settings.



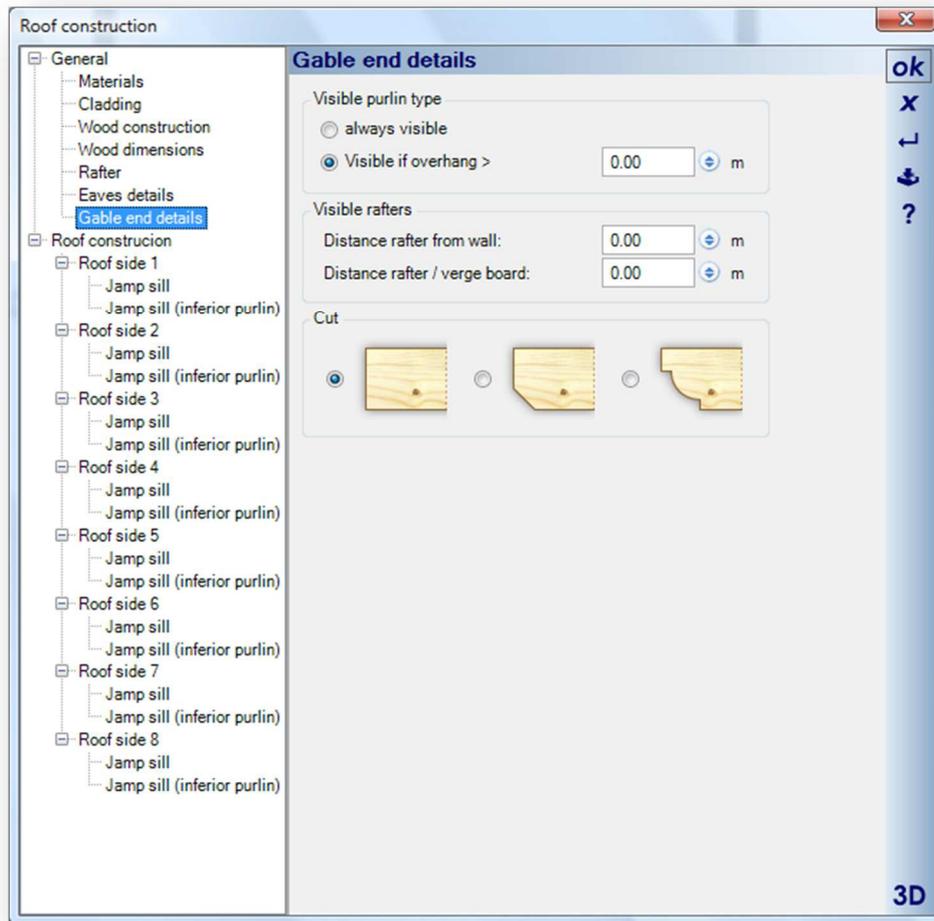
Eaves

Three different types of boxed eaves are provided under '(Details of) Eaves'.

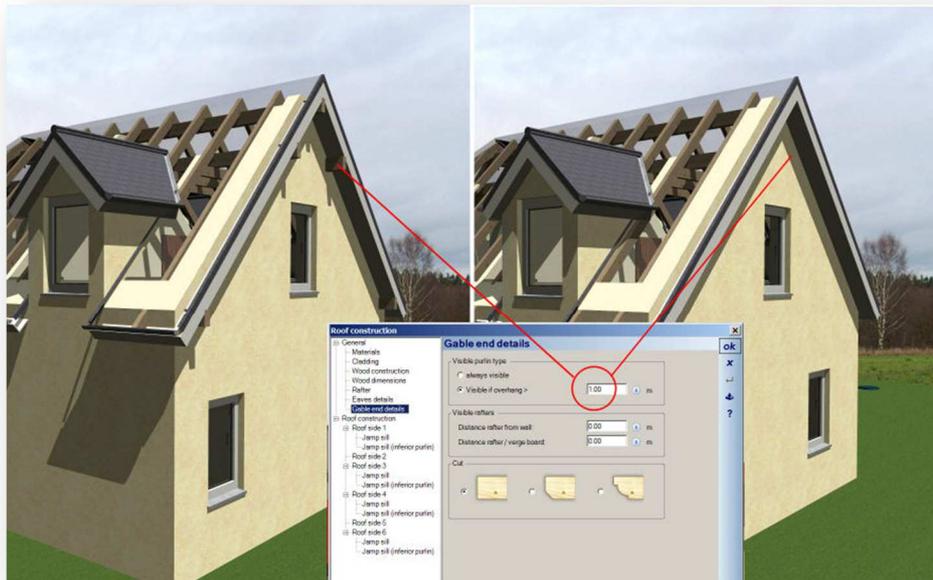


Gable ends

The visibility and shape of the purlins can be selected in Gable end detail. At the moment three different shapes are available.



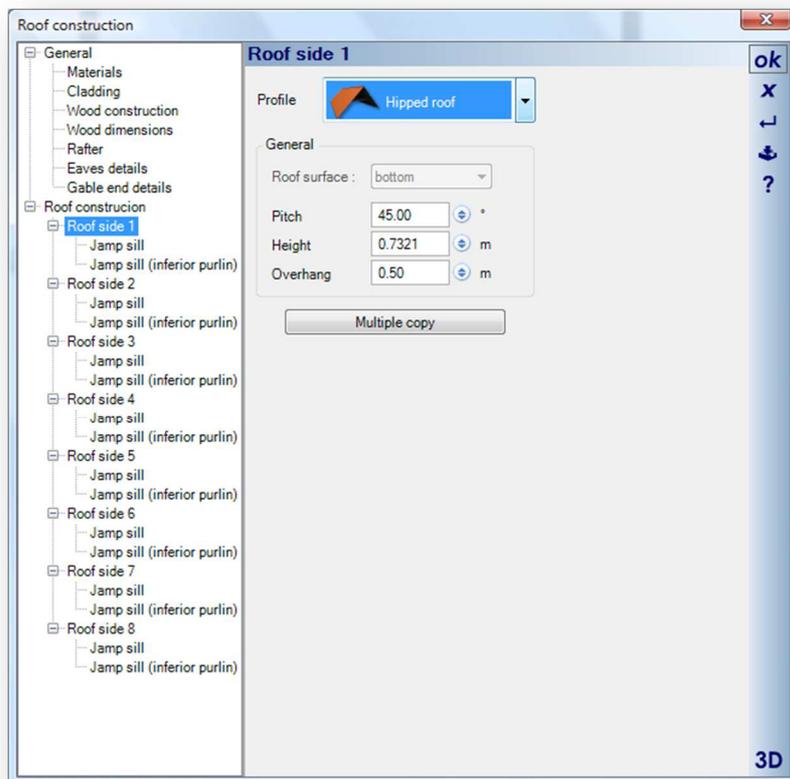
To prevent the purlins extruding beyond the gable wall, set a value for Visible if overhang greater than. Thus setting a value of 1m, will prevent the purlin from showing unless it should overhang more than 1m.



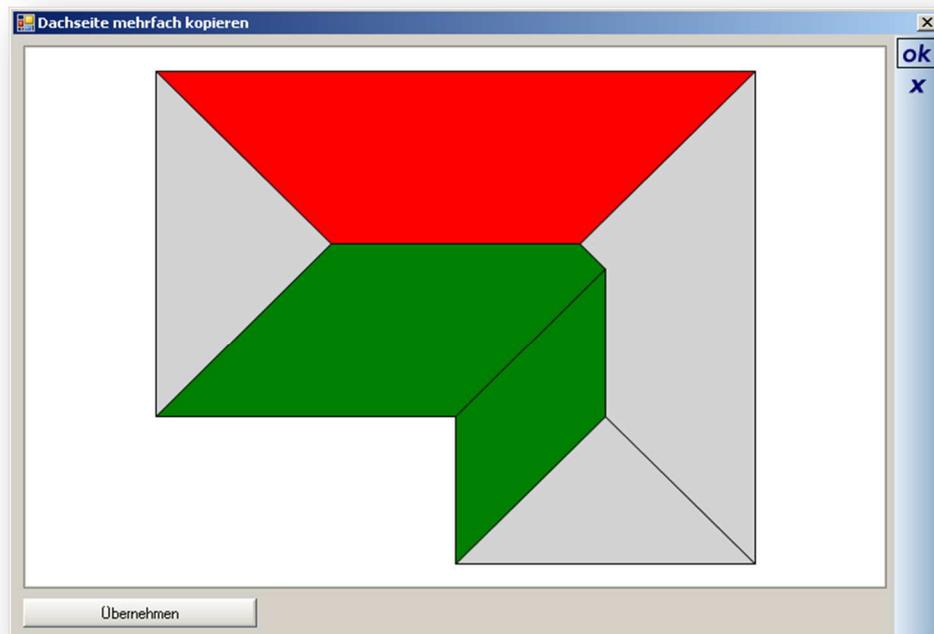
16.1.3 Roof Construction

Roof side 1

In this view the profile of a single roof side can be calculated based on the settings for pitch, height and overhang. The type of roof side desired is specified under 'Profile'.

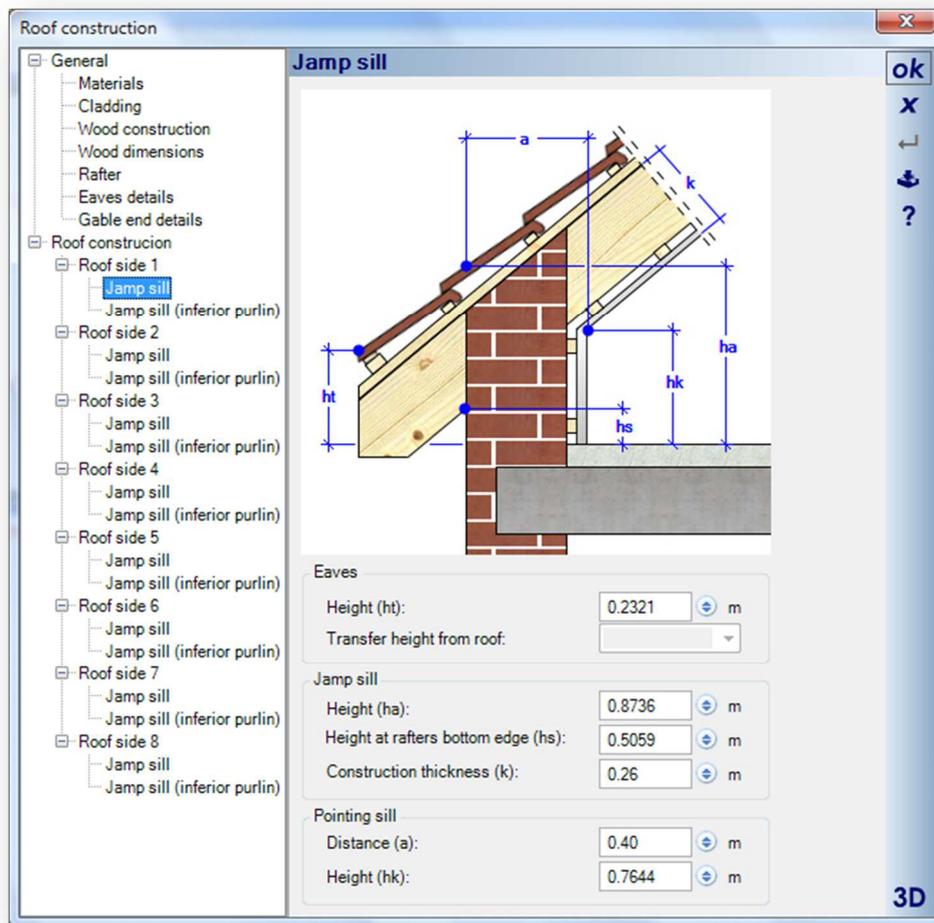


A click on the 'Multiple copy' button opens the dialog 'Multiple copy of roof side', in which the currently active roof side is shown in red. With one or more mouse clicks you can select roof planes, to which the properties of the source roof plane are to be copied. These roof planes are shown in green. You can cancel selection with a second click on the roof plane.



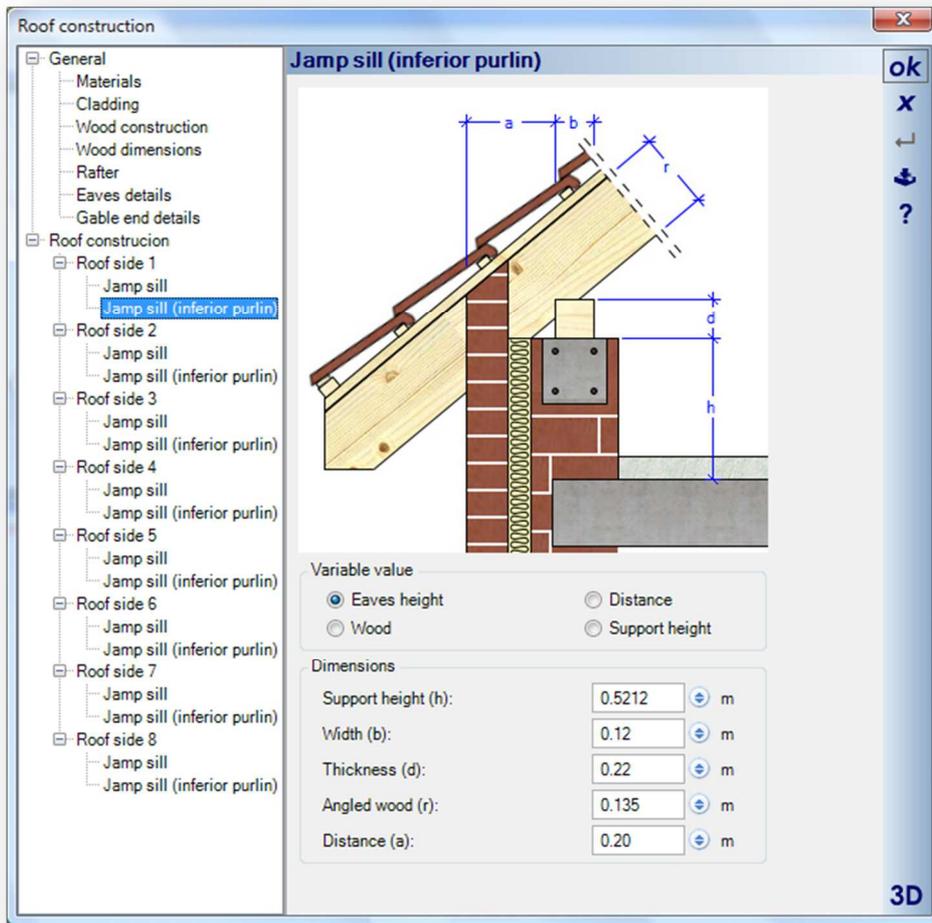
Roof Side 1/Jamp sill

Under 'Jamp sill' you can specify parameters for the bottom of the roof from an architectural aspect. Under 'Transfer height of roof', you can use an existing roof height for this roof side. This is of significance, above all, when there are roof sides with different slopes, in order to guarantee that the eaves and the ridge of the roof are aligned for all roof planes.

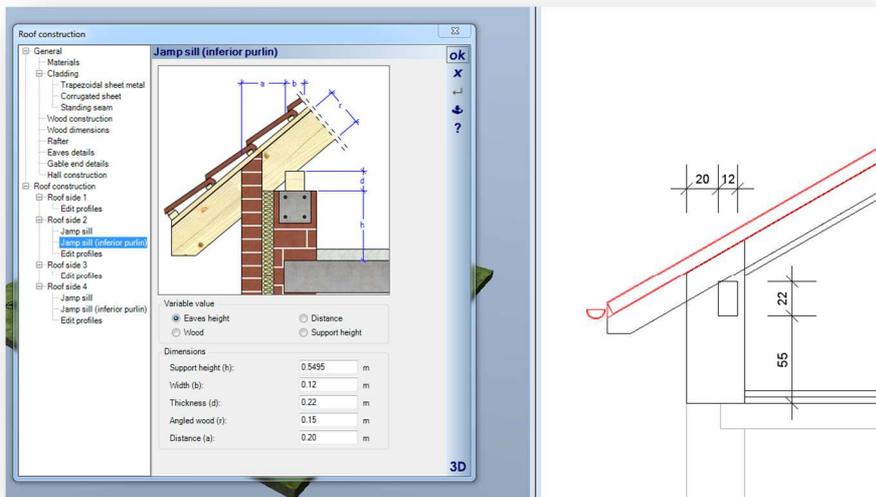


Roof Side 1/Jamp sill (inferior purlin)

Here you can specify the parameters for the bottom of roof with regard to structural aspects. The exact height of the eaves purlin can be specified, taking into account, for example, the thickness of the brickwork. In addition, it can be positioned at an exact distance from the outside edge of the brickwork, in order to guarantee a reasonable static load. The 'Pointing sill' is measured from the top outside edge of the eaves purlin to the top edge of the rafter and at right angles to the slope of the roof.



This diagram relates to a cross section view of a roof as in the following example:



16.2 DORMERS

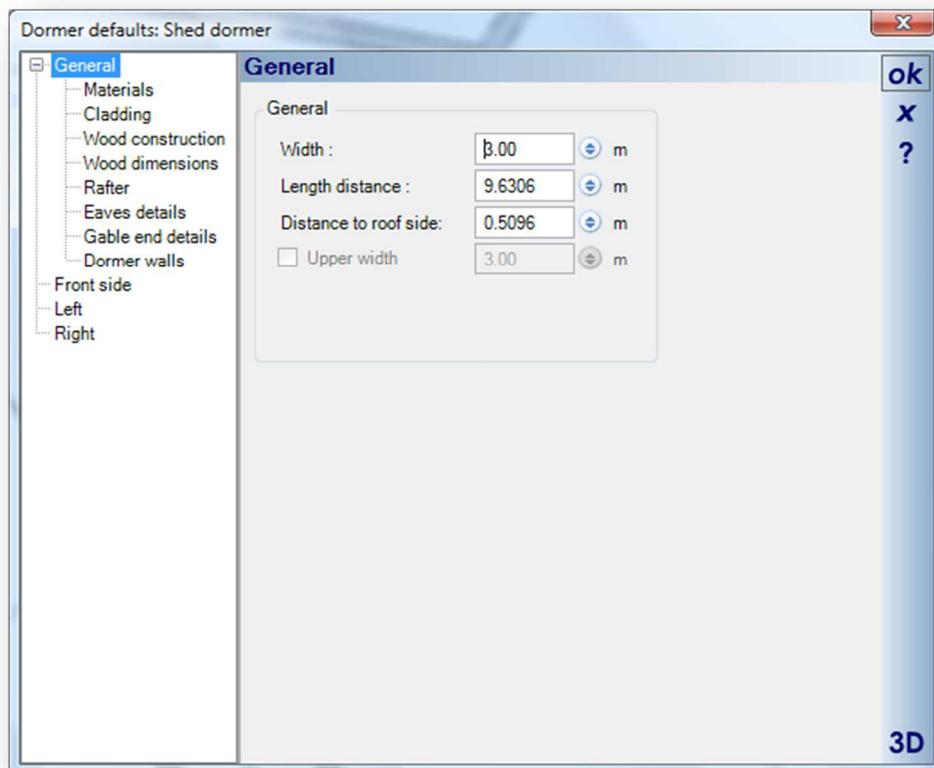
 There are seven different types of dormers available.

On insertion the dormer is attached at its front left outside corner to the cursor and can be 'dropped' into the desired roof plane. Subsequently, the 'Dormer' dialog appears, in which details of the dormer can be specified.

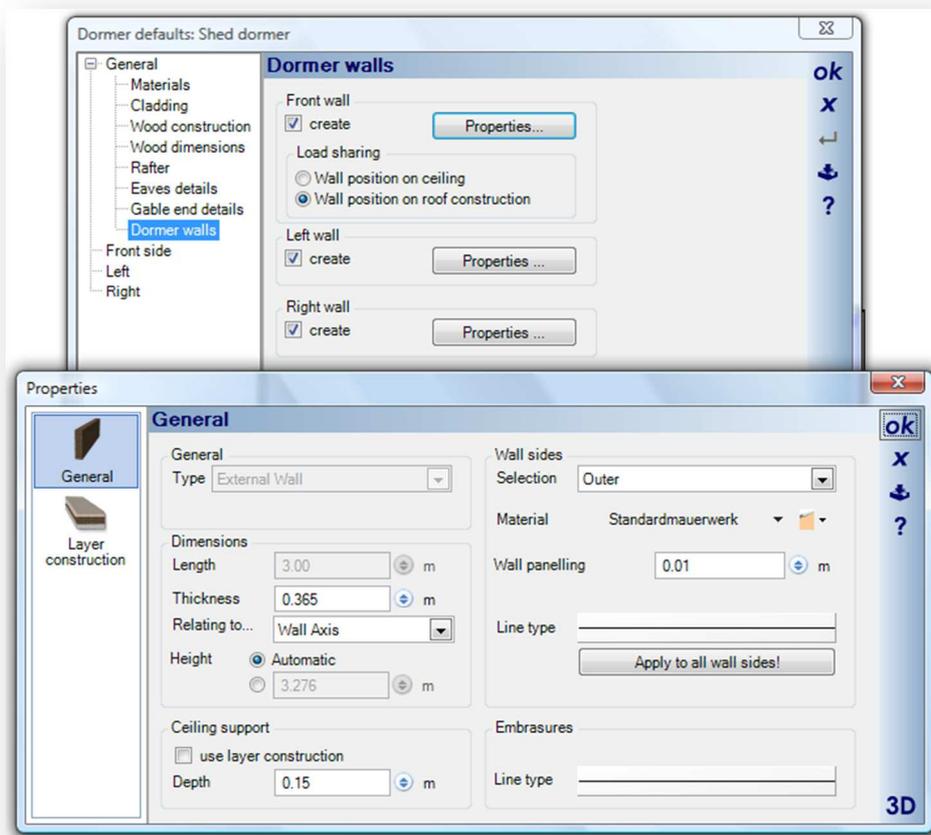


16.2.1 Shed Dormer

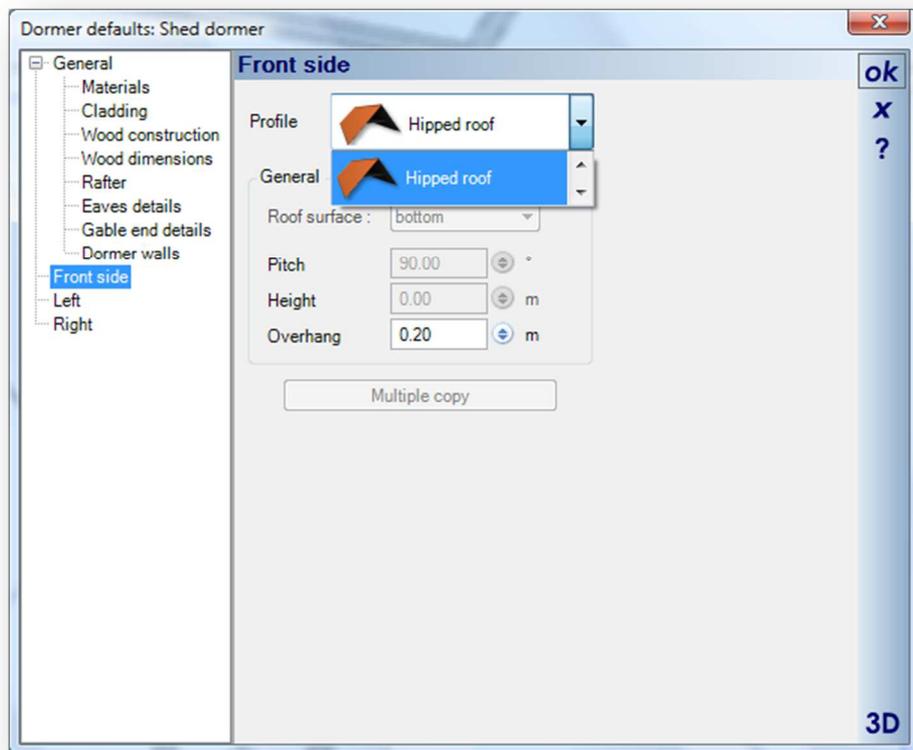
 As with the 'Roof' dialog, the various properties of the dormer are presented in a tree structure.



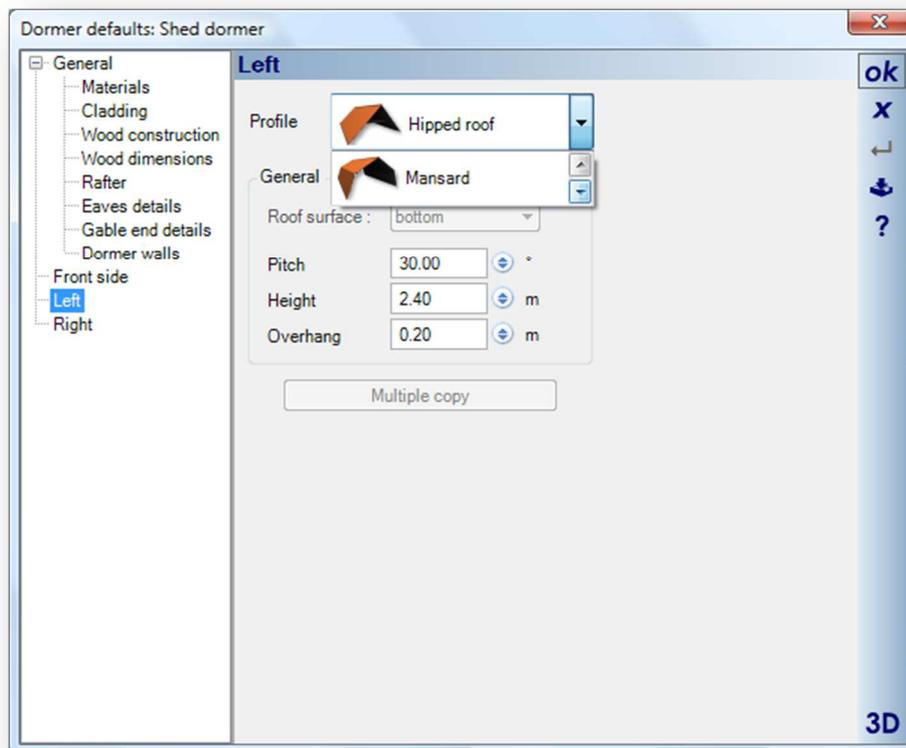
Under 'General', in addition to the roof, the dormer walls can also be defined. Here you can specify whether a wall should be created for a particular side of the dormer, and if so, the normal 'Wall' dialog can be activated for each of the walls.



Additionally, for the shed dormer you can select under 'Front side', whether the dormer should be hipped.



Under 'Left' or 'Right' you can specify the usual settings for the roof planes and select one of the roof profiles available.

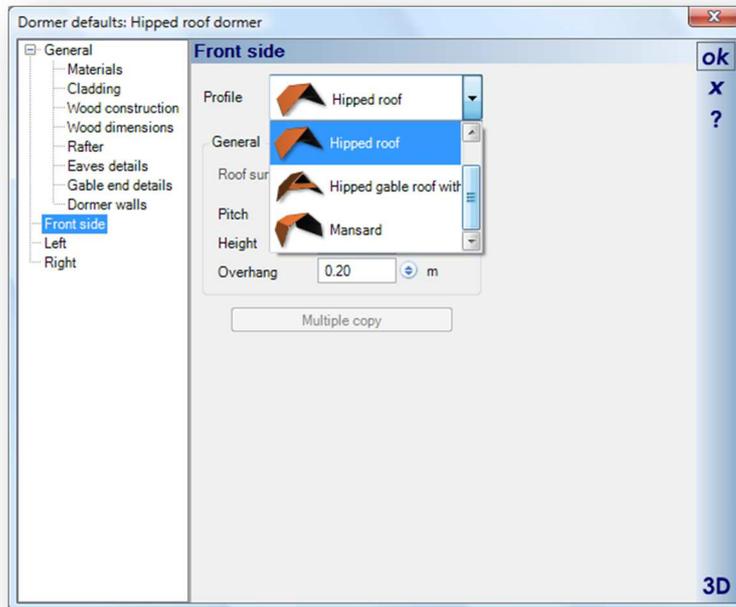


16.2.2 Flat Dormer

The Flat dormer has no special characteristics compared to a gable fronted dormer.

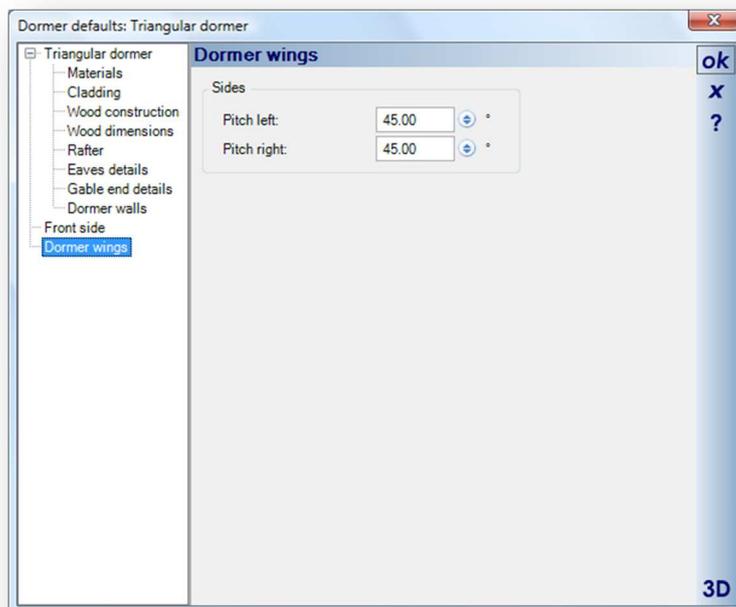
16.2.3 Hipped roof dormer

For the front of the hipped roof dormer, in addition to the option of a mansard roof, a 'Half-hipped roof with opening' can also be selected.



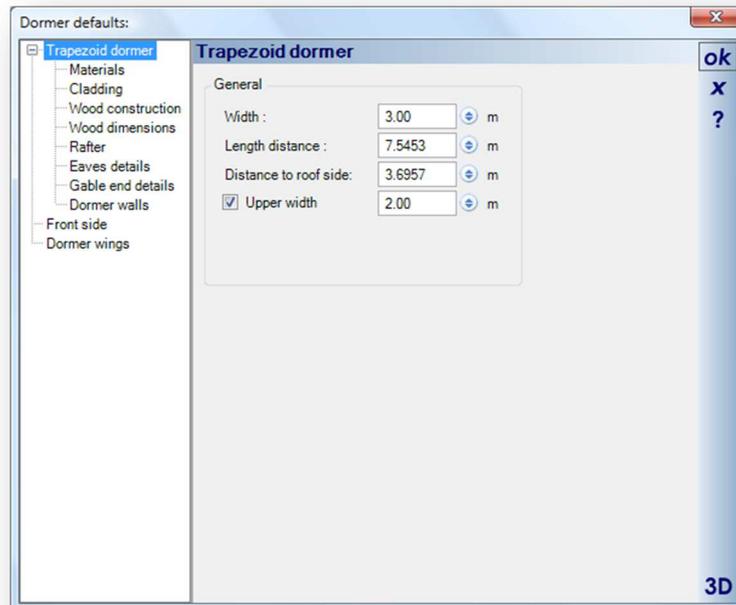
16.2.4 Triangular Dormer

The pitch of the roof of a triangular dormer can be specified under 'Dormer wings'.



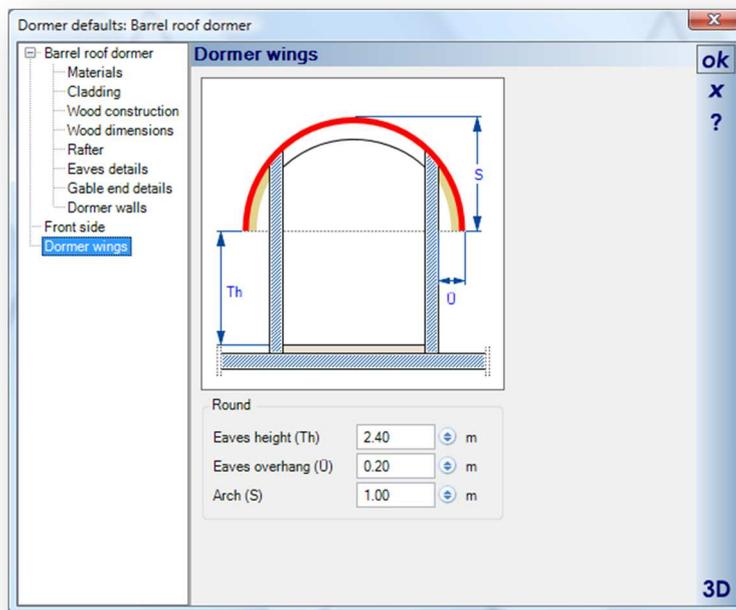
16.2.5 Trapezoidal Dormer

As opposed to other dormers, the 'Top width' for a trapezoidal dormer can also be specified under general settings. This determines the width of the dormer roof at the intersection with the main roof. You can also specify, for example, that the door roof should taper towards the top.



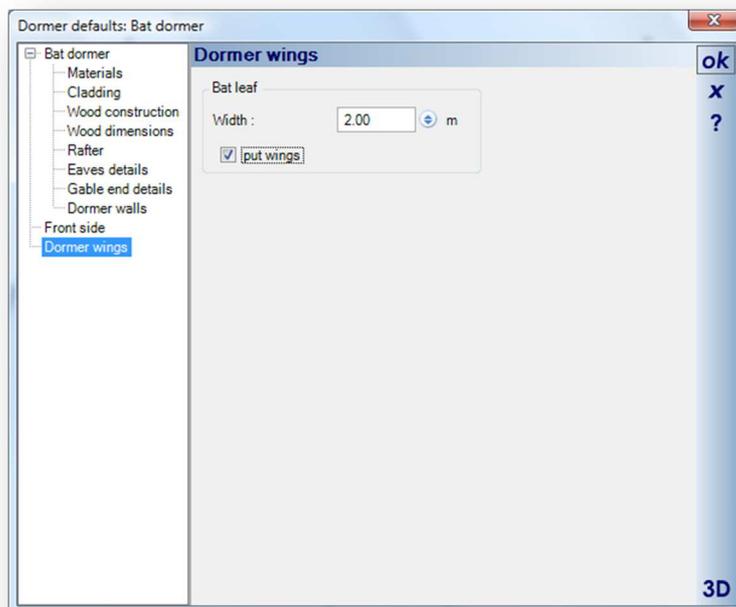
16.2.6 Barrel roof dormer

A customised barrel roof dormer can be created by specifying the width of the dormer, the overhang at the sides and the height of the arch.



16.2.7 Bat dormer

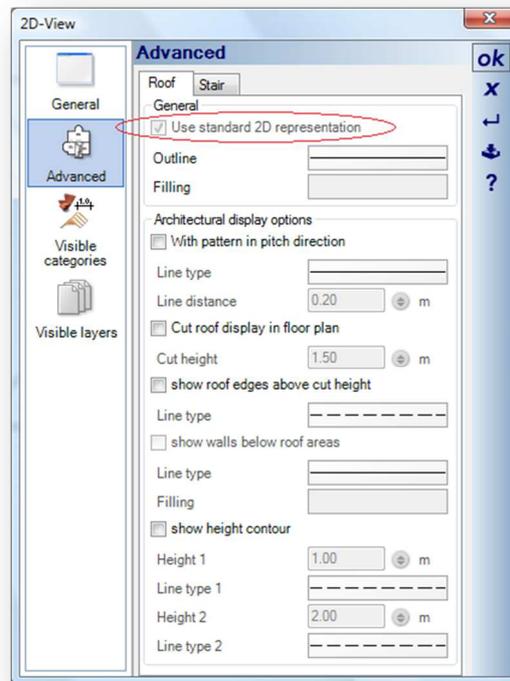
The wings of a bat dormer can be altered by entering their width.



16.3 2D REPRESENTATION OF ROOFS

Initially, using the default settings the 2D representation of a roof is determined by the contour of the roof itself. However, in some cases this level of representation is not sufficient. The additional options available to adjust the 2D representation of a roof are part of the 2D view and are therefore located in the **Advanced** section of the properties dialog for the 2D view itself. This dialog can be activated using the context menu, using a right mouse-click in the 2D view.

The following roof representation in 2D views is only active if the standard 2D representation used by the program is activated. If not activated the 2D display will display a standard 2D view of the roof.



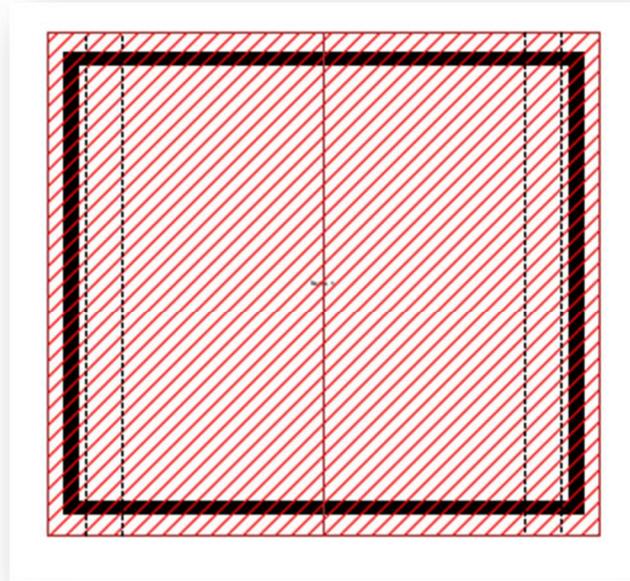
Options for the following representations can be found in this section of the dialog:

- filled representation of a roof
- representation using hatching
- cut-off representation, i.e. only the parts of a roof area up to a defined height are drawn
- representation using contour lines

All options affect only the current 2D view.

16.3.1 General

Using the **Outline** line style you can change how the outline of the roof is represented either

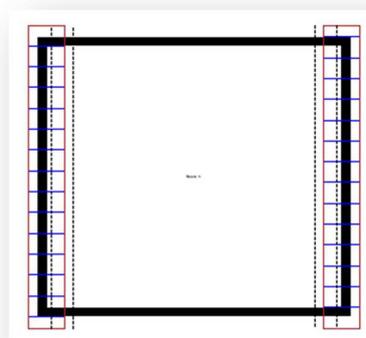


by line style or colour. The **Filling** option will allow you to change the fill style for the roof, allowing you to apply a hatch, a colour or even a texture to your 2D roof representation. An example of a roof 2D representation showing a red hatch.

16.3.2 Architectural display options

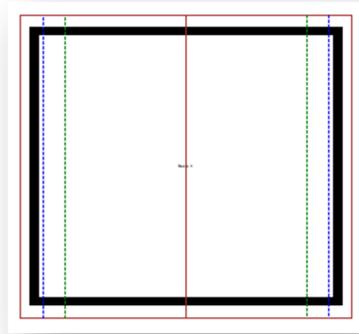
With pattern in pitch direction

You can display a partial section of the roof defined by the Cut height, Line type and Line distance.



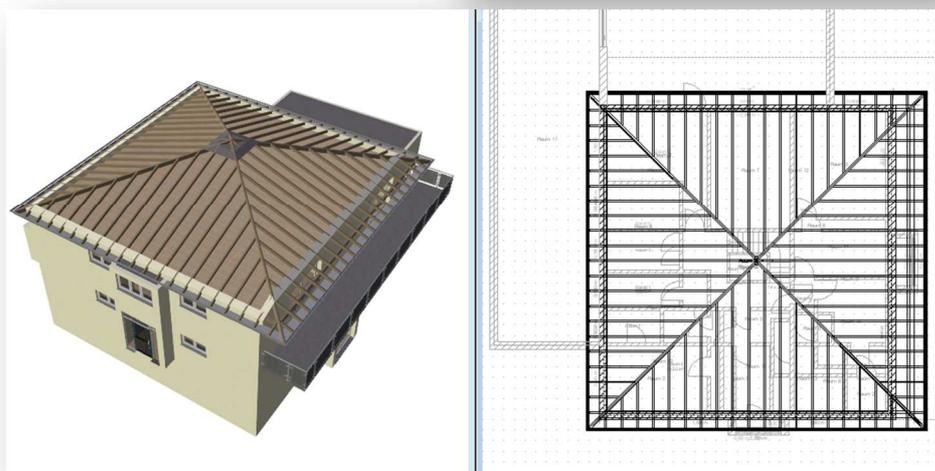
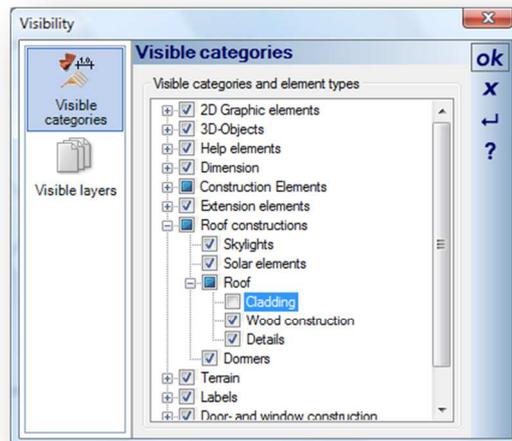
Show height contour

If you want to show the height contour on a pitched roof, this section will allow you to define 2 heights and their respective line representation
The following example shows 2 contour lines at 2m (green) and 1m (red).



16.4 VISIBILITY OF ROOF DETAILS

For all views, certain details of the roof can be set as invisible in the 'Visible categories' section, for example to remove the cladding so that the timber frame is visible.



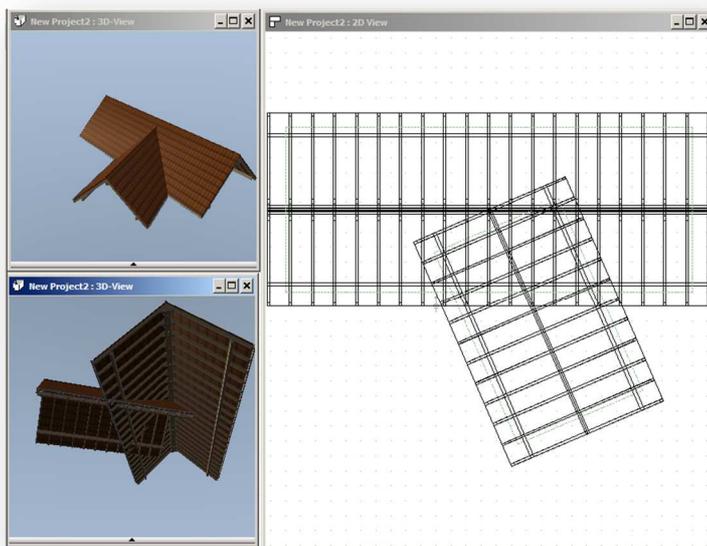
17 ADVANCED ROOF FEATURES

Please note that some of the Advance Roof Features are not standard for all versions, and are found only in the Visual Building Premium, and was introduced with Visual Building v4 release.

17.1 MERGE ROOFS

The **Merge Roof feature** is found only in the **Visual Building Premium**.

You can now merge two individual roof structures. After merging, the individual roof structures become interconnected. This includes the outer roof contour, the roof surfaces and the wood construction. However, the original individual roofs still remain editable.

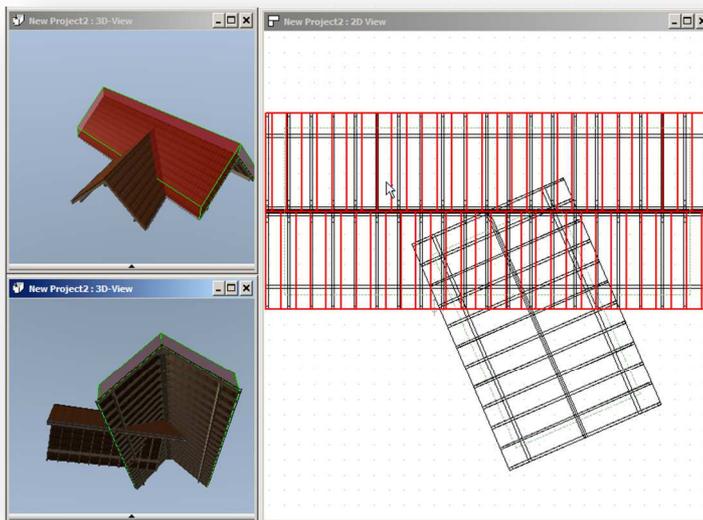
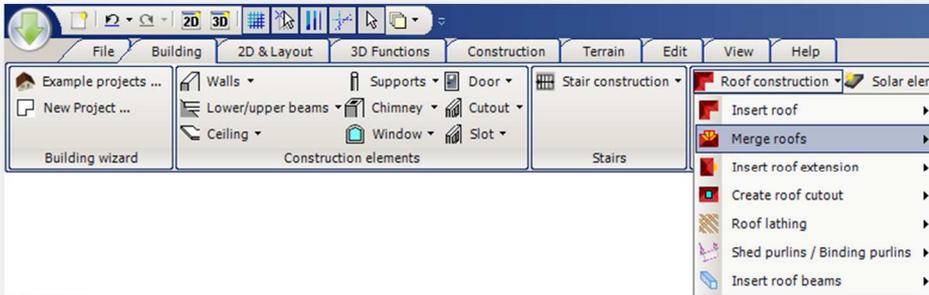


The individual roofs are first inserted using the normal roof input methods. You then position the two roof sections together, selecting each roof and using the move and rotate functions.

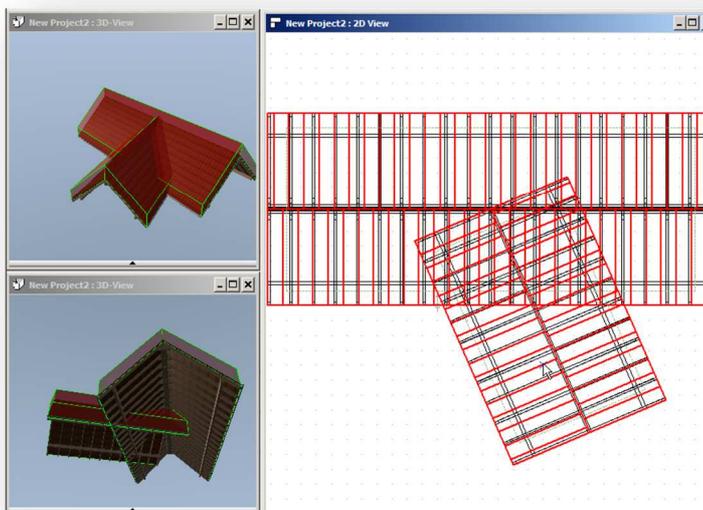
The image shows an example of a situation in which two separate roofs lie inside one another and intersect. This is the situation prior to merging.

As of Visual Building v5.2, you can now merge roofs that exist on different layers.

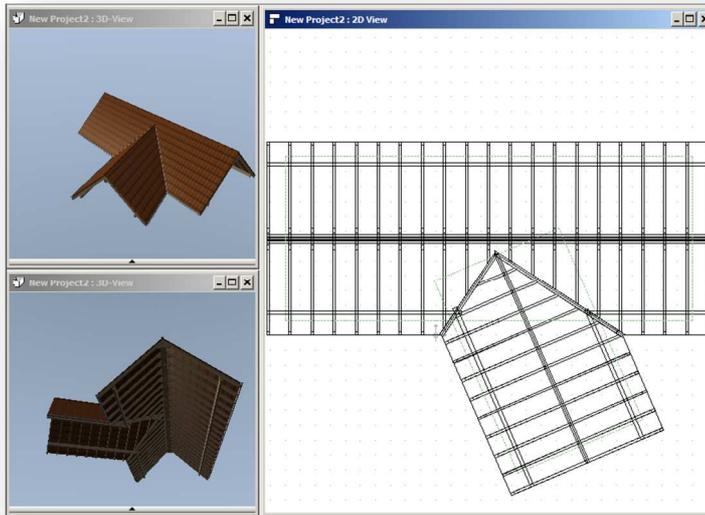
To merge the individual roof sections, use the Merge roofs function located in the Ribbon bar:



The function now expects a click on the first of the roof section to be merged. In the following view the selected roof section is indicated in red in the 2D view and also highlighted in the 3D views.



Then move your mouse over the second of the two roof sections. This second section is then also highlighted in the 2D and 3D views.



With the next click you will complete the merge process. The calculation of the resulting merged roof is automatic.

The two original roof sections are still editable as individual components and you can move, rotate, and change the contour or the properties of each. Select one of the merged roof sections and you will see no difference in the selection of a "normal" roof. Only when updating, after changing the merged roofs is the merged result automatically recalculated.

The two roofs that are to be merged do not need to be on the same on the same layer. If you have two roofs located on two different buildings, you will need to move one of the roofs onto the same building as the other roof.

Once you have both roofs on the same building it will be necessary to register the roof is on a new layer, simply by double clicking on the roof to activate its properties dialog and then close it again by clicking on OK.

17.2 ROOF EXTENSIONS

The **Roof Extension** feature is found only in the **Visual Building Professional, Visual Building Premium**

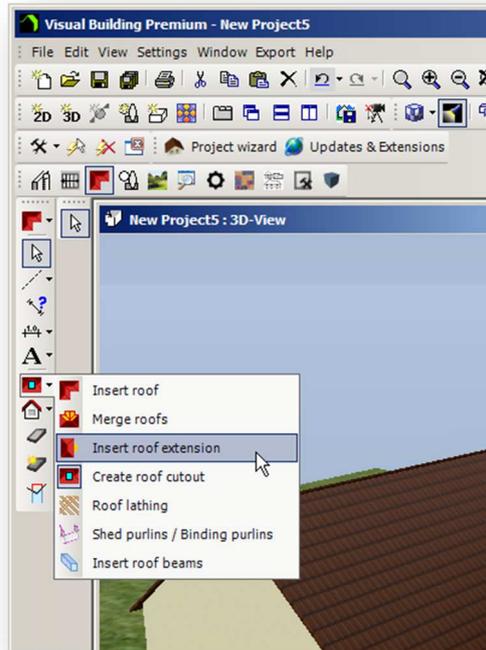
Roof extensions are areas that can be added to an existing roof side. Entering an extension is achieved in the followings steps with a mouse:

- Select the roof side to be extended
- Specify the start and end point of the extension
- Determine the length of the extension
- If necessary add additional extensions or modify existing ones with opening elements

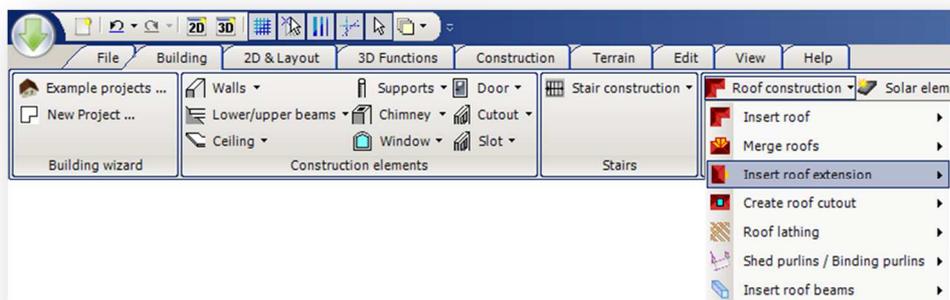
17.2.1 Inserting a Roof Extension

The roof extension is started by selecting the **Insert roof extension** function button on extended roof plug-ins.

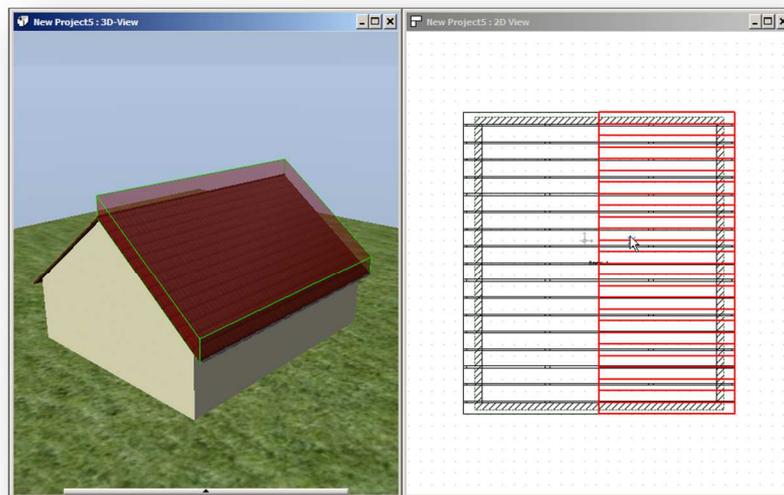
In the toolbar, the insert roof extension is located here:



In the Ribbon bar, the insert roof extension is located here:



Then, move the mouse over the side of the roof, you want to extend. The roof side will be recognized and highlighted in red in all views.



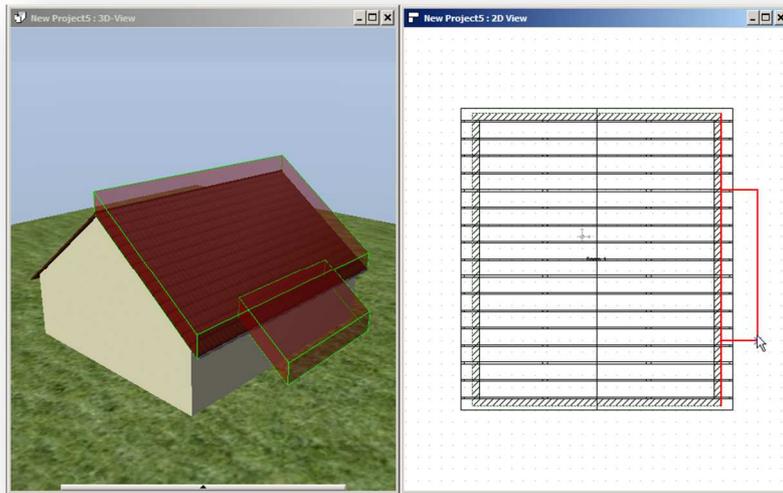
With a left mouse click, select the side of the roof. Then you set the starting point of the new surface.

While adding a new surface you will be supported by a red cursor.

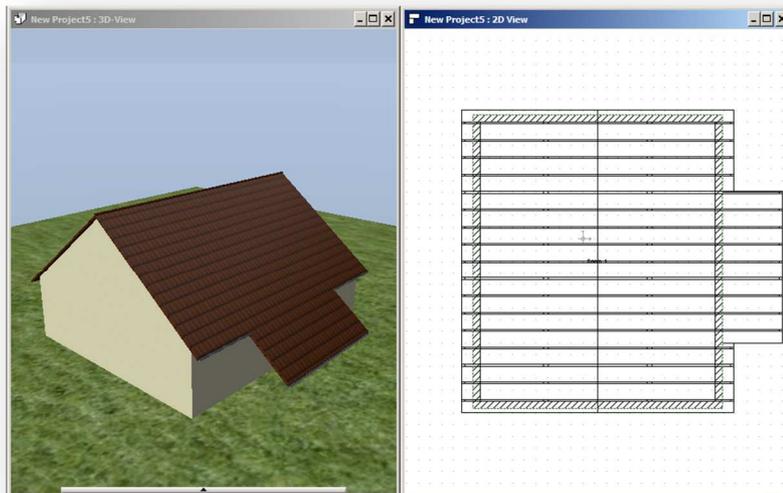
It also shows a red line as an extension to the entry point on the side of the roof line, regardless of where you click. So you can for example take the corner as a reference point, without having to create additional temporary points.

With a second point, you specify the width of the extension, and the cursor takes the shape of a rectangle. At this time the rectangle does not indicate the depth of the extension surface.

Finally, you complete the extension by setting the depth. Again, you are supported by a preview in all views.



The input is terminated with the ENTER key or by the appropriate function from the context



menu activated with a right mouse click.

Prior to completing the extension, you can cancel the roof extension input at any time by pressing the Esc key

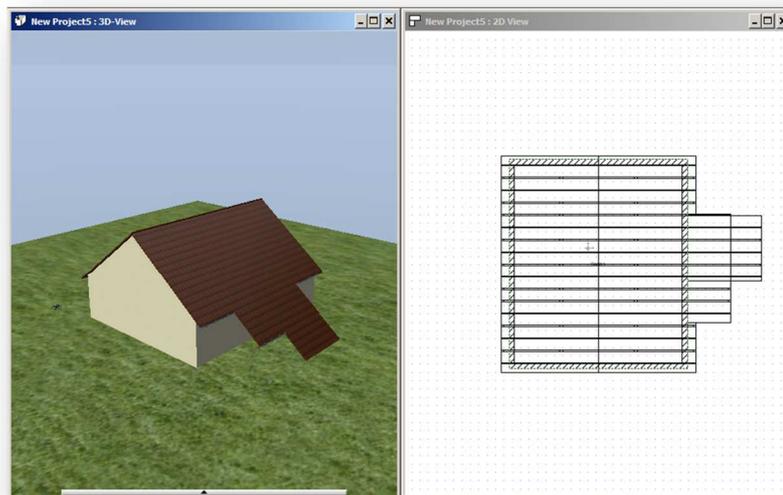
17.2.2 Deleting a Roof extension

Roof extensions can be selected independently. In the 2D view, click twice on the extension area. When you first click the roof is selected, and with the second click, the extension area

itself is selected. Delete the roof extension with the DEL key or the Delete button in the top toolbar.

17.2.3 Multiple Extensions

You can enter multiple successive rectangular roof extensions succession such as:

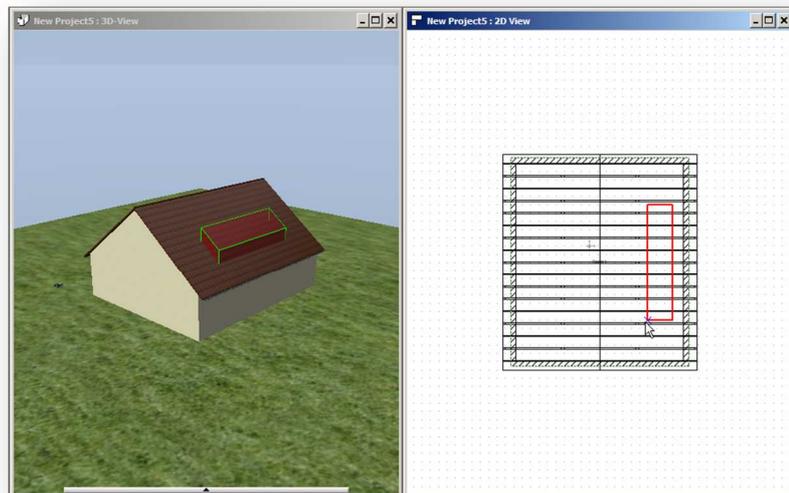


17.2.4 Roof Cut-Outs

The **Roof Cut-Out** feature is found only in the Visual Building Premium

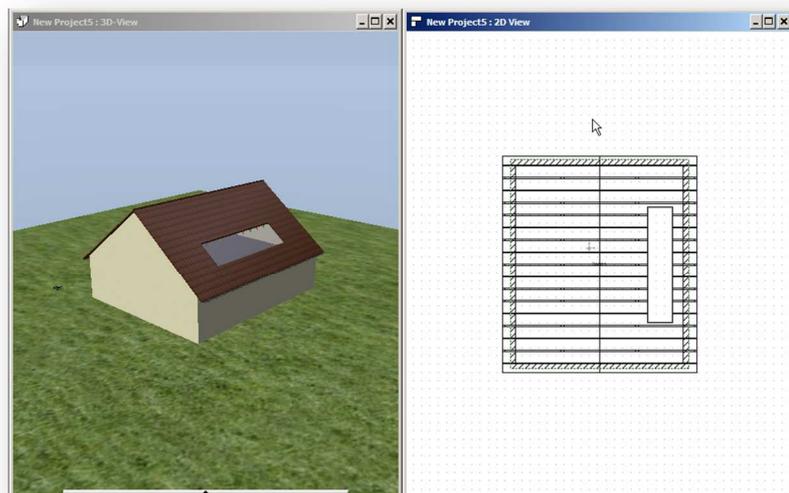
You can remove unwanted sections of a roof. You can enter a rectangular or polygonal cut-out using the Create roof cut-out tool.

To enter a roof cut-out first select the roof, to which the cut-out is to be inserted.



The cut-out tool has both a rectangular tool and a polygonal tool, the latter allowing for complex shapes to be cut-out.

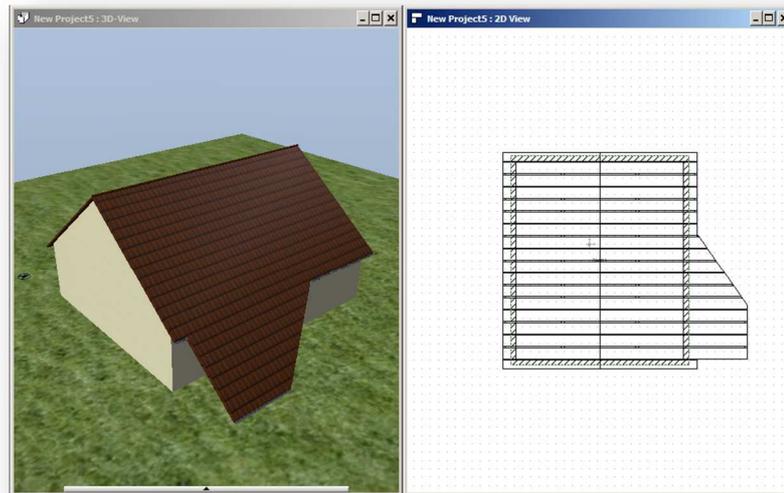
Then enter the cut-out using the selected input method. The points of the cut-out can be outside of the roof surface.



End the cut-out input using the Enter key or the context menu. The cut is automatically displayed in the roof immediately. The 2D contour of the cut-out and a transparent surface in 3D is displayed, allowing you to select the cut-out and delete if necessary.

The roof cut-outs can also be accessed via the Visibility dialog. In the 2D view, right click to activate the context menu and select Visibility. In the visibility tree locate the roof cut-out and deselect.

The cut-out tool can also be combined with the roof extension tool thus enabling you to create roof designs as follows:

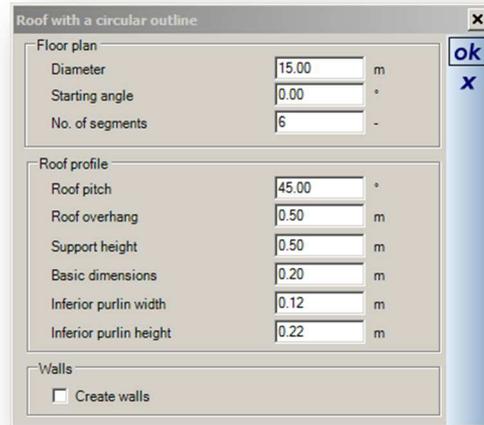


Together, the roof merge tool, roof extension tool and roof cut-out are powerful tools and you may find that some complex roof designs will result in unwanted walls breaking through the roof. To resolve these roofs, save your project, close the project and reload it again.

17.3 CIRCULAR ROOF

As from Visual Building 4, you can create circular, hexagonal and octagon shaped roofs in the **Visual Building Professional**, **Visual Building Premium** versions.

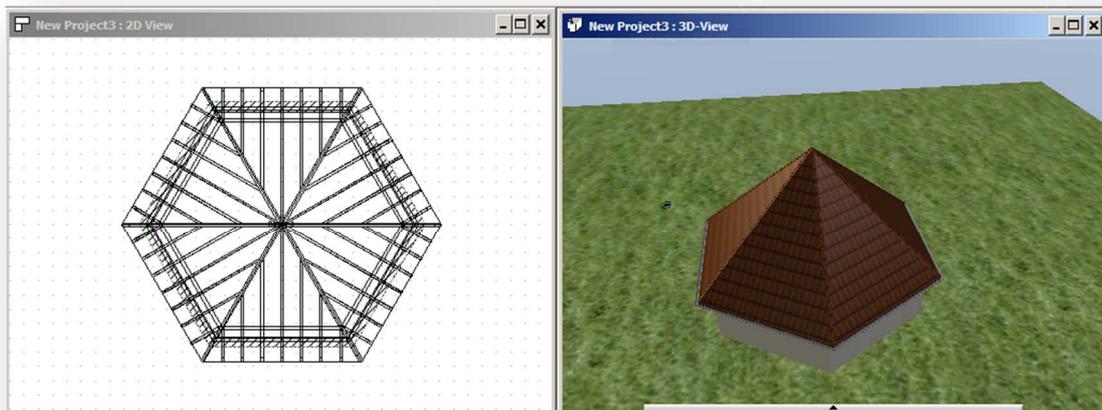
To insert a circular roof, click on the **Insert roof with circular outline tool**, found in the Roof tool's How toolbar.



Then in a 2D view (or in a 3D view but it's easier to position in the 2D view) click where you would like to centre the roof (as if it was a circle), and then a second click sets the roof diameter. The Roof with a circular outline dialog then displays:

You can now define the diameter, starting angle, and number of segments. For example to create a hexagonal shaped roof, set the number of segments to 6. You can change the orientation of the hexagonal roof by entering 30 in the starting angle.

The Roof profile section allows you to specify additional roof details, including roof pitch, overhang and purlin sizes.



You can also optionally create the walls to fit the roof specified by setting **Create walls**.

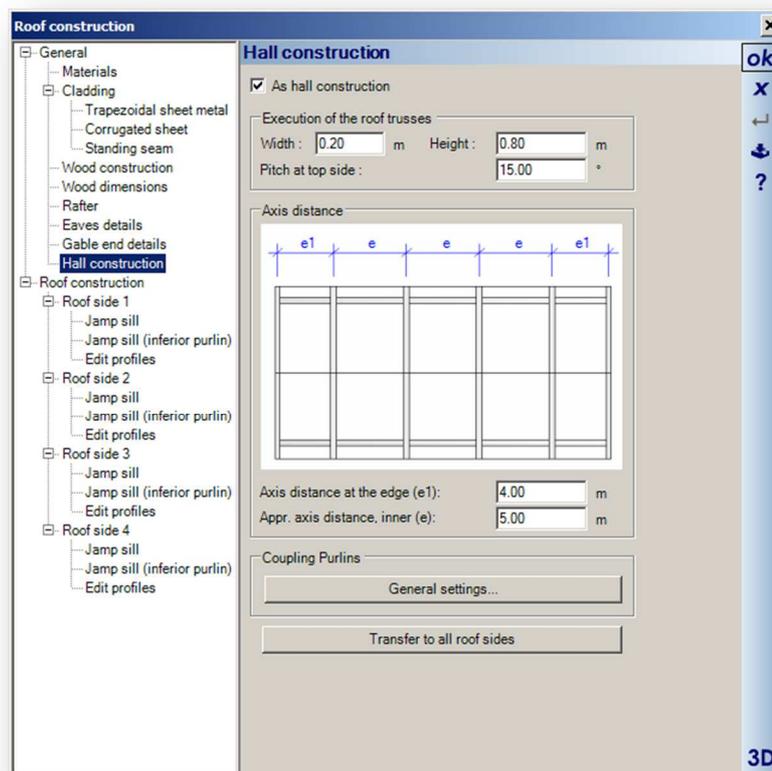
You can create a roof of as many sides as you wish. A circular roof would consist of multiple flat roof surfaces.

Once created, you can continue to edit the roof in the standard roof editor by double clicking upon the roof.

17.4 HALL CONSTRUCTION

The **Hall Construction** feature is found only in the Visual Building Premium product.

Roofs with constructed purlins on a truss structure are widely used in buildings. The roof dialog lists in the tree view, the required settings in the property page the **Hall construction** option.



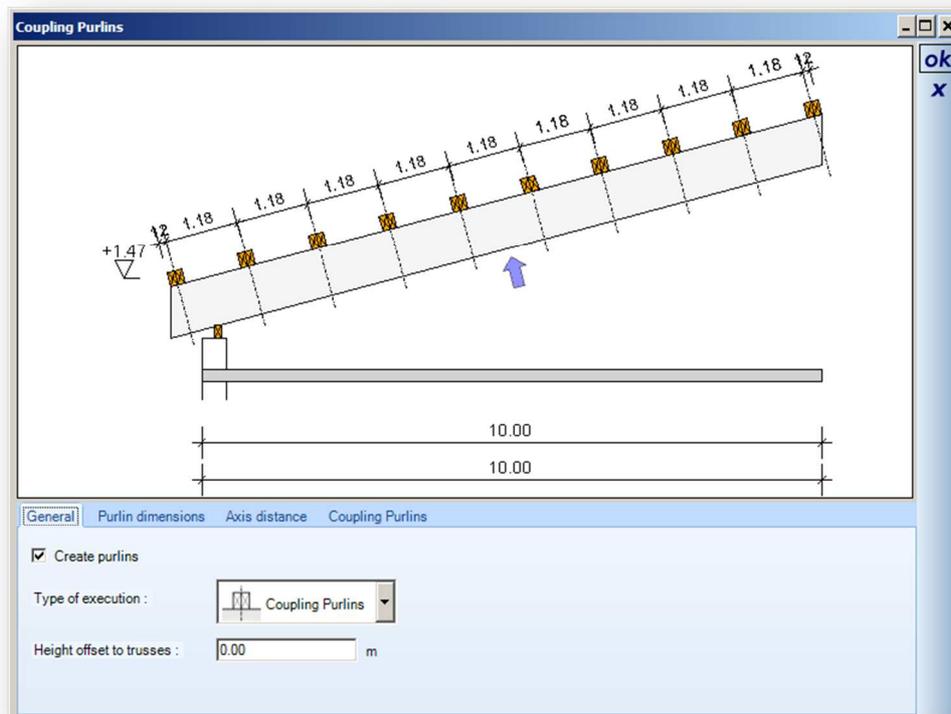
Purlins tie the rafters, suitable for indoor constructions basically exclusively with gabled roofs. Entering a hall roof construction with purlins is as follows:

- Insert a rectangular roof
- Adapt roof sides to create a saddle roof, with the two opposite sides defined as GABLE
- Activate the hall construction

- Adjust the dimensions of the roof trusses and the spacing of the trusses Customise the purlins
- Transfer the settings to all sides of the roof
- Exit the dialog with OK

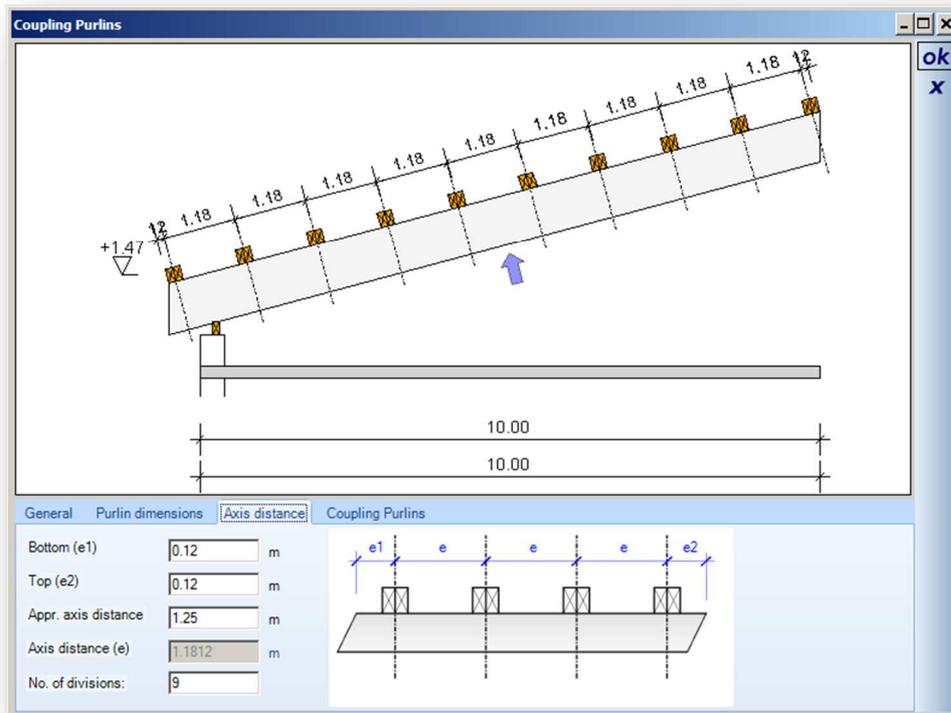
17.4.1 Adjust Purlin settings

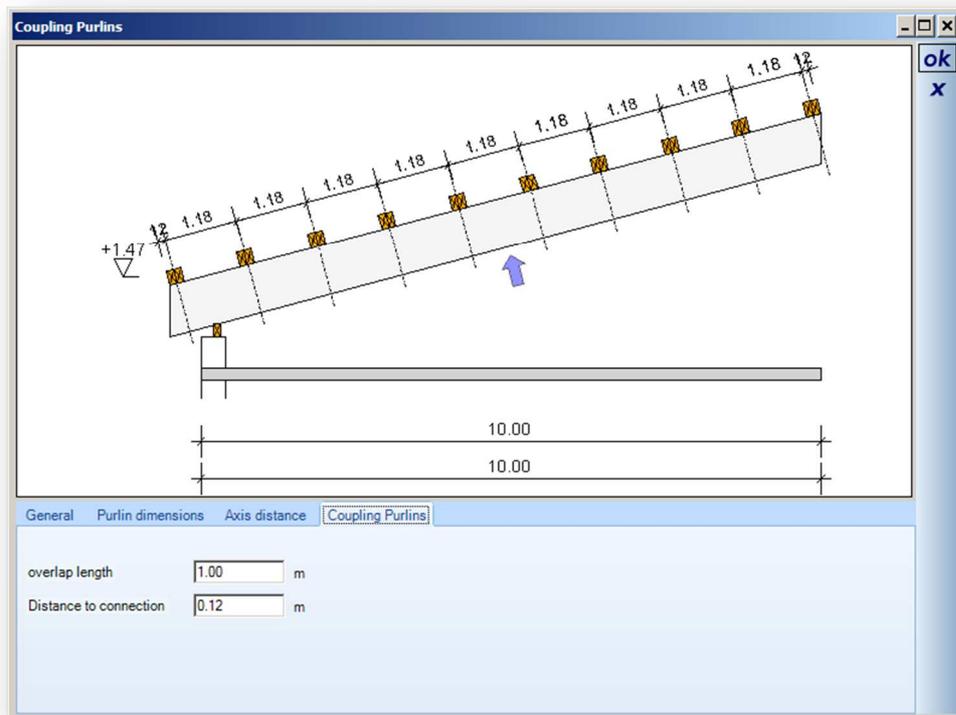
Click on the General settings button to open the dialog for the Purlin settings..



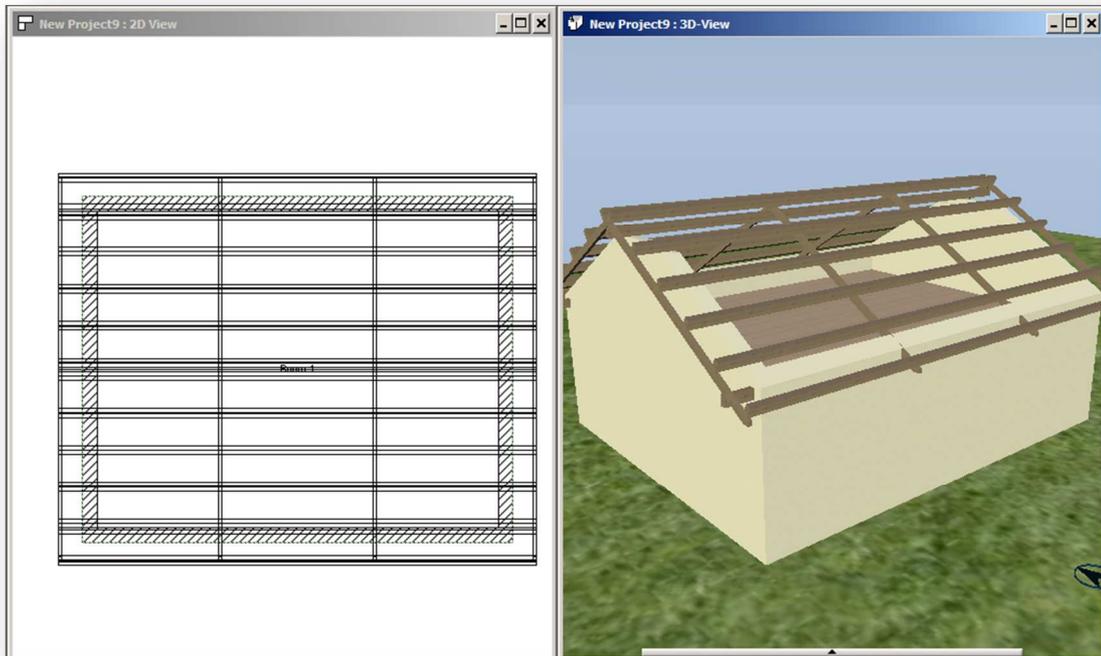
In the upper part of the dialog you can see an interactive diagram that changes depending on the settings and represents the current design. Within the sketch, you can also zoom, scroll with the mouse and using the normal keyboard shortcuts as with a 2D view in the software.

At the bottom of the dialog you can see various tabs for the corresponding settings. On the General tab you first define the type of purlin construction.





After closing the dialog, the changes will update the 2D and 3D roof views.



17.5 ROOF LATHING

The roof lath is the construction that supports tiles and other roof coverings. The roof lath is normally a narrow strip of wood that forms a latticework

Using the Roof lathing tool, you can now apply the roof lathing to the roof structure.



17.5.1 Uniform roof lathing for entire roof

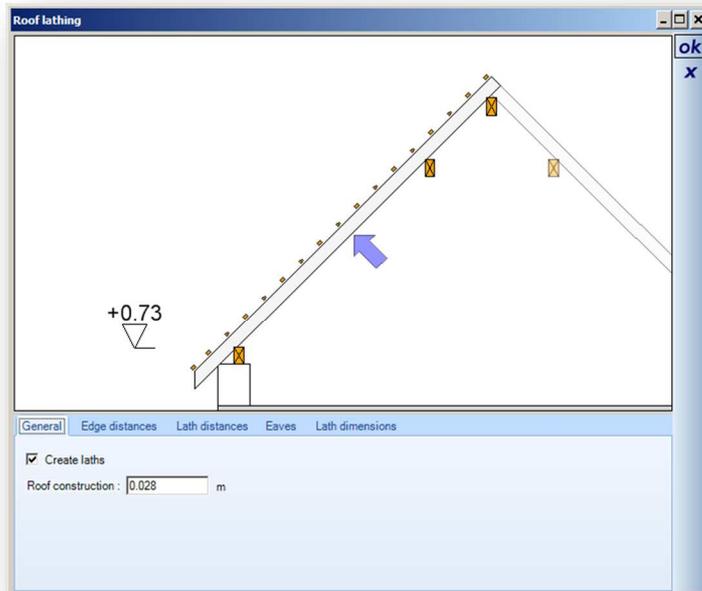
The entire roof uses the same lath dimensions and settings

17.5.2 Roof lathing for single roof surface

You can determine a different set of lath dimensions and settings for individual roof surfaces.

17.5.3 Roof Lathing Dialog

On activating the roof lathing tool, the Roof lathing dialog is displayed. This dialog consists of 5 tabs:



General

Enable **Create laths** to create the laths on the roof surface.

The **Roof Construction height specifies the height of the laths used**

Edge distances

Here you can set the distances that the top and bottom lath will start. This measurement is the inclined distance, and not the vertical distance.

Lath distances

You can set either the number of lath divisions required or the actual spacing between each lath. The first and last lath spacing can be set separately. You can also specify if you want to add lathing over any roof overhang or not.

Eaves

The position of the first lower lath can be further adjusted depending upon the eaves style. The laths can either be aligned to the top edge or bottom edge of the lath.

Lath dimensions

The actual width and height of the lath material can be specified here.

17.6 SHED PURLINS

This is a specialist tool for those users that wish to adjust the spacing and dimensions of additional roof purlins. After selecting the Purlin tool, you can select to edit / apply the roof purlins to either the entire roof or a single roof surface.

This tool is of special interest to solar panel installers that need to plan or design the fixing of solar panel equipment to the roof construction.

17.6.1 Shed purlins for entire roof

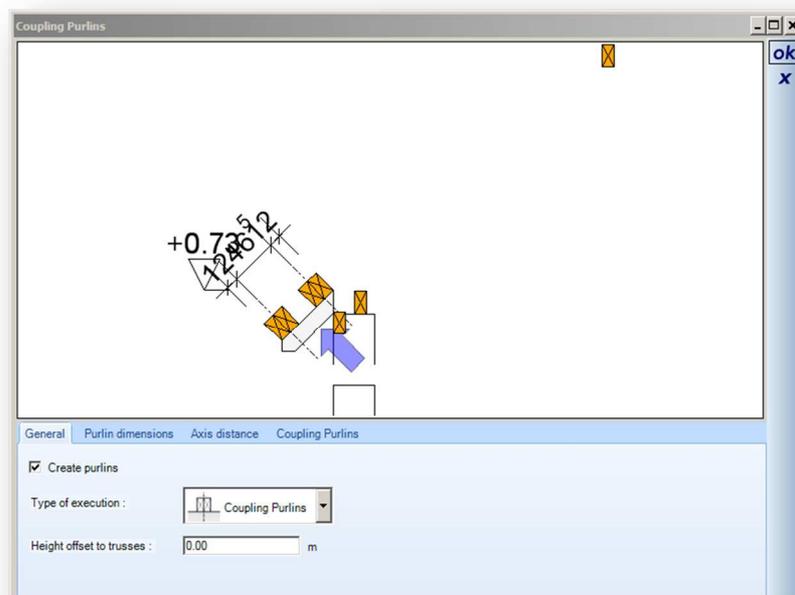
The entire roof uses the same purlin dimensions and settings

17.6.2 Shed purlins for single roof surface

You can now show additional roof purlin information using the purlin tool You can determine a different set of purlin dimensions and settings for individual roof surfaces.

17.6.3 Purlin Dialog

On activating the purlin tool, the Purlin coupling dialog is displayed. This dialog consists of 4 tabs:



General

To automatically create the roof purlins select **Create purlins**

Purlin Dimensions

This tab allows you to specify the actual cross section dimensions of the purlin

Axis distance

The purlin spacing together with the offset for first and last purlin can be set here.

Coupling Purlins

Where Coupling purlins are specified, the overlap length is specified here

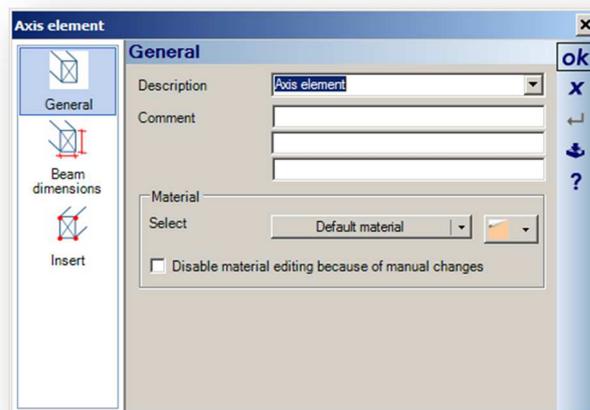
17.7 ROOF BEAMS

This tool allows you to insert individual roof beams. Please note that adding roof beams in this manner will not change your roof profile

When activated, 3 further options become available in the **How** toolbar.

17.7.1 Insert element with 2 points

After selecting the insert element with 2 points tool, next select the roof where you want to add the element. As you move the cursor over existing elements, it will snap to the faces and edges. The first click specifies the start position of the beam, and the second click the end position. The **Axis element** dialog will then display:



This dialog has 3 tabs:

General

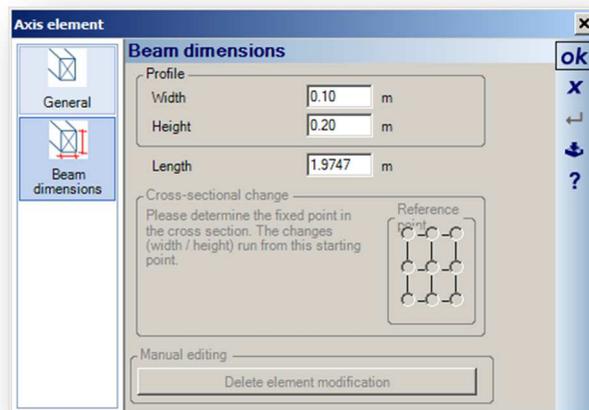
The General tab allows you to specify the element component from a drop down list and optionally add comments for this component.

- Joist
- Girder
- Block batten
- Lath
- Ridge strap
- Fill-in-wood
- Angle rafter
- Collar beams
- Collar beam
- Valley rafter
- Cam
- angle brace
- Purlin
- Top rail
- Bar
- Threshold
- Rafter
- Sheet steel
- Shaft
- Eaves board
- Change
- Windrispe
- Collar beams, tie beams

You can also define the material used for the selected component.

Beam Dimensions

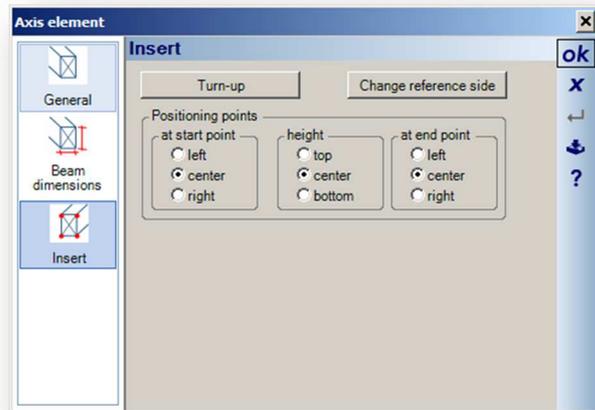
The Beam dimensions tab allows you to specify the beam component profile using the **Width** and **Height** fields. The beam component length can also be adjusted via the **Length** field.



Insert

This tab is only visible at the time of the initial placement of the beam. After the second placement click, this dialog is displayed allowing you to further specify the snap reference points for the start and end points of the beam. The **Turn-up** button also allows you to rotate the beam 90 degrees.

Clicking **OK** will finally place the beam.



17.7.2 Insert element with 2 points in plane

The tool is similar to the above **Insert element with 2 points** tool, but also allows you to specify the 3D plane in which you are working

After selecting the tool, the first click will indicate the roof construction that you wish to edit. The 2nd click will indicate the 3D plane in which you wish to work. Prior to the 2nd click you will see various planes indicated in green as you move the mouse cursor. These planes can be vertical walls, or the floor, or a roof pitch. Whichever plane is selected on the 2nd click becomes the 3D plane in which the 3rd and 4th click will operate in. The 3rd and 4th click will be the start and end point of the beam. Note that after the 4th click you can adjust the snapping reference point and beam dimensions in beams dialog.

17.7.3 Insert single rafter

The tool makes it easier to add individual rafters to a roof surface. The rafters pitch is automatically aligned to the roof pitch. The rafter will also take notice of any existing roof cut out.

The 1st click will select the roof surface in which you wish to insert the rafter. The 2nd click will specify the rafter position within the selected roof surface. . Note that after the 2nd click you can adjust the snapping reference point and rafter dimensions in beams dialog.

17.8 EDIT ROOF ELEMENTS

The Edit elements tool is located in the **What** toolbar for Roof Constructions. Selecting this tool will activate two additional tools in the **How** toolbar.

17.8.1 Trim at plane

This tool allows you to edit selected roof elements. After selecting the **Trim at Plane** tool, the 1st click will select the element to be edited. If you hold the shift key down, you can also select additional elements to be edited. Press Enter to continue to next step.

The next click will indicate the 3D plane in which you wish to edit the element. For example to change the length, you should click on the plane represented by the elements cross section. The selected plane will be indicated with a blue highlight. Press Enter to continue to next step and a dialog will appear in which you can increase or decrease the elements length by the value entered. Enter a negative number to shorten and a positive number to lengthen.

17.8.2 Trim at 2 planes

This tool allows you to edit selected roof elements. After selecting the **Trim at 2 Planes** tool, the 1st click will select the element to be edited. If you hold the shift key down, you can also select additional elements to be edited. Press Enter to continue to next step.

The next click will indicate the 1st 3D plane in which you wish to edit the element. For example to change the length, you should click on the plane represented by the elements cross section. The next click will indicate the 2nd 3D plane in which you wish to edit the element. The selected planes will be indicated with a blue highlight. Press Enter to continue to next step and a dialog will appear in which you can increase or decrease the elements length by the value entered. Enter a negative number to shorten and a positive number to lengthen.

18 STAIRS

This was originally the Stair Plug-in, but is now a standard feature of all Visual Building versions.

18.1 INSERTING DIFFERENT TYPES OF STAIRS

The Stair tool is located in the Plugin toolbar. When you select the stair tool in the Plugin toolbar a stair construction icon will then appear in the What-toolbar. Selecting the stair tool in the What-toolbar will cause the 3 stair tool icons to then appear in the How-toolbar. These 3 icons represent the 3 different stair types available:

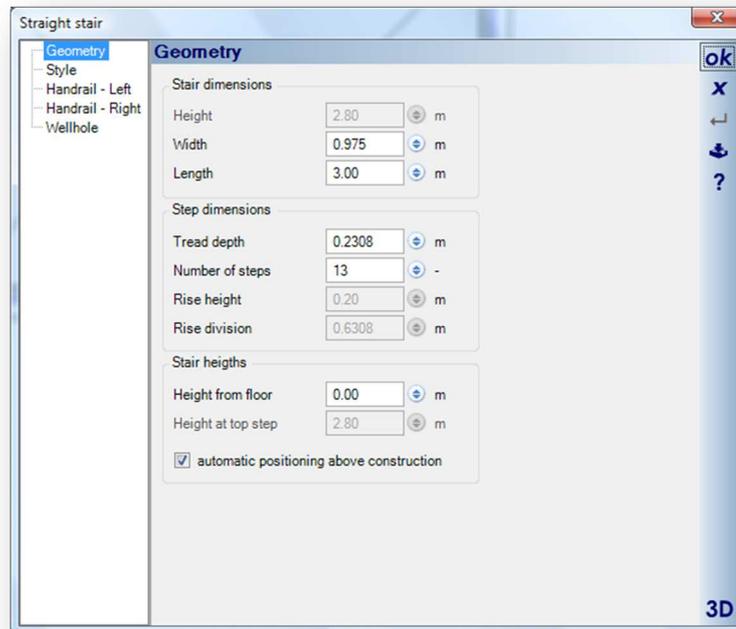
-  The software provides three types of staircase:
-  Straight staircase
 -  Geometrical stair
 -  Landing staircase

After selecting the stair type, the stair component is placed by clicking with the left mouse button. You can snap the placements to the grid, guide lines and walls, adjusting it's the stairs snap point using the Ctrl + W key combination.

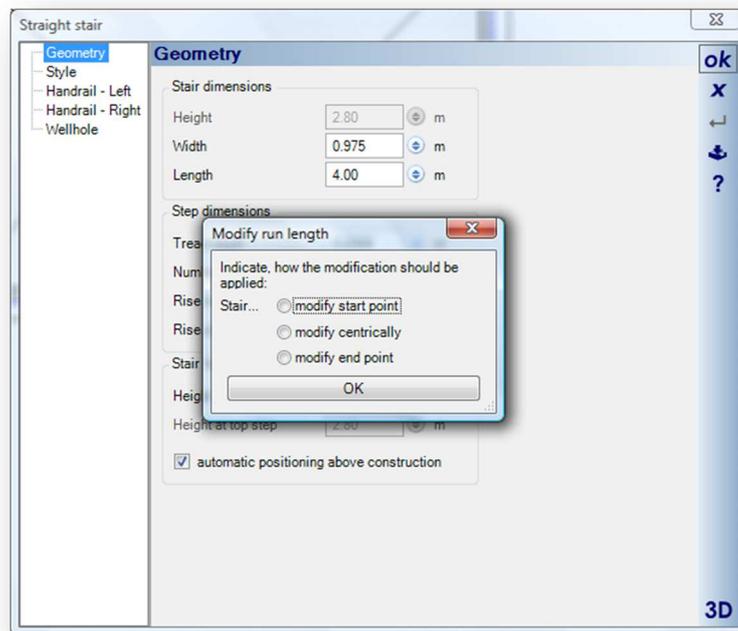
During input, the staircase is displayed, provided that valid data is used. For example, in a multi section staircase, if the angle of the last section is not valid, the last segment will disappear.

For all types of staircase, the stair input is terminated with the 'Enter' key or using 'Complete with' in the context menu which is activated with a right mouse click. When the input is terminated, the properties dialog for that particular type of staircase is activated.

18.2 GEOMETRY



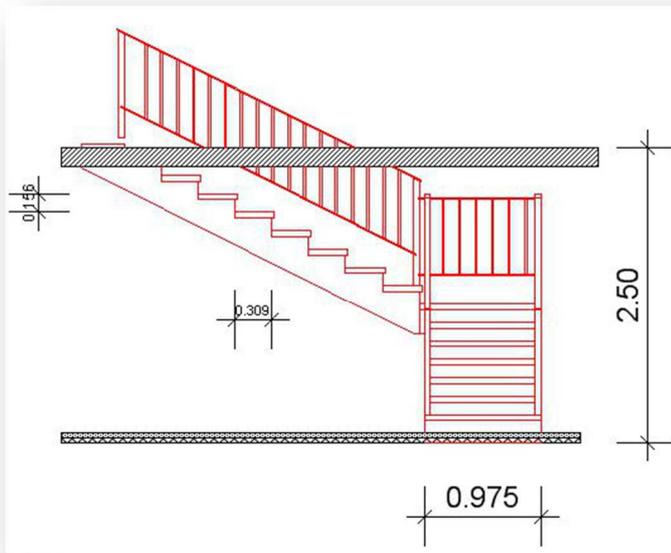
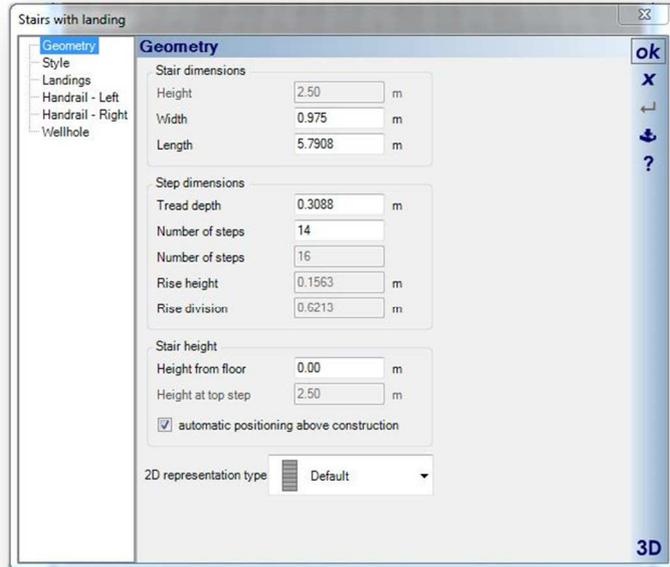
The staircase is automatically calculated, using the step dimensions, and an assumed relationship between the rise and tread depth (note: gradient = two steps + one tread; the ideal gradient based on the length a person's step is 63 cm). If for example, you change the length of the run of the stairs and then switch to another input field, the 'Modify run length' dialog appears. Here you have the choice as to how the stairs should be modified to suit the new length.

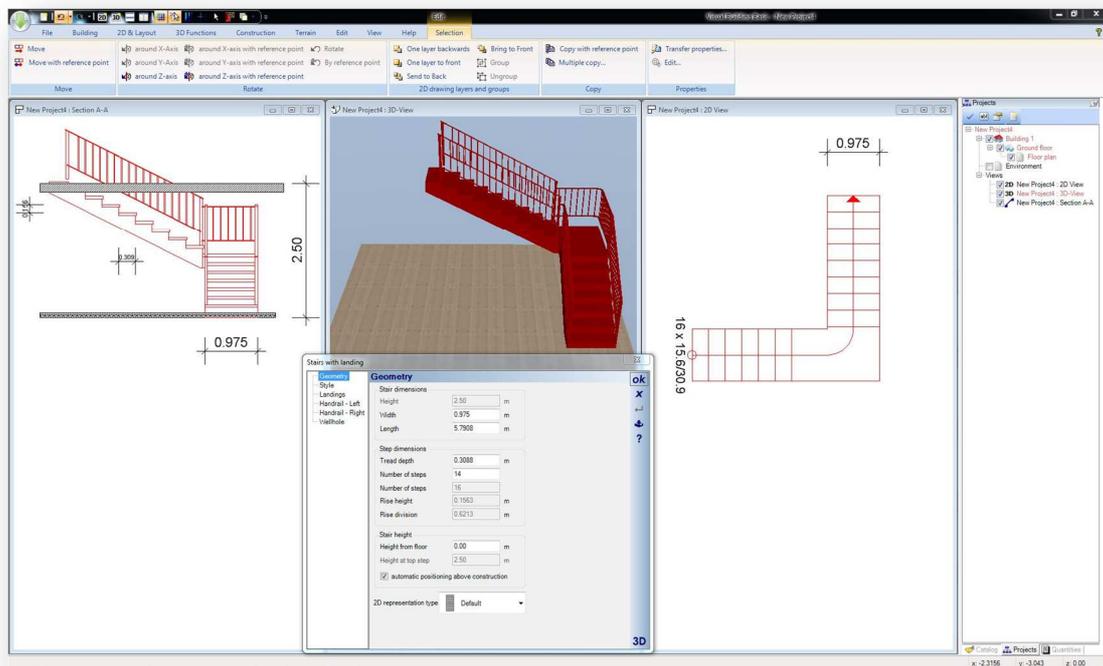


In this example, the number of steps remains constant and the tread depth is changed. If the tread depth is increased, then the length of the run of the stairs changes. If you change the number of steps, the length of the run changes but the tread remains the same. The value 'Height of starting step' allows you to set the height of the stairs above the finished floor. If you uncheck the box 'automatic positioning above construction', then the height of the staircase can be adjusted to suit your specific requirements.

Changes to the staircase dimensions and the number of steps are so designed to allow you to specify the settings for the staircase to meet your specific requirements, without being hindered by automatic functions. So you have to be aware to what extent the gradient adheres to the length of a person's step.

The following image is an example of a stair with a cross section view, showing the dimensions that relate to the dialog.



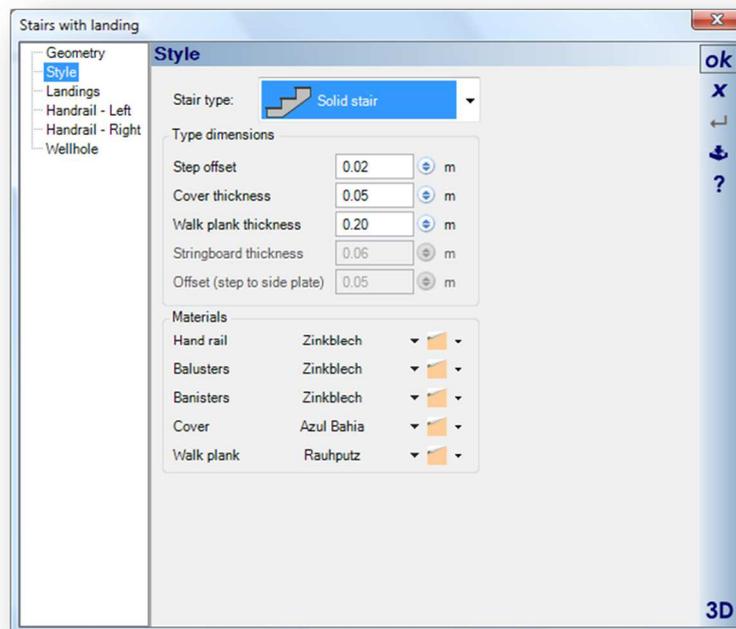


18.3 TYPE OF CONSTRUCTION, SOLID- AND WOODEN STAIRCASES

The staircase construction type can be changed at any point during insertion of the staircase and can also be changed later using the properties dialog, whereby either a solid concrete staircase or a wooden staircase can be specified.

Depending on the type of construction, different input fields are provided for steps, railings, stringers and also different construction materials.

In the Style page, under the 'Type dimensions' section, you can set the 'Step offset' for the staircase, i.e. the distance from the front edge of a tread to the rear edge of the tread below. You can also change the 'Cover thickness' and the 'Walk plank thickness', i.e. the thickness of the concrete slab under the treads, measured at right-angles to the inclination of the stairs. Each change to the staircase is processed immediately, and is shown optionally in the 3D preview, activated by the 3D button in the lower right of the dialog.



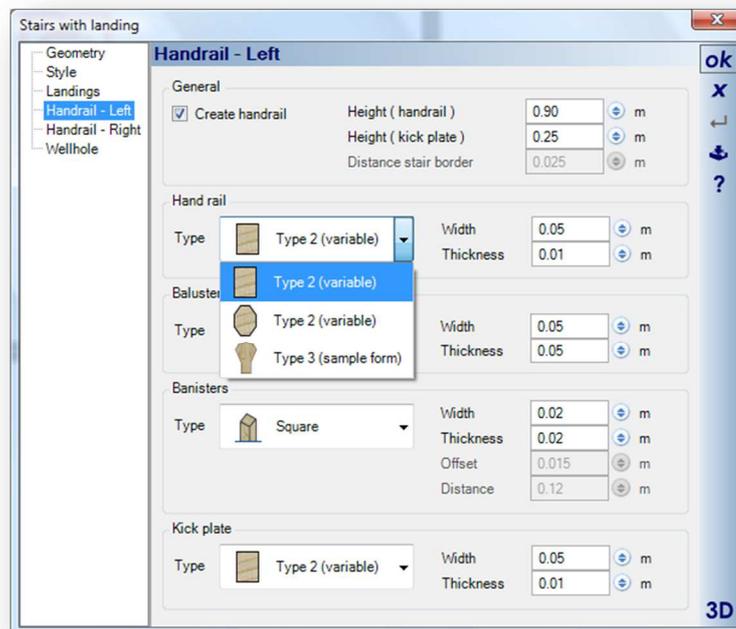
If you select 'Wooden stairs' under 'Stairs type', the input fields under 'Type dimensions' also change, several of the fields change:

'Step thickness' is shown instead of 'Cover thickness',
'Stringer width' instead of 'Walk plank thickness'.

In addition, there are input fields for 'Stringer board thickness' and the distance between a tread and the bottom edge of the stringer (the so-called 'Margin'). The 'Nosing' is again the distance from front edge of a tread to rear edge of the tread below. The 'Step thickness' is the thickness of the tread, the 'Stringer width' is the width measured at right-angles to the inclination of the stairs. The 'Stringboard thickness' is the thickness of the stringer and the 'Distance tread to stringer' specifies the distance between the front, top edge of a tread and the top edge of the stringer.

18.4 HANDRAILS

Common to all staircases are the Left and Right Handrails, which can be modified. The changes not only apply to the dimensions of the handrail components, such as 'Handrail', 'Balusters' und 'Kick plates', but also the shape of the component can be selected from a number of predefined shapes.

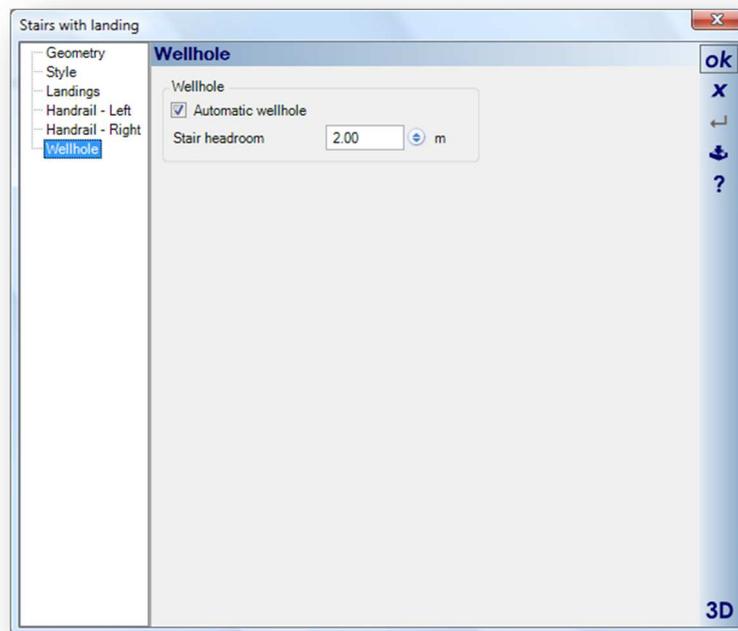


18.5 STAIRWELLS

Here you can define the stairwell opening, which staircases can automatically create in the floors and ceilings of the floors above.

If you uncheck the box 'Automatic well hole', then no openings are created in floors and ceilings. In this case you have to manually insert a stair well into the ceiling. This stairwell cut-out can then have any shape and size, and also retains its properties even if changes to the staircase or to the height of a floor cause the staircase to be recalculated, which is not the case for an automatically created stair well, which would be adjusted appropriately.

'Headroom' defines the minimum clearance between the stairs and the ceiling, and thus also determines the size of the opening above the stairs.



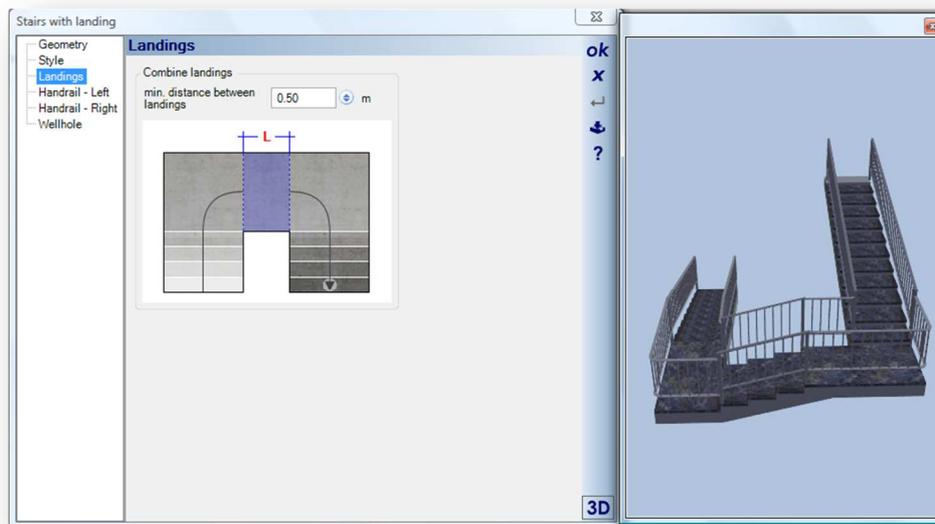
Note that the stair object and the stairwell are two different objects and can be selected and edited individually. The stairwell is in fact a ceiling cut-out.

You can tell when only the cut-out is selected because the steps are not red, and double clicking activates the cut-out properties.

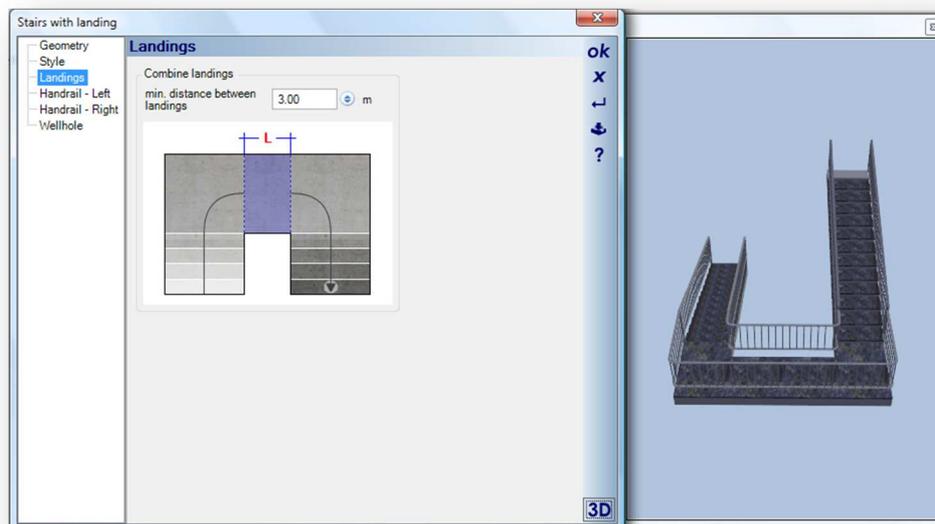
You can tell when only the stair is selected because the steps are red, and double clicking activates the stair properties.

18.6 COMBINE LANDINGS

When inserting a staircase that also has a landing, the individual landings are created automatically at each corner of the polygon. There is then also an additional landing page within the dialog. You can then set the minimum distance between the landings, which determine at which point the software creates stairs between the two landings.

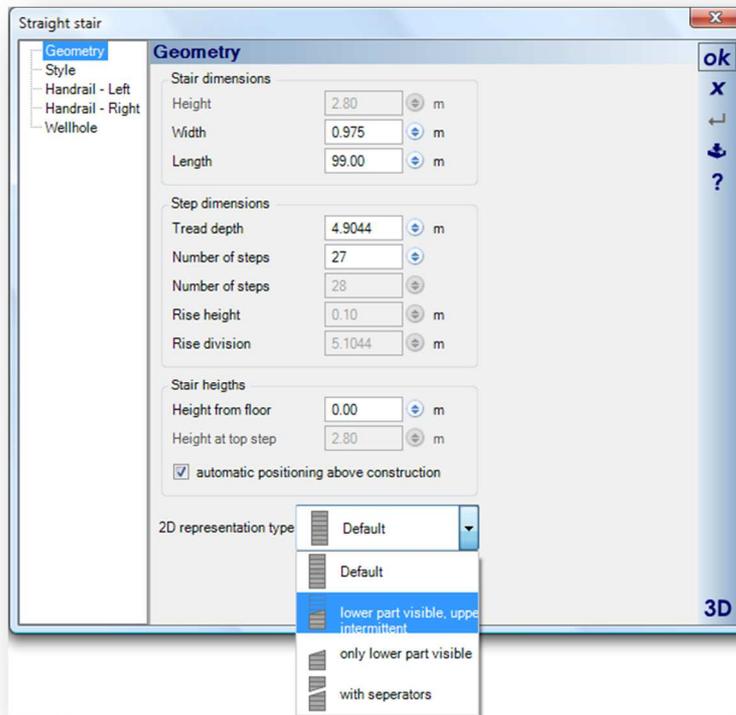


In the example, a distance of only 0.5 m is sufficient to connect the landings with three steps. If on the other hand only one landing is desired without any steps, then by increasing the minimum distance in the example to 3 m, after a recalculation (i.e. with ) , the steps are removed and only one landing instead of two is created.

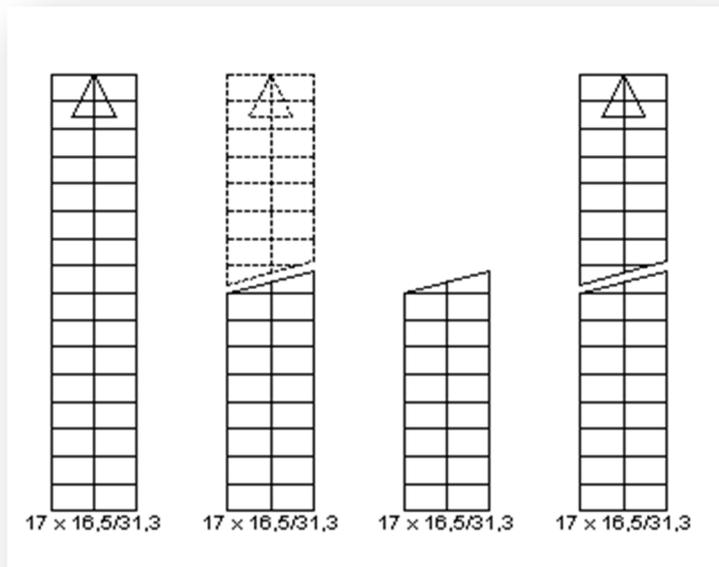


18.7 2D REPRESENTATION OF STAIRS

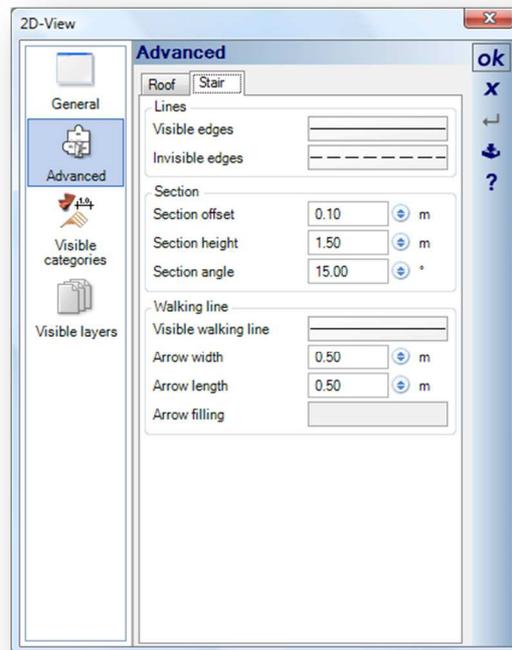
The 2D representation of stairs style is always selected individually for each stairs using the 2D representation property in the in the Geometry page in 'Stairs' dialog.



Here are some examples of different types of representation and their effects.



Additionally, the properties of the 2D view dialog contain further options, which have a common effect on the representation of all stairs in the 2D view. The dialog can be activated using the context menu, opened with a right mouse-click, in the 'Advanced' page.



19 2D GRAPHICS



This was originally the 2D Graphics plug-in and is now a standard feature for all versions of Visual Building.

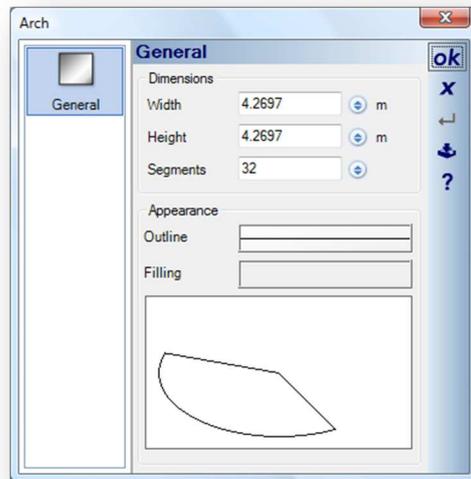
The 2D graphics plug-in offers a range of 2D graphic elements and various ways to input them.

-  Line
-  Circle
-  Rectangle
-  Ellipse
-  Arc
-  Polygon
-  Bitmap

All elements have a properties dialog, which is opened by a double click on the selected element, or using the 'Properties' entry in the context menu.

19.1 REPRESENTATION

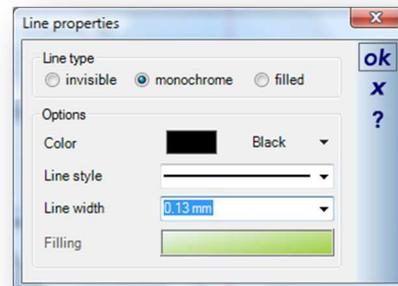
The properties for the representation of an element can be demonstrated with an example for an arc. Basically, closed figures such as circles, rectangles etc., are automatically created filled in. By default, this does not apply to arcs, but they can be assigned properties for fill-in nevertheless. The 'Properties' dialogs for 'Outline' and 'Filling' under 'Appearance' are opened if you click on the field next to the respective name.



19.1.1 Outlines

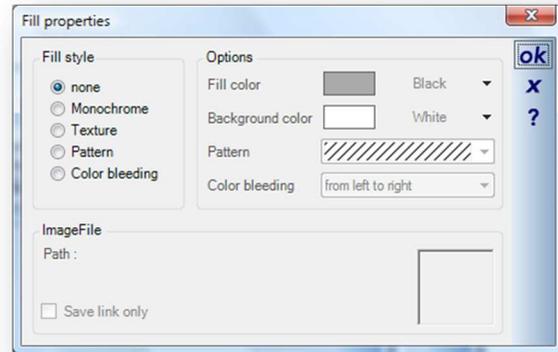
Since with outlines we are dealing with the properties of lines, the corresponding dialog is identical to the properties dialog for lines, which is often found in other dialogs.

For borders you have the option 'invisible' i.e. without a border, or 'monochrome' with the usual line properties.



19.1.2 Fill Properties

The fill styles provided are monochrome, texture, pattern and colour gradient. For each of the usual fill styles the appropriate options are also provided. For textures however, the associated image in one of the supported bitmap formats must first be loaded. A mouse click in the preview box under 'Image file' opens the standard dialog for 'Open file'. The selected image is automatically scaled to fit the fill area. Using the 'Save link only' option, you can decide whether the image, or only the path to the image, should be saved directly in the project file. Saving the image in the project naturally affects the file size, according to the size of the image file. If you only save the path, you should ensure that the image is always accessible using this path. If you change the directory structure, or pass on the project to someone else without the image and path, then the image will no longer be displayed.

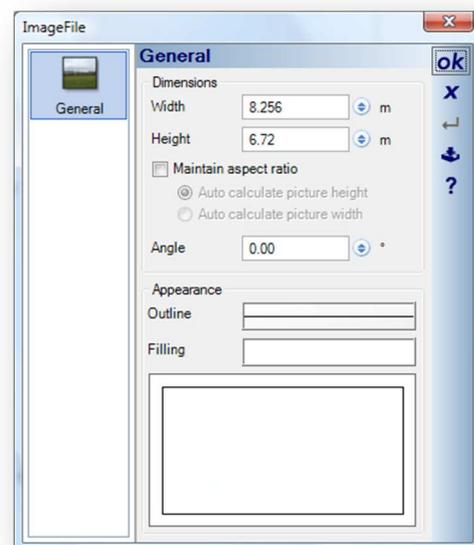


In many cases, which are beyond the possibilities for fillings, it is better to insert an image using the 'Insert image' function.

19.2 INSERTING IMAGES

When the function for 'Insert image' is selected, the standard dialog for 'Open file' is opened, in which you can choose the desired image file. Following this, the software expects a rectangle to be entered, which is then filled with the image. The properties of the image and the surrounding rectangle can be changed subsequently if desired using the properties dialog, which is opened with a double click, or using the context menu.

It should be noted that if the dimensions of the image are changed, the image will be distorted, if the values for height and width are adjusted manually without retaining the original width-to-height ratio. The 'Maintain aspect ratio' option prevents distortion, by allowing only one of the two values for width



and height to be entered, the other value is then adjusted automatically.

If a value for 'Angle' is specified, the image and its surrounding rectangle are rotated in the plan.

19.3 VISIBILITY OF 2D ELEMENTS

As already mentioned, 2D graphic elements are generally visible in all 2D plan views. Detailed settings for each plan view can be specified using the visible categories in the 'Visibilities' dialog, activated using the context menu.

2D graphic elements are inserted exclusively in the current view for 2D views and cross-sections.

19.4 DISPLAY PRIORITY

Basically, the order in which elements are inserted also determines the order in which they are displayed. For instance, a filled in rectangle which is drawn over text that was inserted previously, will cover the text, which is then no longer visible.

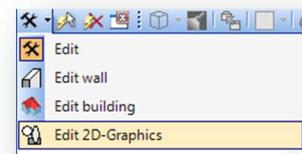


This default setting can be changed subsequently with the buttons for display priority, which are always shown in the toolbar when an element is selected.

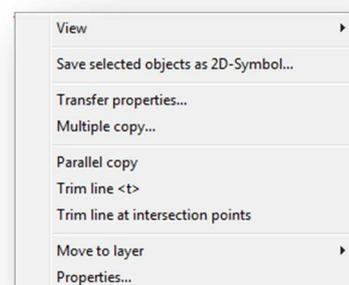
This enables you to specify the order in which elements are displayed, to suit a particular case, e.g. inserting text over a filled in rectangle when creating a title block.

19.5 EDITING 2D ELEMENTS

The following functions for editing 2D graphic elements can be found in the appropriate 'Edit 2D Graphics' toolbar.



Alternatively, the tools can be activated using the context menu, as soon as a line or polygon has been selected.

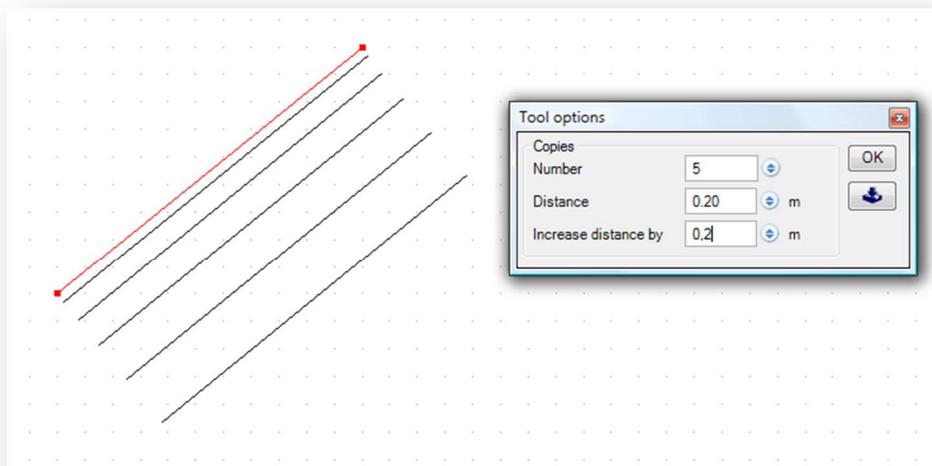


19.5.1 Parallel Copy

 With this tool you can create parallel copies of lines or polygons. In the 'Tool options' dialog you can specify the number of copies and the spacing between copies. All copies are shown first of all only as a preview. They are only inserted into the plan when the settings are confirmed with 'OK'. Activate the tool and position the mouse cursor over the object you wish to copy. As soon as an object is detected it is highlighted in the preview. In the following illustration a normal line is shown on the left, and on the right a line which has been highlighted by the tool.

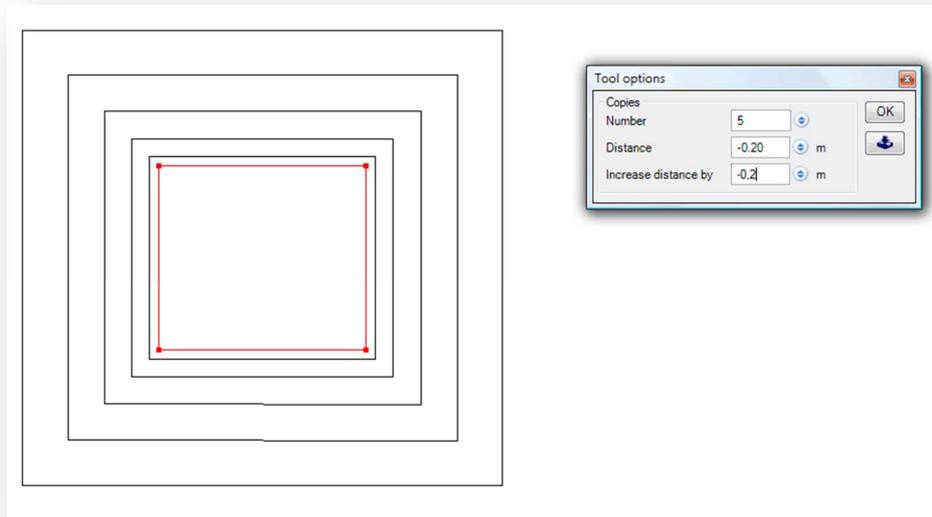


Now click on the object. As a result the 'Tool options' dialog appears.



To create parallel copies in the opposite direction a negative distance must be specified.

The following example shows a closed polygon, for which concentric copies have been created by specifying a negative distance with a constant increase in the distance between copies.



19.5.2 Trimming Lines

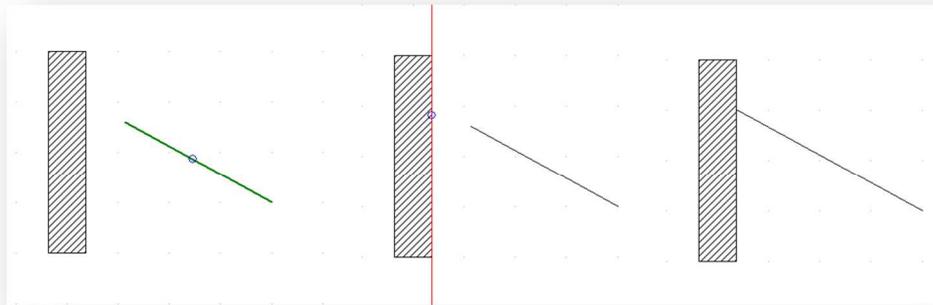


The tool can also be used to trim lines. Activate the tool and then select the line to be processed. When a line is detected under the mouse cursor it is highlighted and can be selected with a left mouse-click. Next a reference line must be selected against which the line is to be trimmed. Move the cursor to the edge of a construction element, to another line or a guideline. A valid reference line is immediately marked with a red line and can be selected with a left mouse-click.

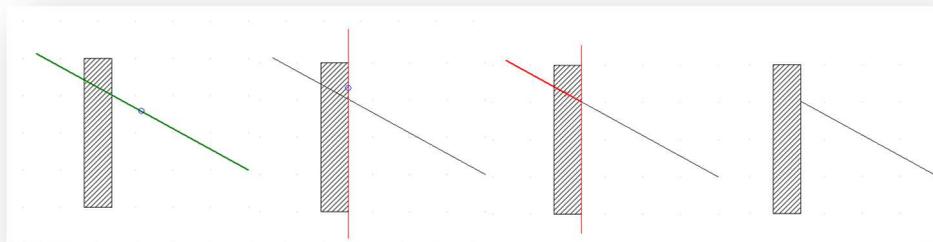
Below we consider two different cases:

- The line is extended to meet the reference line.
- The line intersects the reference line.

In the case of the line being extended, this is performed immediately and the line is extended to meet the reference line. In the following illustration the necessary steps are shown from left to right together with the final result.



If the line intersects the reference line an intermediate step is necessary. You must first specify which part of the line, which is split by the reference line, is to be removed. The part of the line to be deleted is highlighted in red when the cursor is positioned over it, and can then be deleted with a left mouse-click. The following illustration shows, from left to right, the necessary steps and the final result.

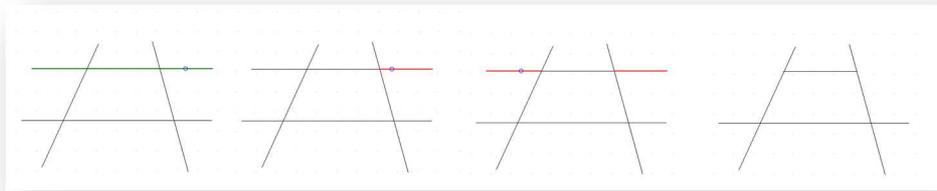


Note: The 'line trimming' tool can also be activated directly with the 'T' key.

19.5.3 Trimming a Line at an Intersection



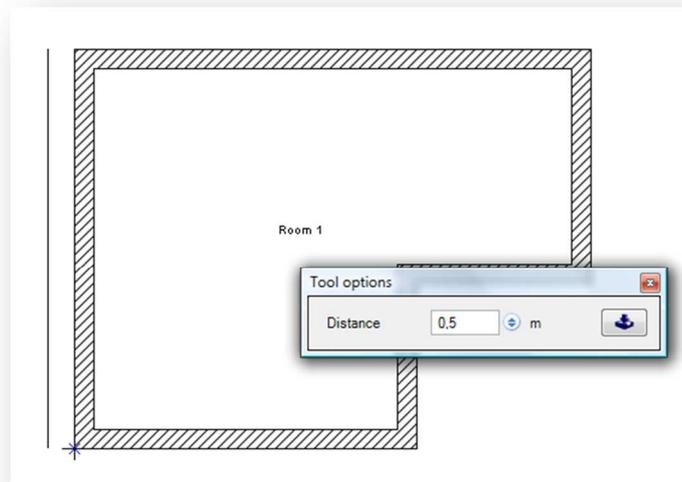
Trimming lines at an intersection is performed without the need to select a reference line, since all intersections with other lines or guidelines are automatically detected along the line. However, the edges of construction elements are ignored. The illustration shows the necessary steps from left to right; using the mouse first select the line, and then the parts of the line to be removed. With this tool you can select several parts of the line by keeping the 'Shift' key pressed. The second diagram from the right illustrates this option. Once the selection of the 'line sections' is complete, the selected sections can be removed by pressing the 'Enter' key.



19.5.4 Tools for Inputting Parallel Lines and Polygons

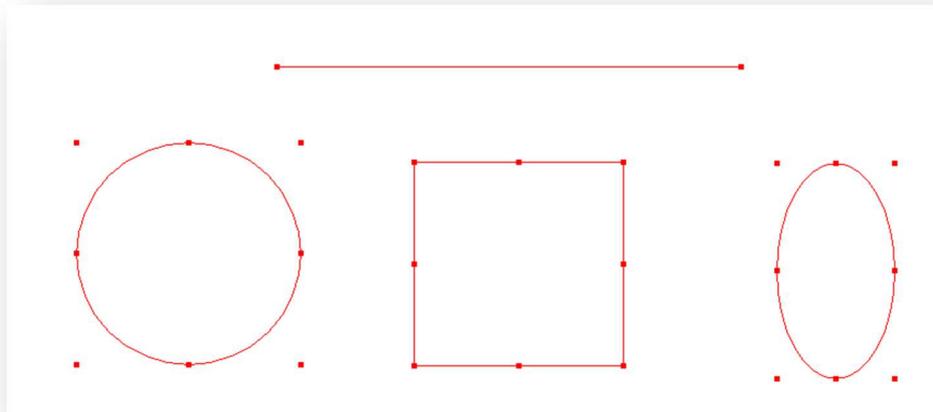


In addition to the normal tools, there is an option for lines and polygons which automatically creates the appropriate objects with a specified lateral spacing. If a positive distance is specified, the line is created to the right of the mouse cursor relative to input direction, and to left if a negative distance is specified in the 'Tool options' dialog. In the example shown, the line is input automatically parallel to the wall between corners.



19.5.5 Scaling 2D-Elements

Selected 2D graphic elements show 'grips' at the ends of lines and on the rectangles surrounding them, which can be used to position or change the dimensions of the element.



Select one of the 'grip' points with a left mouse-click. For a line you can now reposition the point, or in the case of a surrounding rectangle you can change the size of the complete element. A second mouse-click terminates the operation.

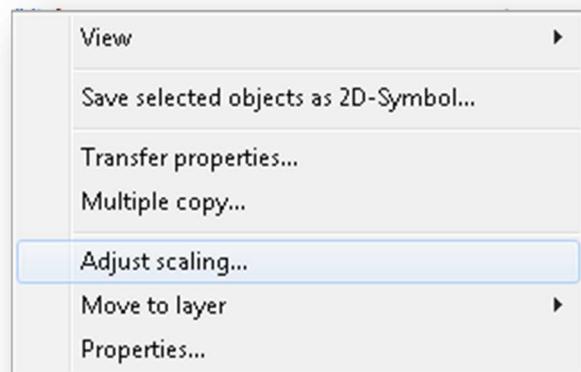
Note: If you keep the 'Shift' key pressed while repositioning a point then the previous direction of a line remains fixed, and rectangles are only changed proportionally, i.e. the width-to-height ratio is retained. For lines you can thus select a point away from a line as a reference point for the new length of the line.

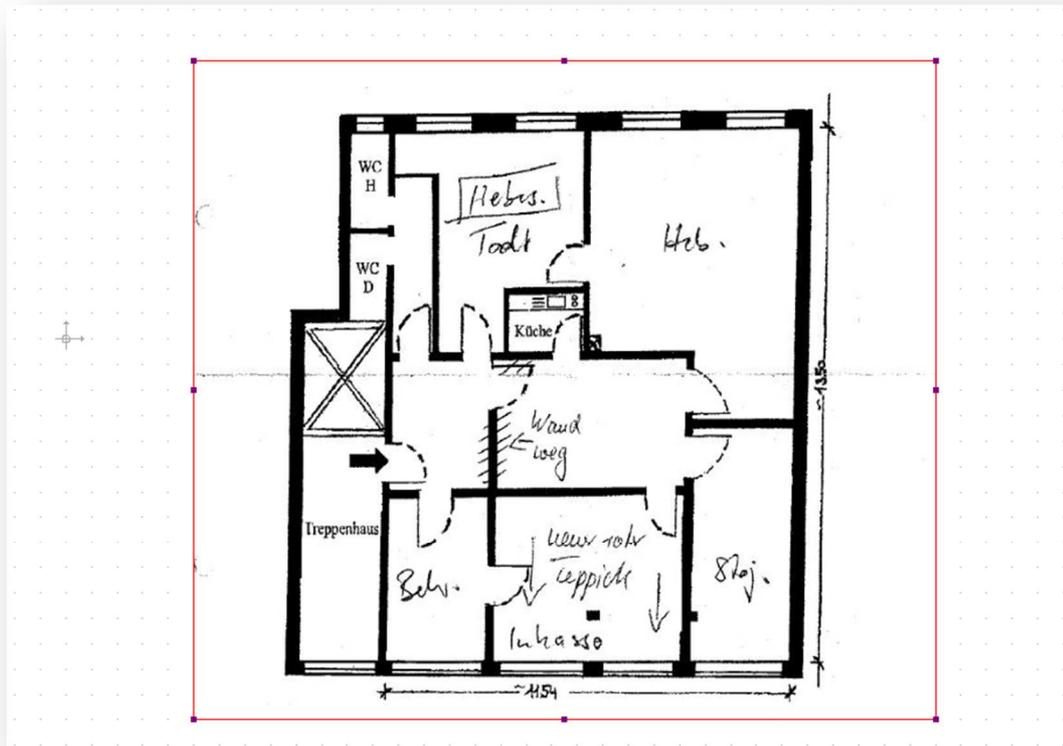
19.5.6 Scaling Images and 2D Elements numerically

Images and 2D Elements can be scaled very accurately. This allows images of floor plans to be inserted and used as a blueprint over which the 3D model of the building can be constructed.

To achieve this, the image must first be scaled to the correct dimensions, as undefined dimensions and incorrect proportions can result after the image has been inserted

First select the image and then right click on the image and select 'Adjust scaling' function from the activated context menu. If right clicking on the selected image does not produce the correct context menu, then you have either not selected the 2D image or may even be on an entirely different layer.





The next step is to enter a dimension from the image as a reference dimension for subsequent scaling. In this case we choose the horizontal value shown as 11.54 and define the length with two mouse-clicks on the dimension in the image. Keep the 'Ctrl' key pressed to activate the angle grid and this will guarantee an exact horizontal length measurement. On the second mouse-click a dialog box will appear in which the current measurement is shown and allows you to insert the actual length.

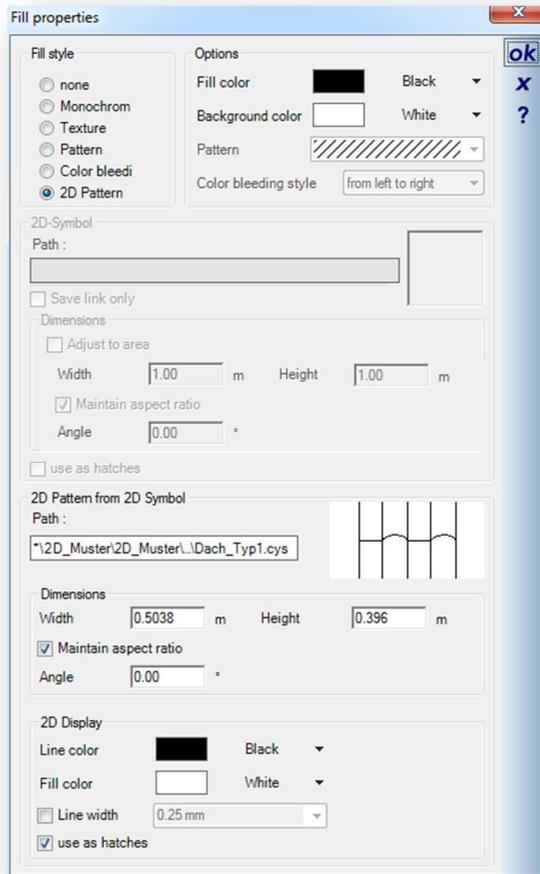
A click on **OK** ends the dialog and the image is scaled to the new dimension.



The floor plan can now be inserted by tracing over the scaled plan, although all measurements should be checked beforehand.

19.6 EXTENDED FILL PROPERTIES

As of Visual Building Premium v5, the Visual Building Premium version has extended 2D fill properties.



This extended fill applies to all 2D fill operations, which includes the following:

Applying 2D filling to walls for example wall hatching including wall layer filling.

Applying 2D filling to ceilings for example ceiling hatching including ceiling layer filling

Applying 2D filling to 2D shapes, such as circles, rectangles and polygons.

Assigning and applying 2D fills within the Surface Editor.

Wherever you previously had the option to fill a 2D area from the limited 2D pattern list, you can easily now create your own patterns from 2D symbols. You are therefore no longer limited to a standard set of 2D fill patterns.

Line Color

You can apply any colour to the line (default black) that the fill pattern is defined by.

Fill Color

You can apply any colour to the background (default white) that the fill pattern is defined by.

Line Width

Normally you should set the line width to hairline.

Use as hatches

The option "Use as hatching", is disabled by default and must be activated only in a few cases, for example:

In the left image you see the fill pattern used in walls with the option "Use as hatching" disabled. (Also without having an angle defined in the dialog). The pattern then follows the alignment of the wall, and always starts in a corner of the drawing area, usually in the upper left.

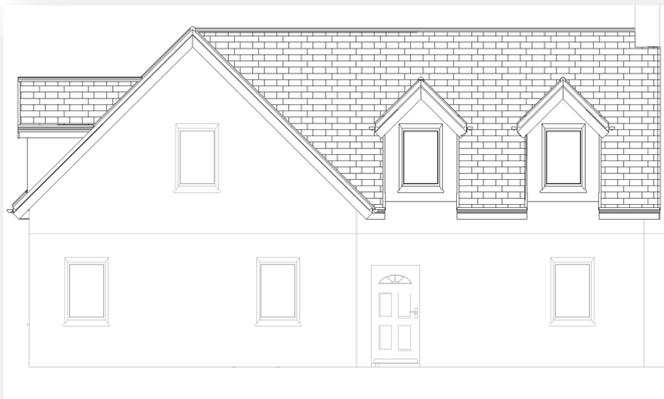
On the right image you see the same drawing but with "Use as hatching" enabled. The pattern is now tiled without reference to the element and is centered on the screen and spread over all the elements in an identical manner. This functions in the same way as the standard "standard Windows hatching".

The 2D fill patterns are selected from the 2D Symbols catalogue in the new 2D Patterns folder. This folder includes several types of fill objects:

19.6.1 Section Hatch patterns

For use in section views, which includes Concrete, Insulation, Glass and Timber.

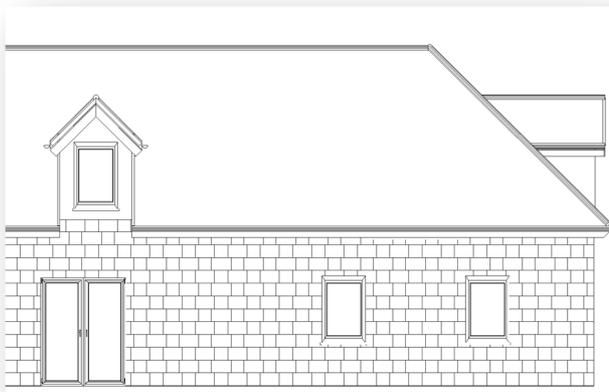
19.6.2 Roof Surface Fill Patterns



For tiling roof areas in 2D views.

Use a 2D polygon to trace around the roof surface that you wish to fill and then fill the polygon with the roof tile pattern.

Surface Fill Patterns



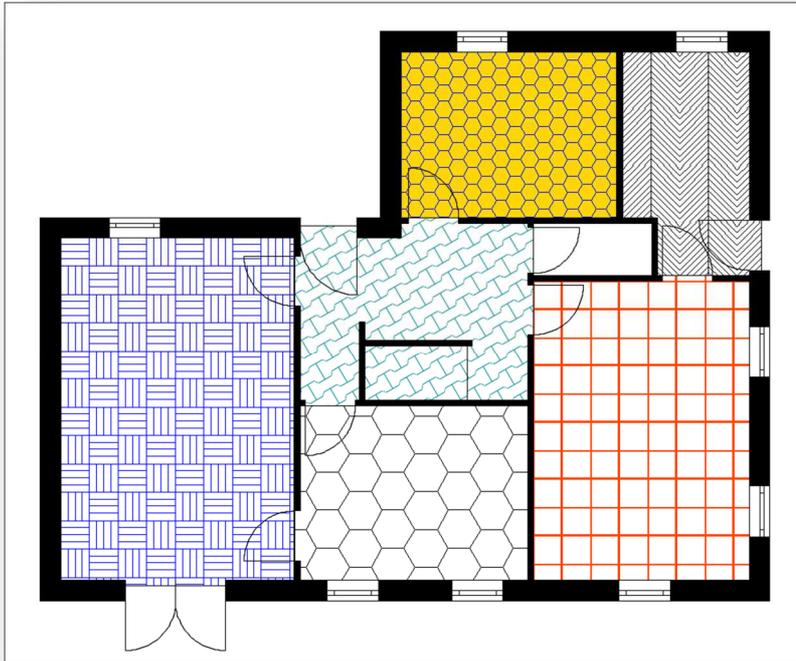
19.6.3 Wall

Use a 2D polygon to trace around the wall surface that you wish to fill and then fill the polygon with a 2D fill pattern. For tiling wall areas in 2D views.

You can use the Surface Editor tool to define a plane and then apply the 2D fill pattern to that plane.

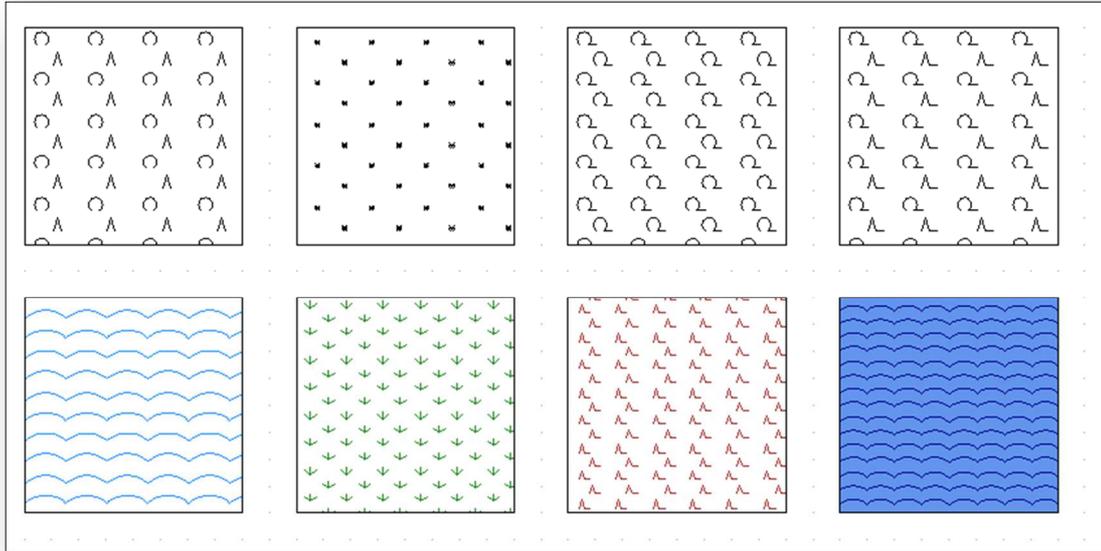
19.6.4 Floor Surface Fill Patterns

You can also apply any 2D fill pattern to floor surfaces.



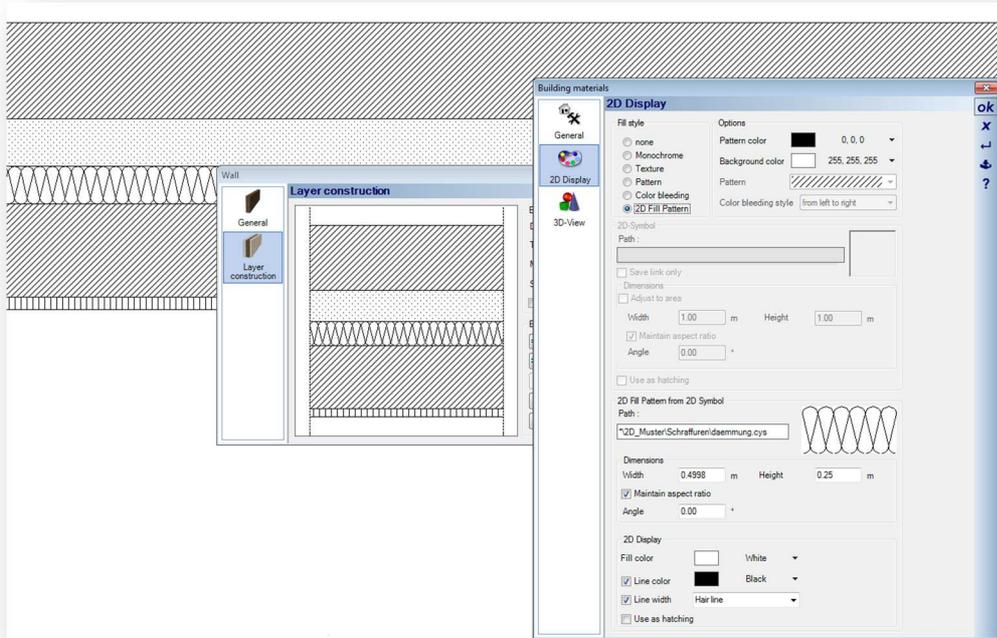
19.6.5 Terrain Fill Patterns

For filling terrain with terrain fill types. You create your own terrain styles and vary then use line width and colour



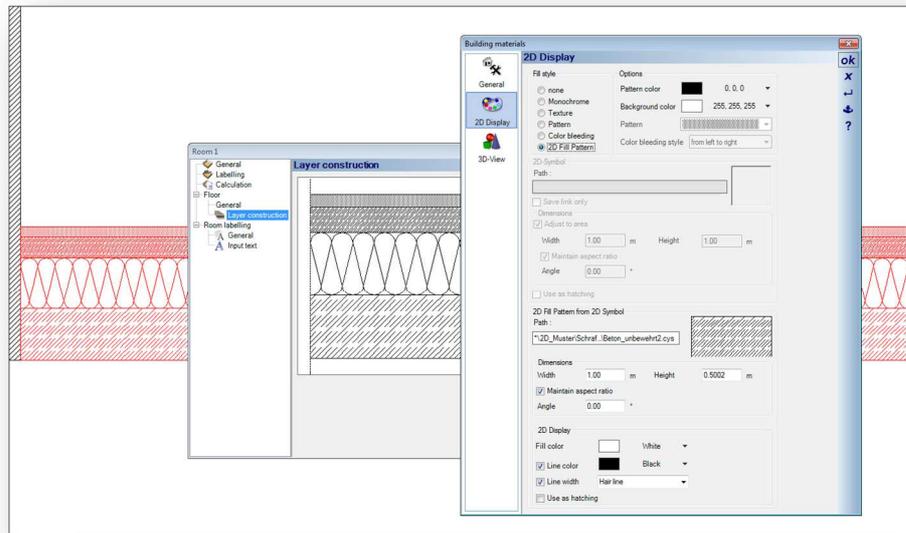
19.6.6 Wall Layer Fill Patterns

You can now apply more standard and recognisable 2D symbols. The above image shows the insulation layer within a wall layer.



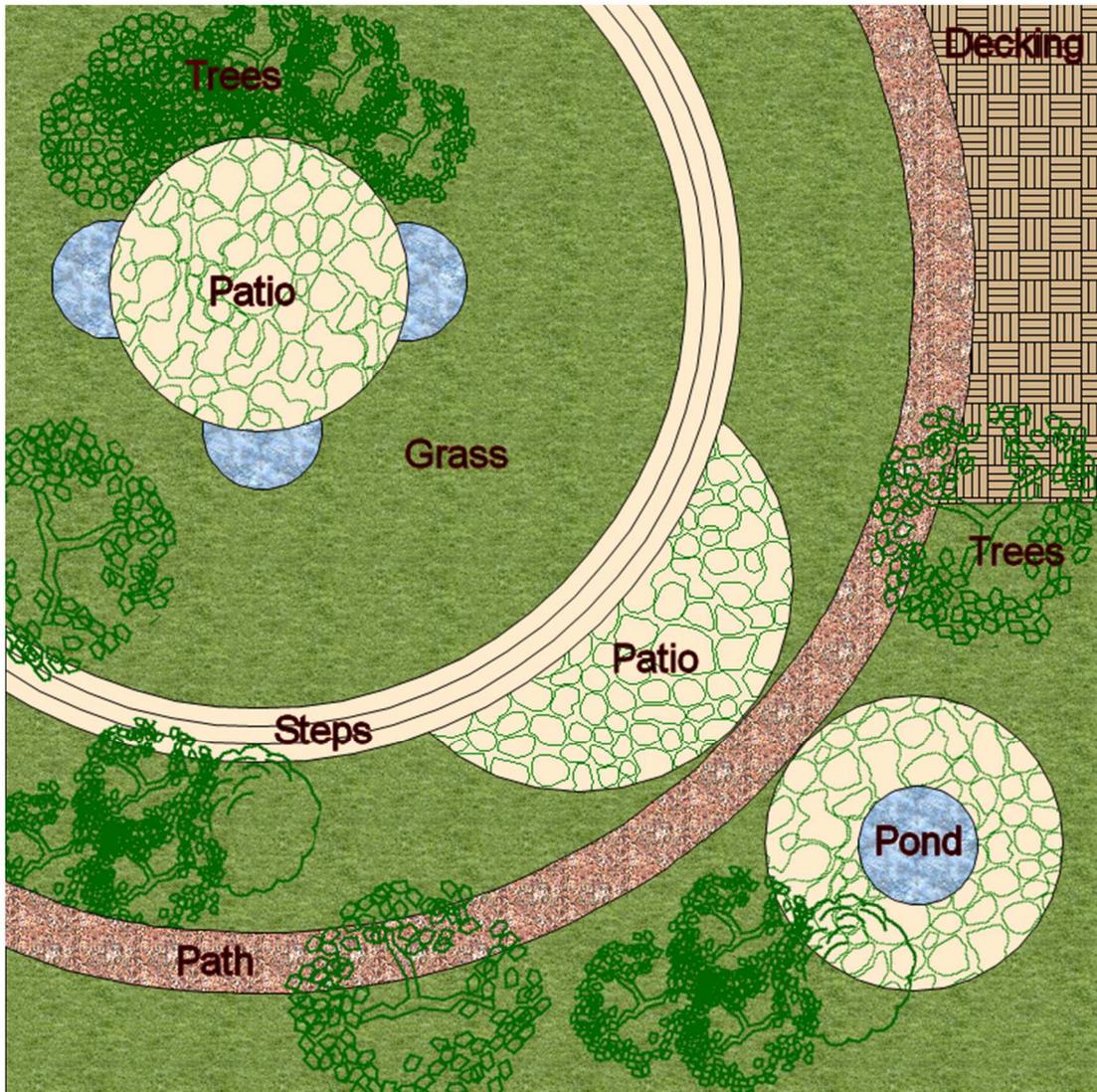
19.6.7 Floor Layer Fill Patterns

2D Fill patterns can be applied to floor layer structure. This works in exactly the same way as the wall layer.



19.6.8 2D Object Fill Patterns

You can fill any 2D object with either a standard fill or a customised fill pattern.



The above image demonstrates how easy it is to create a 2D garden design plan view.

Some aspects of the above project can only be achieved with the advanced 2D fill tools specific to Visual Building Professional and Premium v5:

Patio

This objects contains a customised fill pattern.

Decking

This objects contains a customised fill pattern.

Trees

Previously these 2D objects could be viewed in black, but with Visual Building Professional and Premium v5, they can also now be coloured.

Grass, **Path** and **Pond** could be achieved in all versions.

19.7 CREATING FILL PATTERNS

You can add your own hatch and fill pattern designs to the catalogue. All hatches and patterns consist of 2D symbols, using the native .cys 2D file format. You could import your own samples, e.g. from DXF files, or draw graphics using the drawing functions of the 2D drawing tools, located in the 2D & Layout tab. Then select the items you want to belong to the 2D symbol and save using the context menu, activated with the right mouse button selecting "Save selected objects as 2D Symbols".

An example:

Draw a bounding rectangle and enter the dimensions exactly as you require for the fill pattern. These dimensions are also displayed in the Fill Properties dialog and can be changed later for each fill there.

Then inside the rectangle draw your fill pattern using 2D drawing functions- such as Line, Arcs, Circles, Rectangles and Polygons etc.. While drawing, it makes sense to turn off the line widths in the 2D view (via the Quick Access Panel). In our example patterns, we have also used the "hair line" line width setting to increase clarity.

Please take into consideration when drawing the pattern any tiling that may displayed display both vertically and horizontally, otherwise you will see a tiled effect in the drawing.

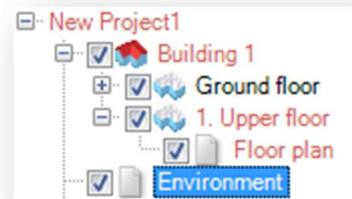
The initial bounding rectangle is used for the orientation and is automatically stripped when the 2D symbol is used as a pattern. Therefore, you can also create patterns without this bounding rectangle.

20 TERRAIN

This was originally the Terrain plug-in, but is now a standard feature for all versions of Visual Building

20.1 GENERAL

For each new project the software automatically creates a terrain with the dimensions 50 x 50 m. The terrain is also assigned its own layer entitled 'environment', which can be displayed, for instance, using the project viewer.



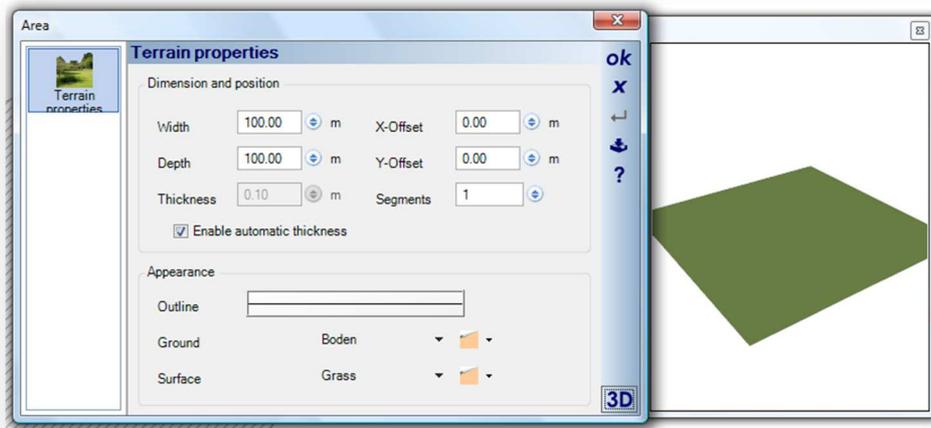
The terrain is set by default as visible, which means that if the 'Show all' button or the 'HOME' key is pressed, the software zooms out of the view until all of the terrain is completely shown. For normal planning it may therefore be advantageous to make the layer for the environment, together with the terrain, invisible. The easiest way to do this is in the project viewer by unchecking the box for the 'Environment' layer. Alternatively, the standard method using visible categories / visible layers is of course also possible.

As opposed to the way the software normally behaves, i.e. elements are always inserted in the current layer, all elements entered in the 'Terrain' plug-in, e.g. terrain forms, terrain areas etc. are internally always assigned to the 'Environment' layer, which as a rule is not active. This also means that the terrain elements can only be selected and edited, if beforehand the 'environment' layer is set as an active layer in the project viewer.

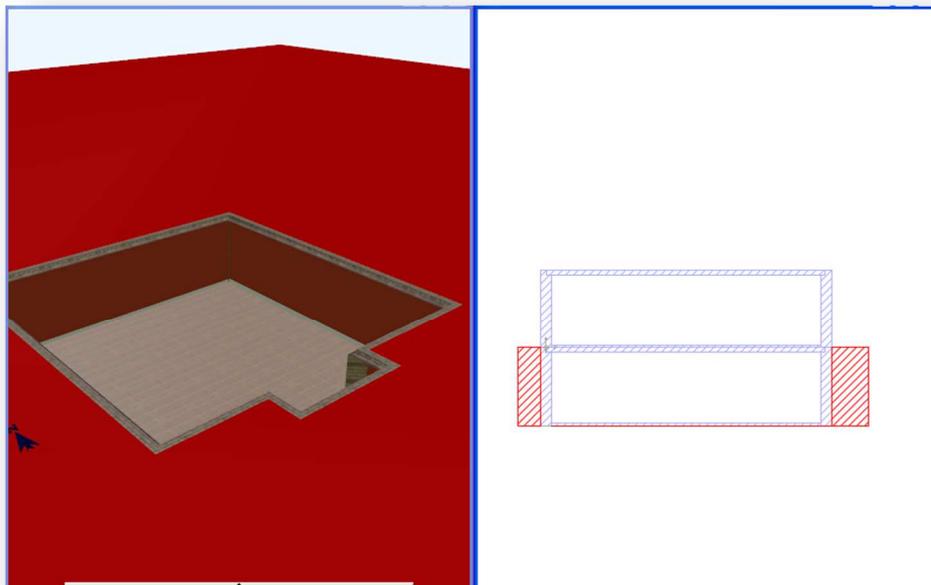
The terrain, and the terrain areas and forms which are situated on it, are proper 3D bodies, and not just surfaces for better orientation. This gives us basically the possibility of calculating not only surface areas but also the volume of areas and openings. Several further visible effects are explained in the following chapters.

20.2 TERRAIN PROPERTIES

The 'Terrain' properties dialog is opened by a double click on the terrain, when the layer for environment is active.



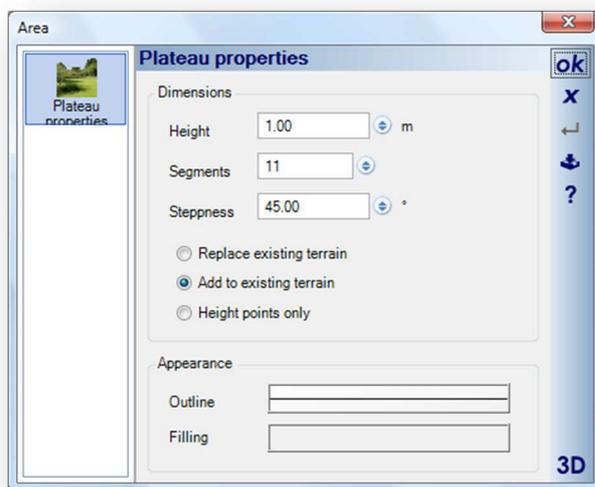
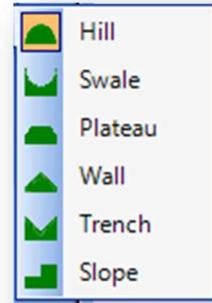
The terrain is always positioned about its origin. If required it can be repositioned by entering an offset in the x and y direction. If the terrain is 100 x 100 m, an offset of 50 m in the x and y direction would thus reposition the bottom left-hand corner in the direction of the origin. Since the terrain is a 3D solid, as we have already mentioned, you can also specify a thickness. Alternatively, you can allow the terrain to be automatically adjusted if, for instance, a basement floor is created below the ground floor. In this case the terrain automatically assumes the thickness of the basement floor, and creates an opening in the ground to match the contour of the building, as can be seen in the following illustration.



20.3 TERRAIN FORMS

The software provides a range of predefined landscape forms to enable you to landscape the terrain.

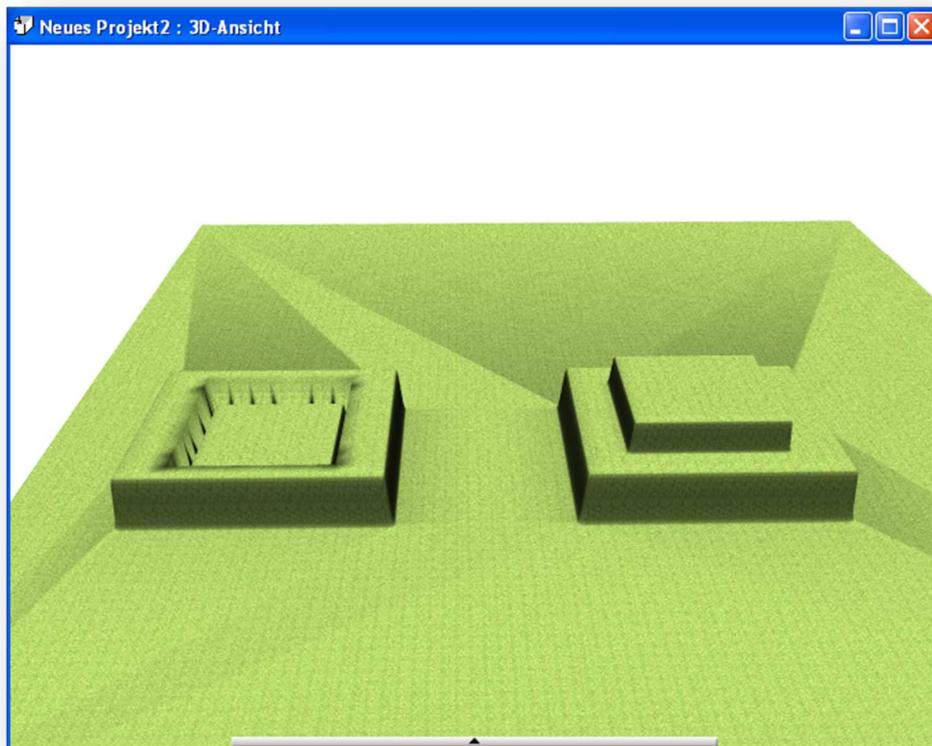
Suitable tools are provided for inserting the various landscape forms. For instance, to enter a slope, an area and a gradient must be defined, whereas a plateau only requires a rectangle to be entered. After an area has been defined for the landscape form, the corresponding dialog is opened. The possible settings in the dialogs for the various landscape forms are basically similar in all dialogs.



Worth mentioning are the options, 'Replace existing terrain', 'Add to existing terrain' and 'Height points only'.

The option 'Height points only' causes the landscape form to lose its properties, and only individual height points, which can only be edited individually, are inserted for the project. Therefore, it is not possible later to simply change the height of a landscape form, but instead every single point must be adjusted.

The 'replace' and 'add' options behave as illustrated in the following figure for two plateaus, which in both case are situated above each other. On the right, a small plateau was entered above an existing one and created with the 'add' option. The new plateau automatically assumed the height of the ground at this point and was inserted. Terraces result. On the left, the existing ground was replaced at this point. The small plateau has assumed a height of zero and has created a hollow, corresponding to its shape, in the existing plateau.



20.4 TERRAIN ELEMENTS

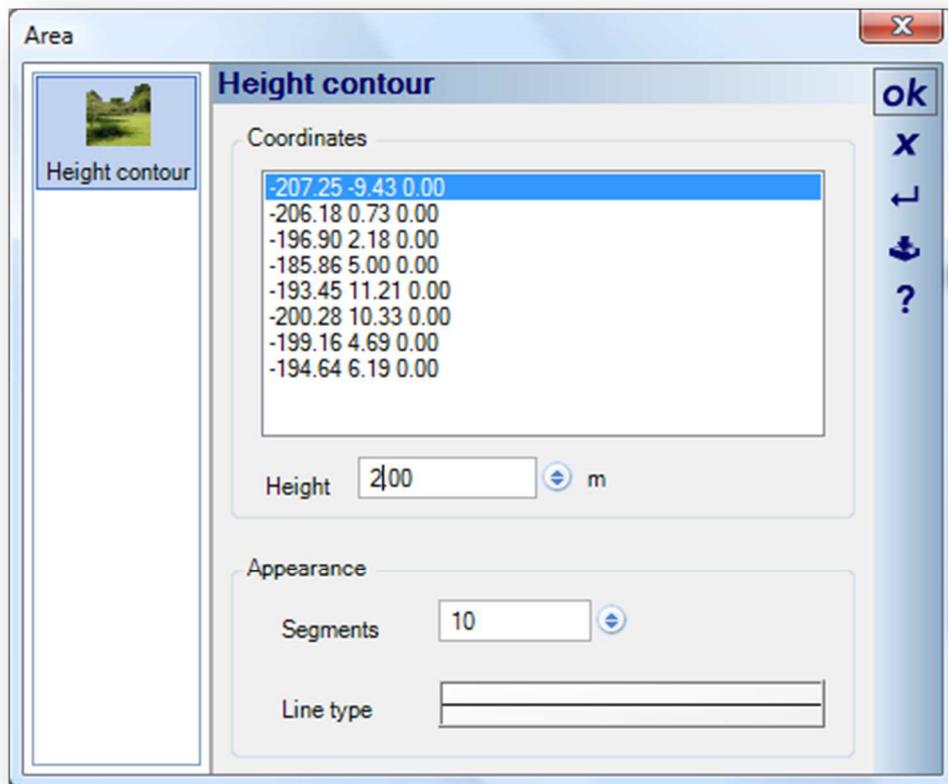
After the contour of the ground has been defined, further landscape features can be incorporated. The features available here are flower beds, ways, terraces and water features. The appropriate means of entering the feature are also provided, so that for instance, a path can be inserted as a polygon or as a spline, whereas a flower bed can only be inserted as a closed polygon. Landscape features are created as surfaces, which automatically conform to the contours of the ground and the defined landscape forms. Since landscape features are discrete surfaces, they have their own materials, and can, as opposed to the terrain as a whole, be allocated textures from the catalogue.



20.5 TERRAIN CONTOURS

Apart from the predefined landscape forms, the contour of the ground can also be modified by entering individual height points or a spline shaped contour line.

When input for height points is terminated, a dialog is opened which enables coordinates for a height to be entered. A contour line is also resolved into individual height points along its course. The list of height points along a contour line are shown point for point in the following dialog.



20.6 TERRAIN SHAPE

The default environment block is a 50m x 50m square. If you select the Environment layer and double click on the environment block, you can change the block size, but the block must retain a rectangular shape.

If you want to create an irregular plot size then use the Terrain tool to create a polygon to define your plot size. (**Terrain - Terrain elements - Bed - Insert with Polygon**) The terrain objects normally sit on top of the environment block, and can be textured. You can make the Environment block invisible by placing a glass material on it.

If you want to have a solid block similar to Environment block, then use Extrudes solid tool to create an irregular shaped block. (Applicable to Visual Building Professional/Premium only)

21 SURFACE EDITOR

This was originally the Surface Editor Plugin but is now a standard feature for all versions of Visual Building.

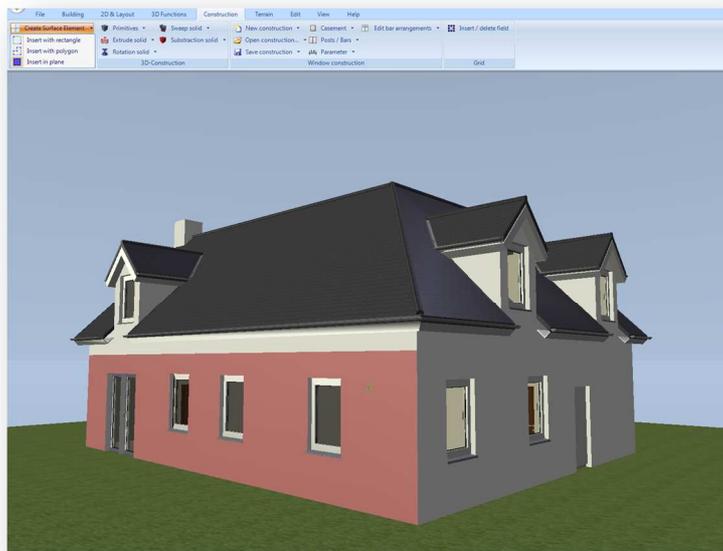
The Surface Editor was extended with the Visual Building Premium v 5, that include the ability to use user defined fill patterns in the 2D view.

The surface editor can be used to create 3D surfaces in any plane. A few examples of the use of such surfaces are façade cladding, tiled backsplashes for kitchens and bathrooms, work tops, and patios and other landscape features.

21.1 DEFINING SURFACE AREAS



The surface editor first requires that a plane or surface area is first selected in a 3D view. Only when an area has been defined can the surface be created. This can be performed in any view, so for example, tiled backsplashes can also be created in cross-section views. The surface area can be selected very simply with a left mouse-click. First choose one of construction tools, i.e. a rectangle, a polygon or a plane, and position the mouse cursor over the chosen element in a 3D view. When an element is detected, be it a wall, a roof plane, or a piece of furniture, its surface area is highlighted in red in the 3D view.



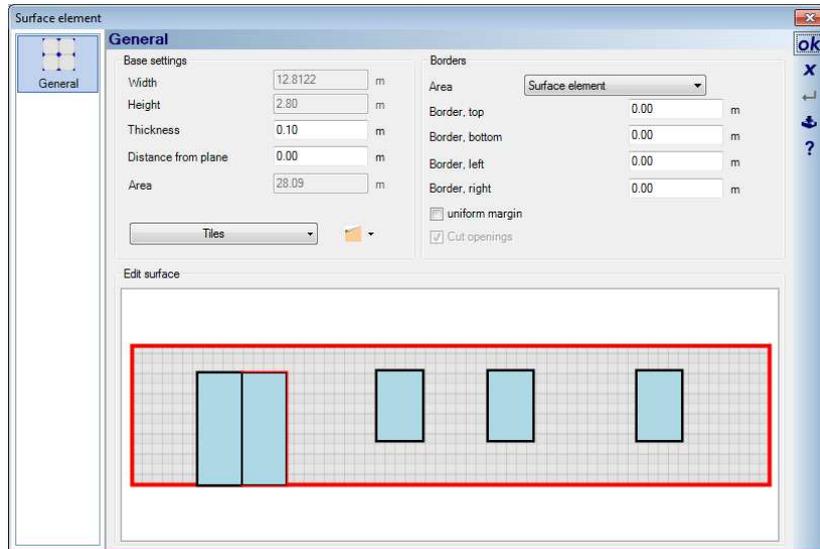
The Insert in plane too is used

For the rectangle or polygon tool the first step is now complete and you can begin defining the surface area. For the plane tool option the 'Surface' dialog will now be automatically activated. If you wish to define several surface areas or planes using the plane option, for instance the complete façade as shown in the example below, then simply keep the 'Shift' key pressed and select further areas. The selection process is terminated with 'Enter'.

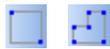


The image shows the Insert with Polygon is used

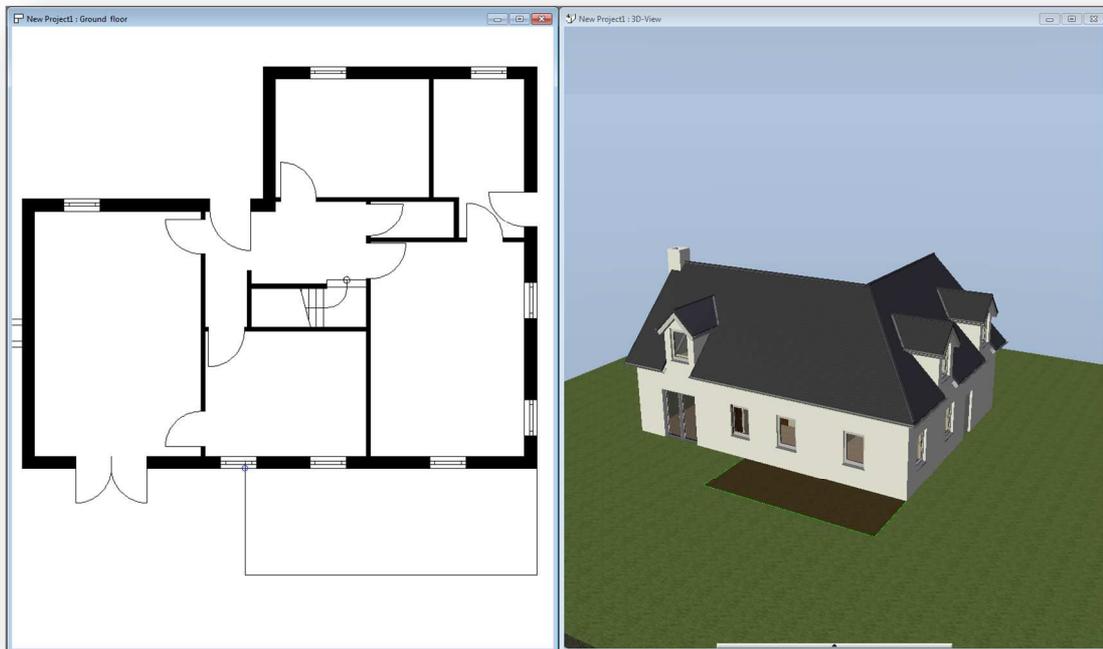
Whenever a surface area is defined first all openings such as windows, doors or wall cut outs, included in or under the surface, are detected and shown in the 'Surface' dialog.



21.2 DEFINITION USING A RECTANGLE OR POLYGON

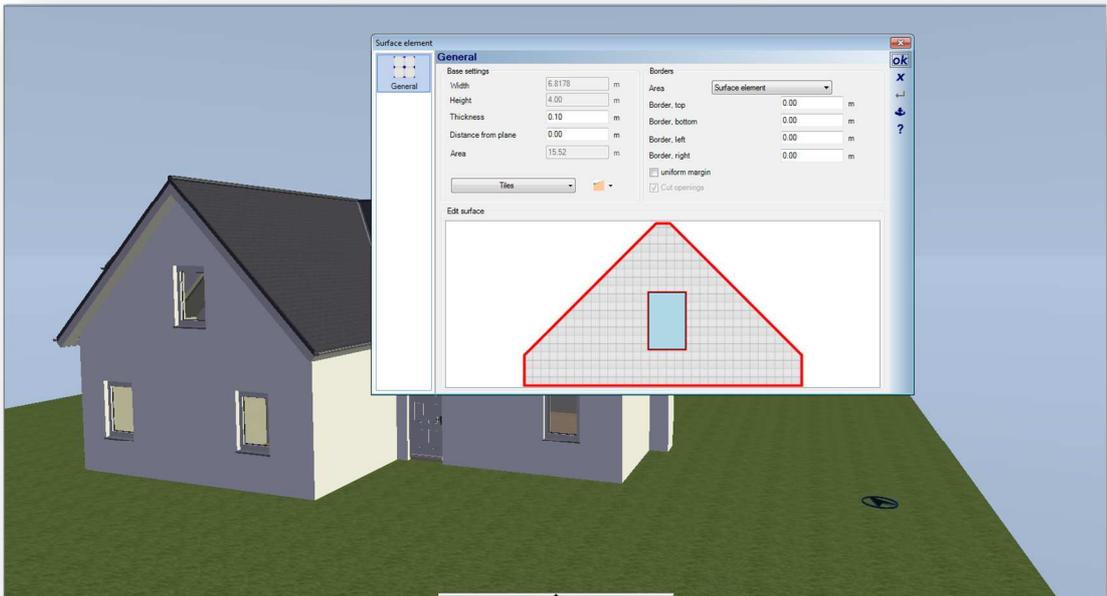


As already described, the first step in defining a surface area is to select a plane. Once this has been performed, the desired contour of the surface area can be entered in a view or using several views. In 3D views the surface area is shown as a transparent preview. During definition of the surface area you can swap between views. For example, you can set the first point of a rectangle in a 3D view and the second, for greater accuracy, in the 2D plan view.

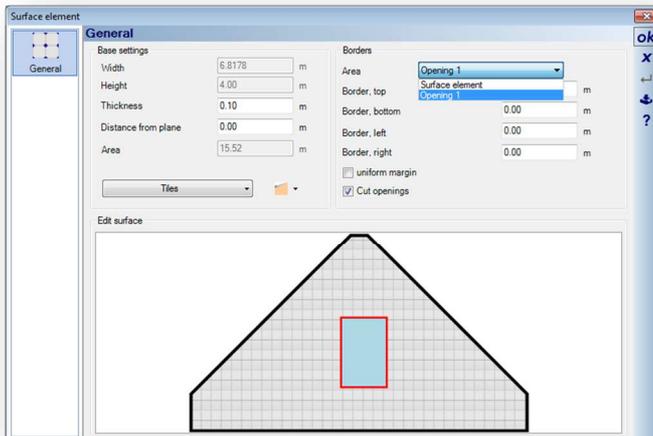


21.3 THE 'SURFACE ELEMENT' DIALOG

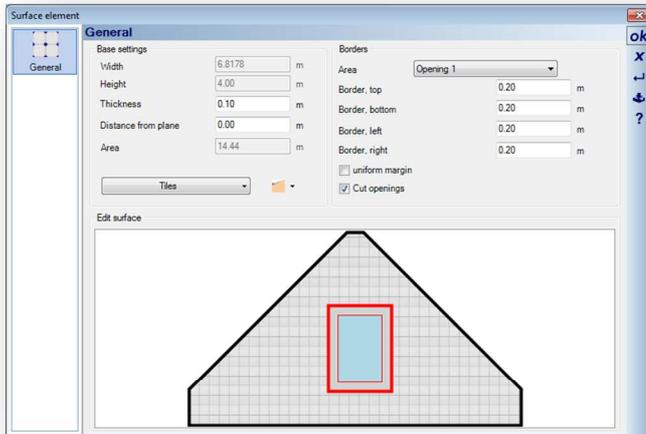
The 'Surface Element' dialog is activated as soon as the definition of a surface area has been completed.



In the 'Base settings' section you can specify the thickness of the surface and the distance from the selected plane. The distance from the plane can also be a negative value if the surface is to be set back from the plane.

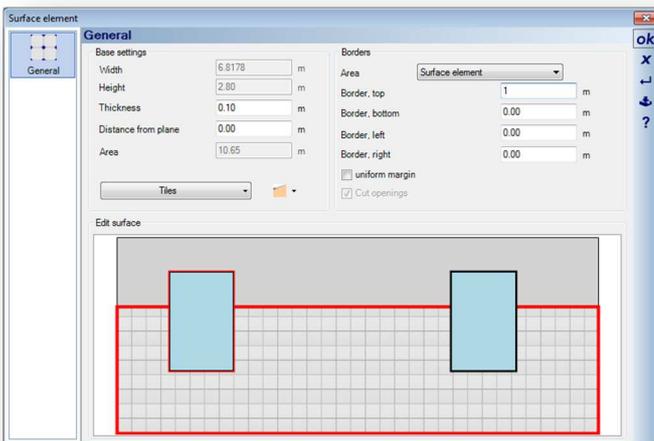


An important part of the dialog is the interactive sketch in which the current dimensions of the surface area are shown and in which, for example, you can select the various openings using the mouse. Alternatively, you can select the surface area and openings by means of the drop-down list for 'Area'.

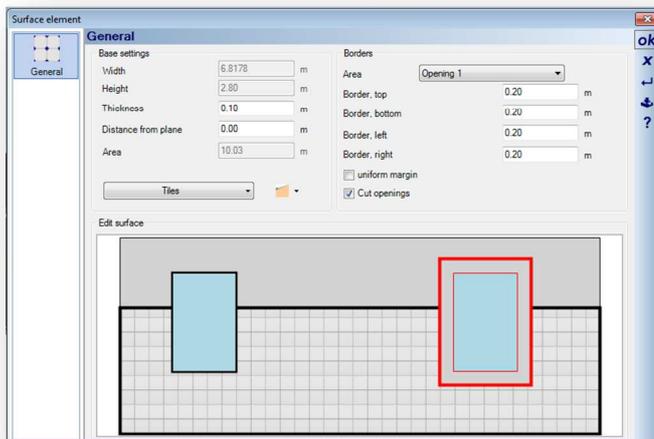


The surface area itself and the openings can be modified using the settings for 'Border', which always apply to the active area, highlighted in red in the drawing.

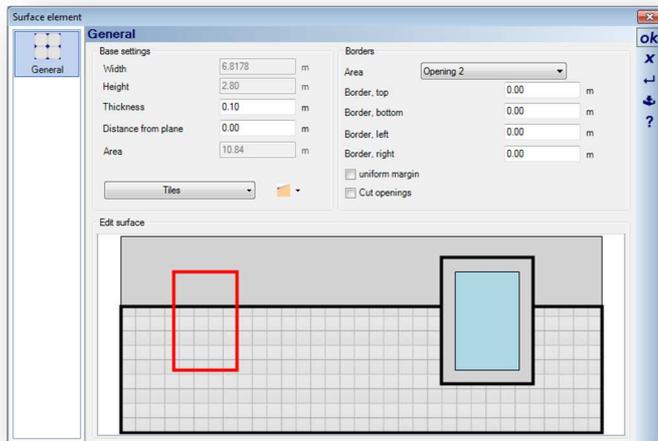
This example shows a border of 0.2m added to a window opening.



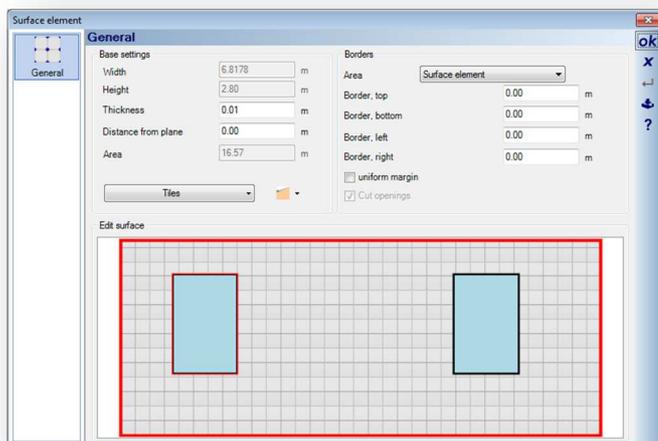
Another example: You would like to tile a wall but not to the full height of the wall. You could define the area manually with a rectangle or alternatively use the 'Plane' construction aid and then limit the surface area using the settings for 'Border'.



You can also create separate borders for each opening. First select the desired opening and then define, for each side individually or as a uniform margin, the area which is to be excluded from around the opening.



In some cases it may be required that openings are not cut out of the surface area but instead are covered by the surface. In this case deactivate the 'Cut openings' option.



Here (right) we see the effect of adjusting the thickness of the Surface area.





Here (left) we see the effect of adjusting the distance from plane.

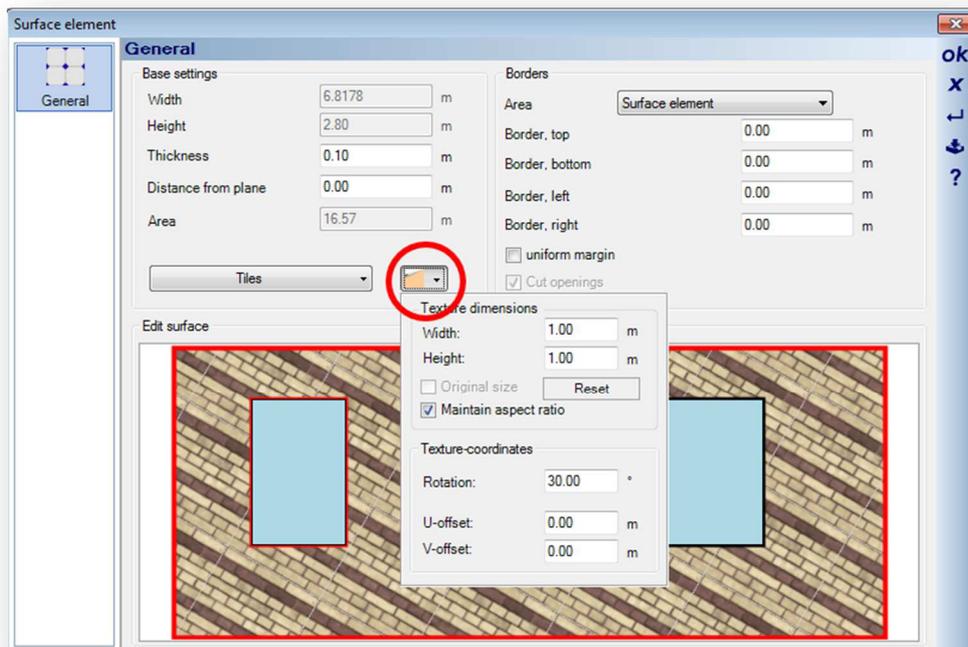
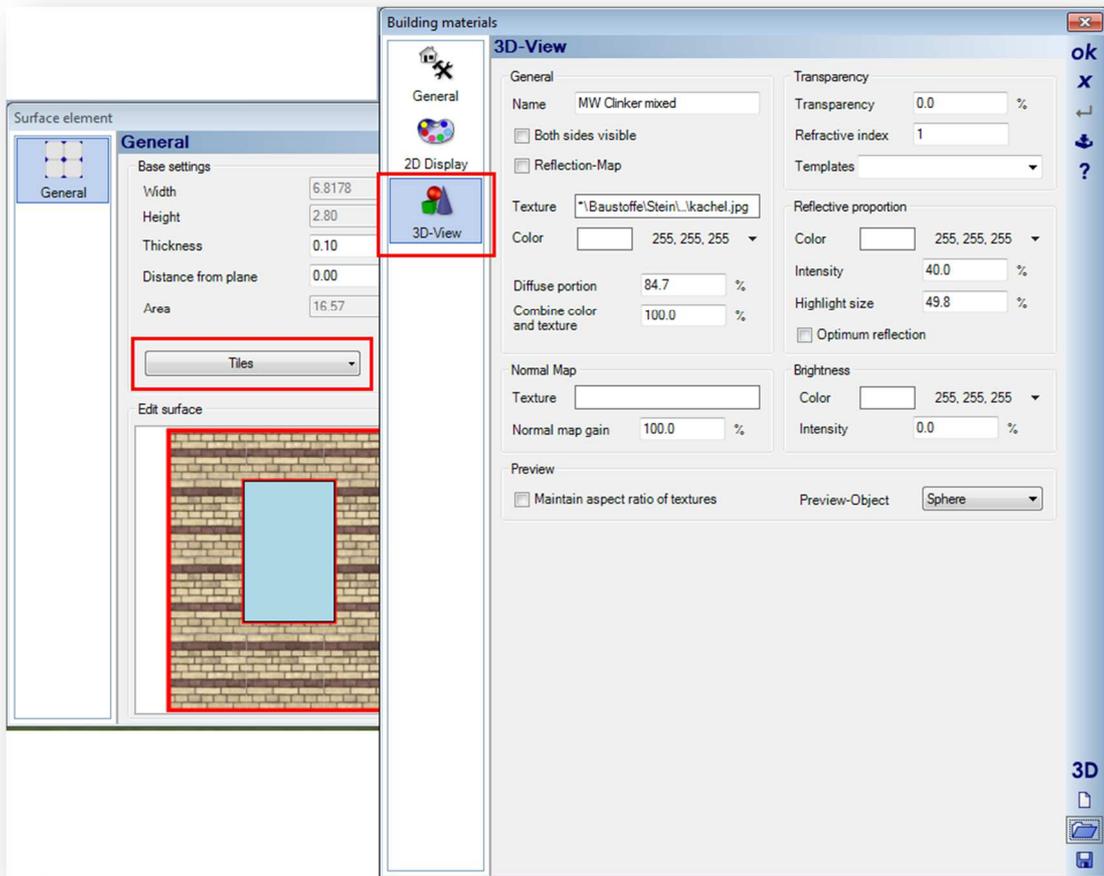
21.3.1 Surface Area using 3D View Textures



Textures and materials can be applied to the surface area in the 3D view simply by dragging a texture or material from the catalogue onto the surface.

Alternatively, you can click on the **Tiles button**, which will activate the Building material dialog.

Select the **3D View** tab and you can now select any texture in the catalogue path and adjust the presentation using many different settings such as Diffuse, Normal Maps, Transparency, Reflective and Brightness properties.



Clicking on the Texture Coordinates button will activate the Texture Dimensions dialog, where

you can adjust the texture size, rotation and offset. The preview window shows the changes to the surface that will not be applied until you click OK.

To delete a Surface Area, simply select it in a 3D view and press the Delete key. Like other objects you can hide the Surface Area from specific views and transfer them to another layer.



21.3.2 Surface Area 2D View using Fill Patterns

Define the surface area either using a rectangle, polygon or as a plane exactly as previously, but in the Building materials dialog select the 2D View tab. This will activate a dialog with which you can define the 2D pattern fills.

21.4 MISCELLANEOUS

- Surfaces can only be repositioned in the plane in which they were created.
- The representation of a surface in 2D views, i.e. filling or hatching, is as always dependent on the building material used and can be modified by clicking on the setting for material, located above the drawing.
- Relationship to other objects: If a surface is created on a construction element, for example a wall, then the surface automatically reacts to changes in the position of the element. If the wall is repositioned, the surface moves with it, but not vice versa. However, if the wall is deleted the surface is retained; since it could be that the element was only created temporarily in order to define the plane of the surface.
- Modifying surface area: Selected surfaces in 2D views show 'grips', with which the position and dimensions of the surface area can be changed, in the same way as with 2D elements.

22 WINDOW CONSTRUCTION

The Window Construction feature was originally a plug-in, but is now supplied as standard with:

Visual Building Premium

This feature is not supplied with:

Visual Building Basic

Visual Building Professional

You can however easily upgrade to Visual Building Premium - contact Visual Building Ltd now.

Note that although only new windows and doors can only be created with Window Construction editor, all versions of Visual Building can use these windows and door without the use of the editor. Also these doors and windows can be resized in all versions of Visual Building.

22.1 USER INTERFACE

This component of the software allows the construction of windows for use in the main planning software. The designs are saved in a format in the catalog at \AEC\WindowConstruction.

The production of a window construction takes place in its own editor.

22.1.1 Start the window construction

To start the Window construction PlugIn click on its icon in the Plugin toolbar . The following icons will then be displayed:

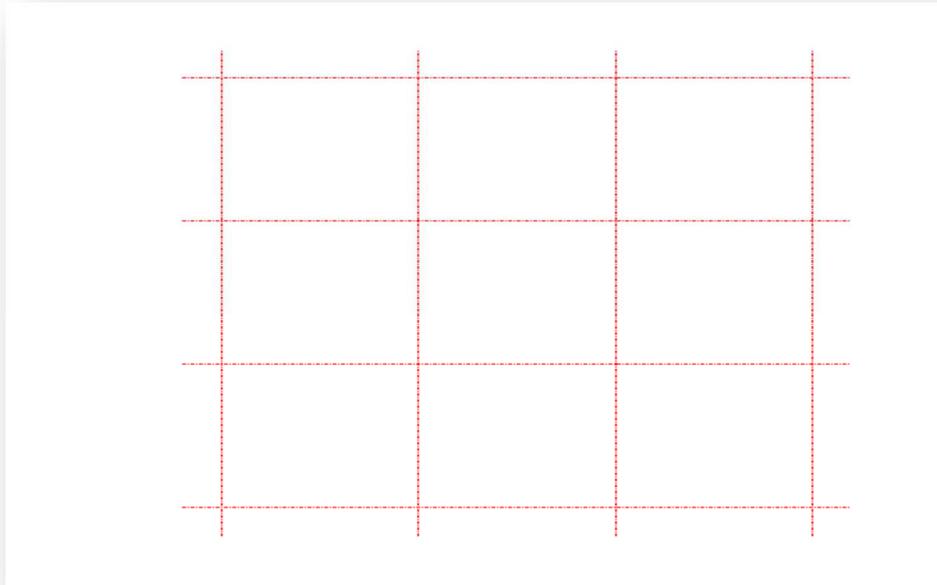
-  New construction: creates a new design view
-  Open construction: opens an existing design
-  Save construction
-  Casement
-  Posts
-  Dimensions
-  Bars

To start on a new window construction click on the New construction icon  or the Open construction icon .

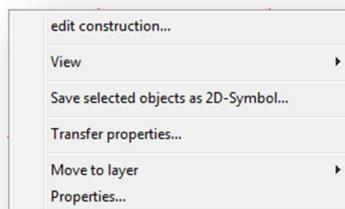
When creating a new construction you must first specify the type to be a window . Currently only the window type is available, but will be extended in the future so doors and other construction types can be selected at this point.

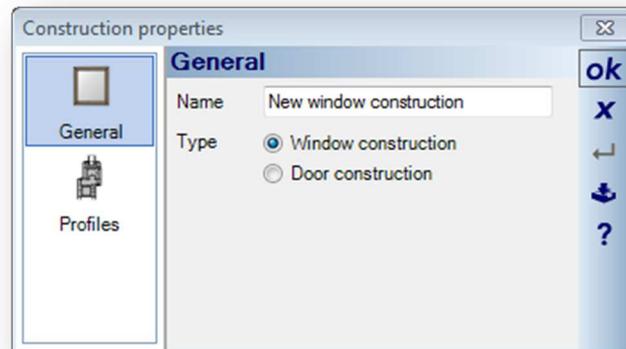
22.1.2 Creating a new construction - General properties

The new construction starts with a view in which you will see a grid of 3 x 3 boxes



Activate the context menu with a right mouse click, and select the menu entry **Edit construction**:





In the Name field you can specify the name of the Window as it should appear in the catalogue. Use an underscore if you want spaces to appear in the name. e.g. Arched_window will appear as “Arched window”, with a space between the words.

On the Profiles page, you can manage the window construction profile types, create new profiles and change their dimensions.

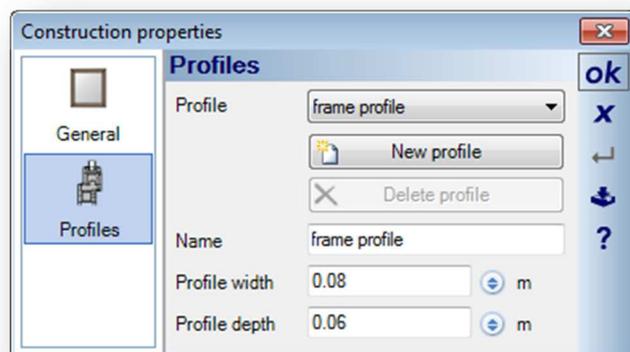
22.1.3 Profiles, dimensions of components

All components in a window construction are based on profiles. We can therefore include different profiles of a window from a manufacturer.

By default three profiles are created for each window construction, the Frame, the Casement and the Bar profile. All component dimensions are derived from these profile types.

If for example you want to change the frame width, open the dialog "properties construction" and modify the width of the frame profile. If you need more than the default profiles in your design you can create a new profile. So, you could use different sized panes with different frame.

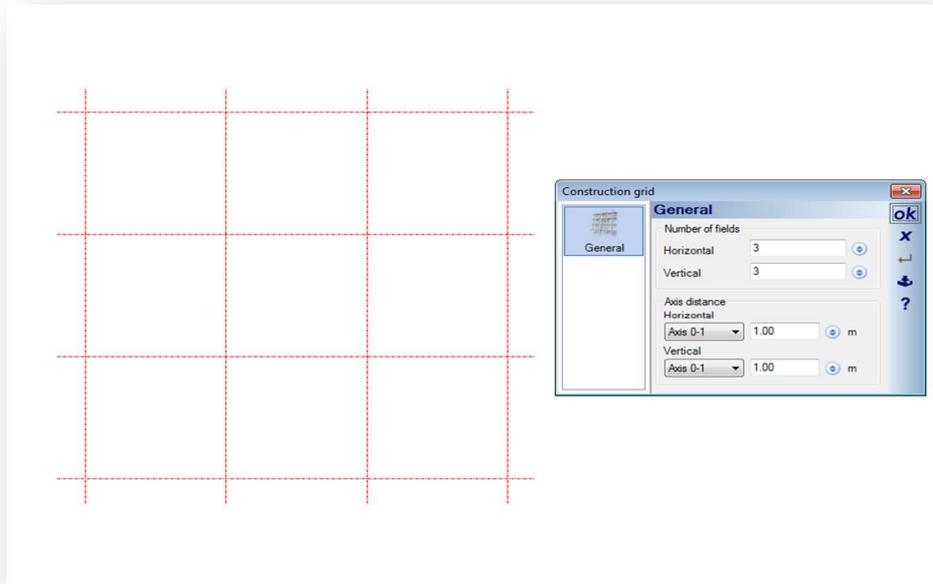
All dimension changes within a profile automatically update all components that use that profile.



Click on OK to close the Profile dialog.

22.1.4 Set the design grid

By default a 3x3 grid is created in a new construction. You can customize this grid before starting the window construction.



Activate the Construction grid dialog by double clicking on the grid.

First, specify the number of horizontal and vertical fields in the grid. Select the relevant axis and change the dimensions of the field spacing. So you get a framework on the grid for the preliminary dimensions of the construction.

Here we have a 2 x 1 grid with the height = 2m and the width of each = 1 m. The size of each row or column can be set individually using the drop down list in the horizontal or vertical axis.

22.2 FRAME

The frame of a window structure is always automatically created. It is added after you have placed your You change the width and depth of the frame using the frame profile from the profile page.

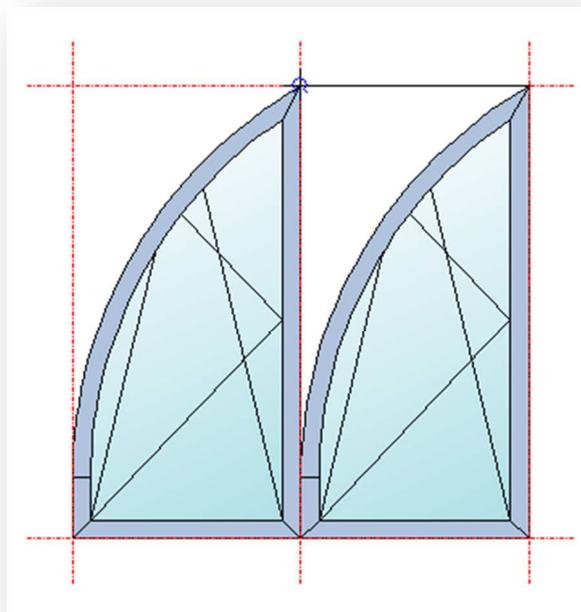
22.3 CASEMENTS

 Now click on the Casement icon, and the casement option icons will then display:

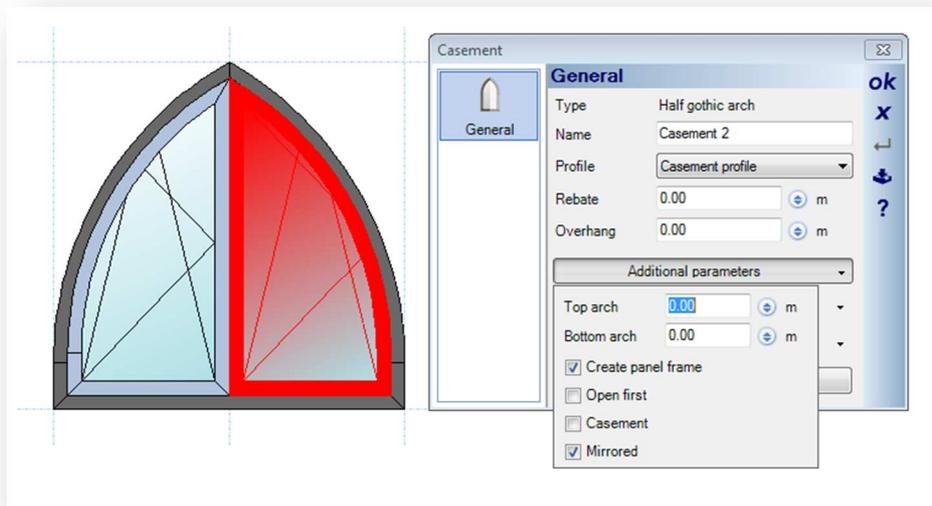


Select a casement and place it with the grid, by dragging a rectangle over the grid section you want to place it. The input direction of the rectangle is irrelevant. In certain forms, such an arch, you must reflect one of the panes to make two half arches.

For example after entering the half Gothic arch in each of the grid fields you will see:

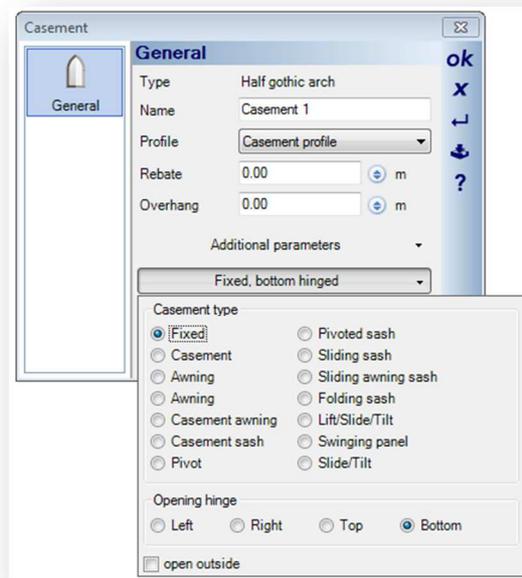


You then need to mirror the right hand arch. This achieved by selecting the right arch, and then doubles clicking it to activate the Casement dialog. In the Additional parameters select the Mirrored check box.



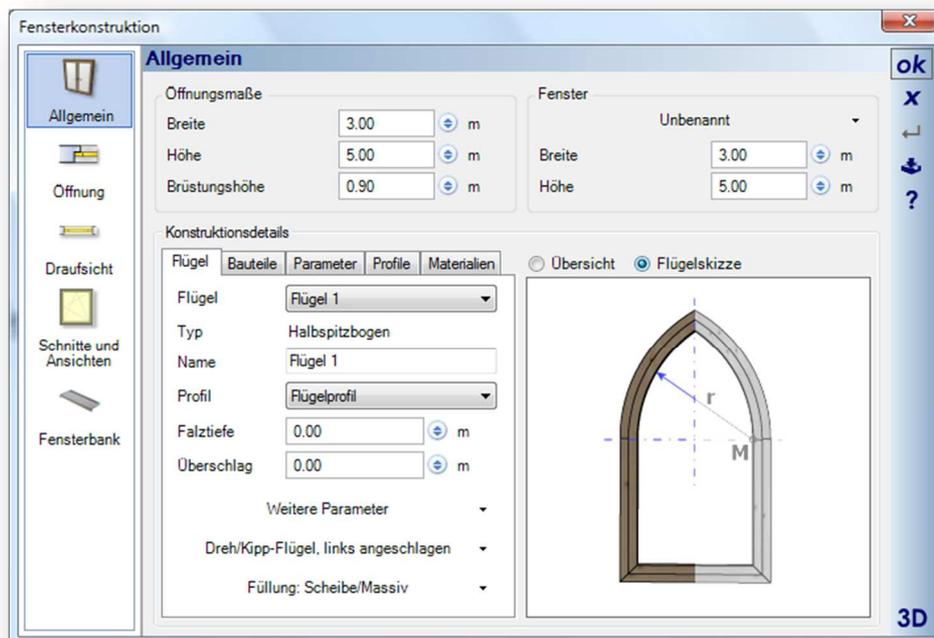
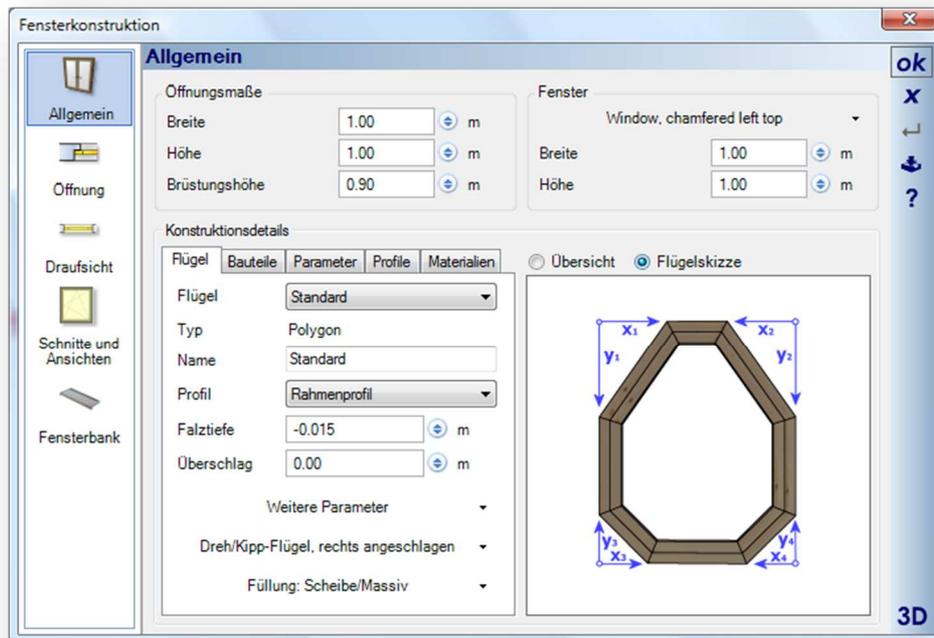
22.3.1 Casement properties

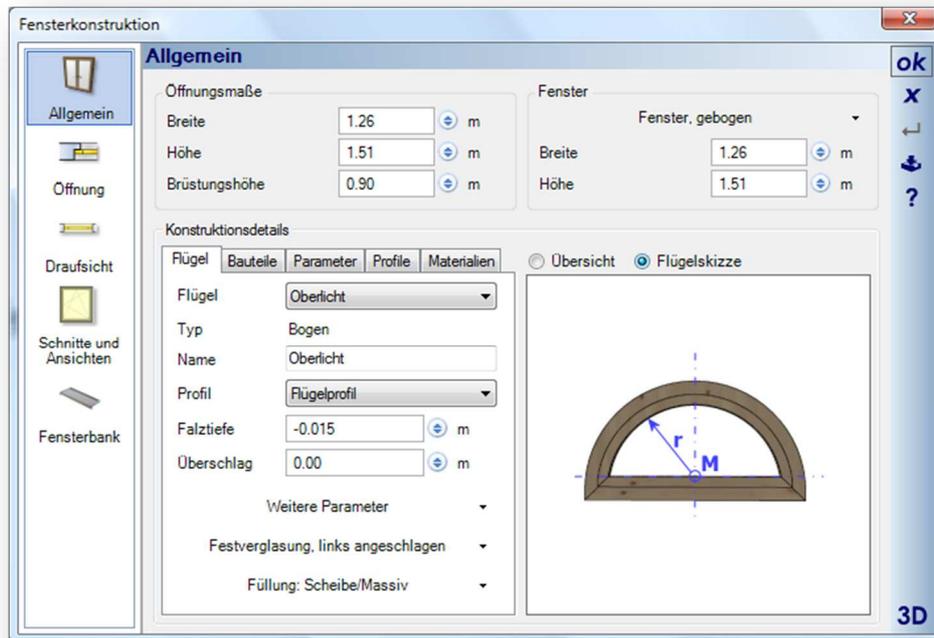
Each casement has various properties that you can edit depending on its type. The name displayed in the selection depends upon the current parameters selected.



Casement sketch

Various parameters of the casement are illustrated in the software dialogs using sketches. The following sketch is for a polygon and arch window.

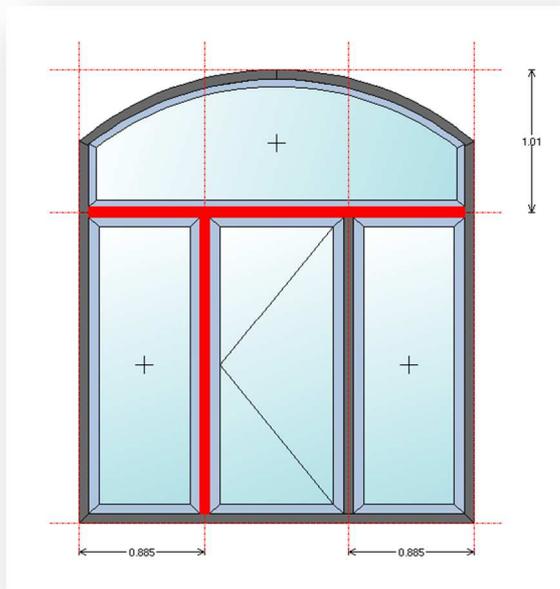




22.4 POST AND BAR



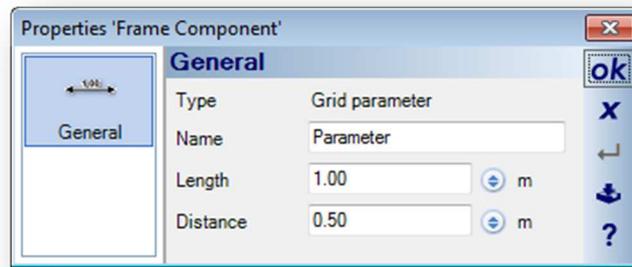
Casements by default are always connected together. However, it may be that the construction should be separated both vertically and horizontally by a post or a bar. Posts and bars are entered on the grid between the casements. Posts and bars have only width and depth properties.



22.5 PARAMETERS

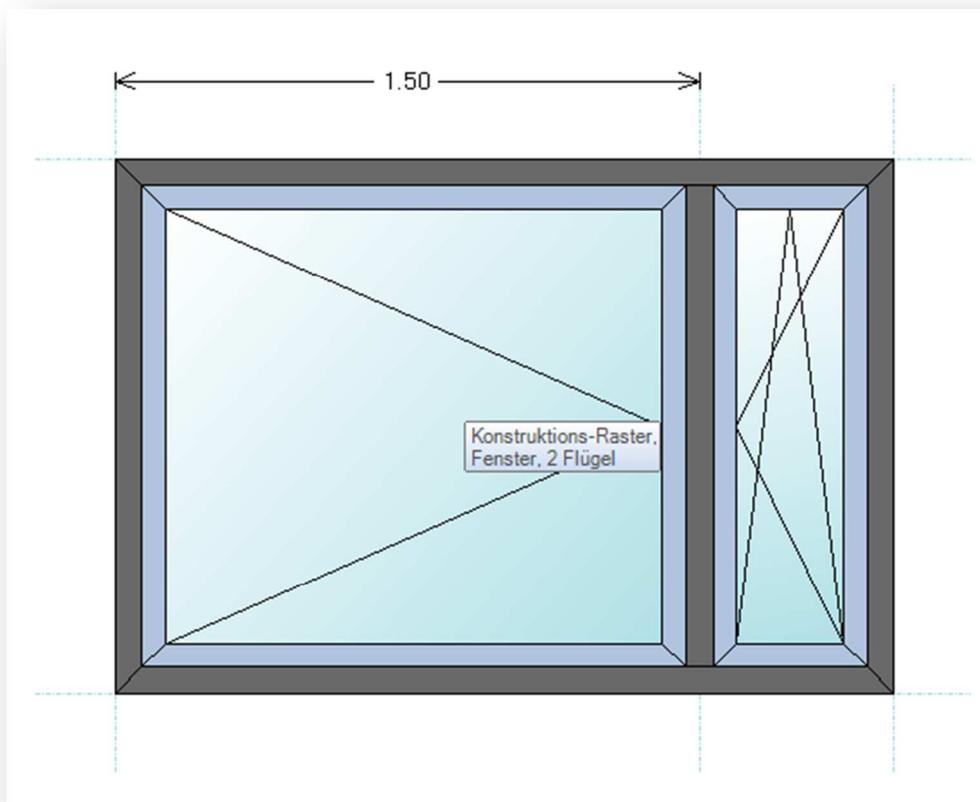
 The software distinguishes between grid and framework parameters. Parameters influence the variable portion of each type. A grid parameter changes the scope of the part of the grid, on which it was entered. A frame parameter is only useful when used on a polygon casement type.

Parameters are entered with the mouse along the grid and then their dimensions entered. The properties of existing parameters can be changed by double-clicking or using the context menu. The name is used in the dialog window of the planning software and the distance determines the distance of the parameter, the visible level of the construction.

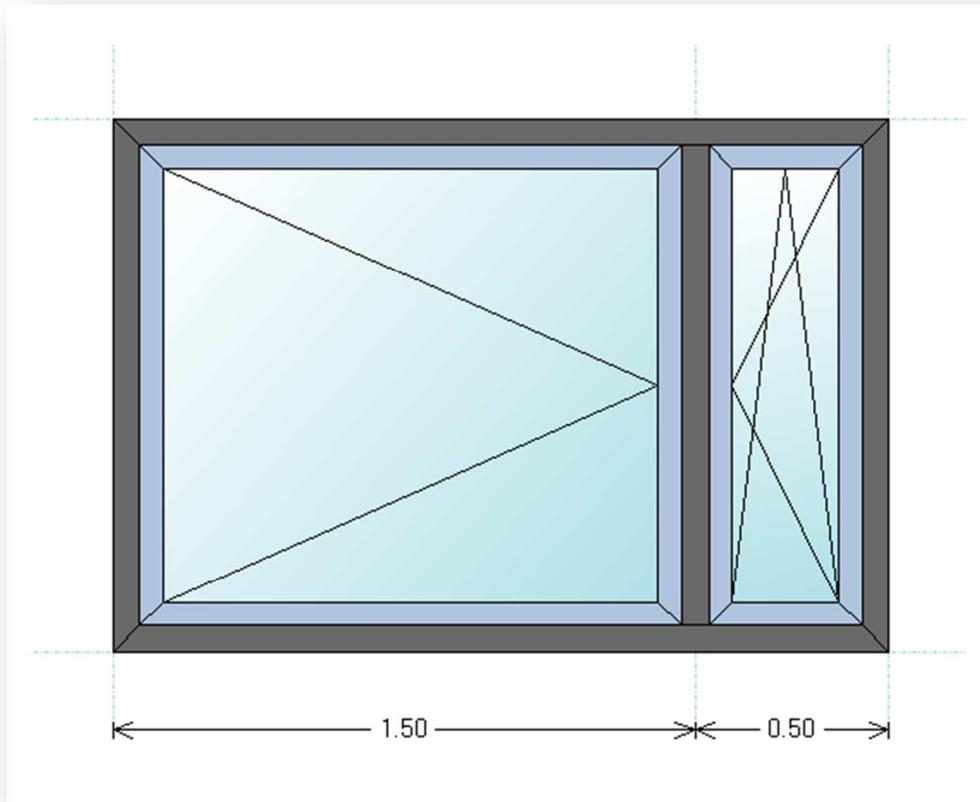


22.5.1 Grid parameters

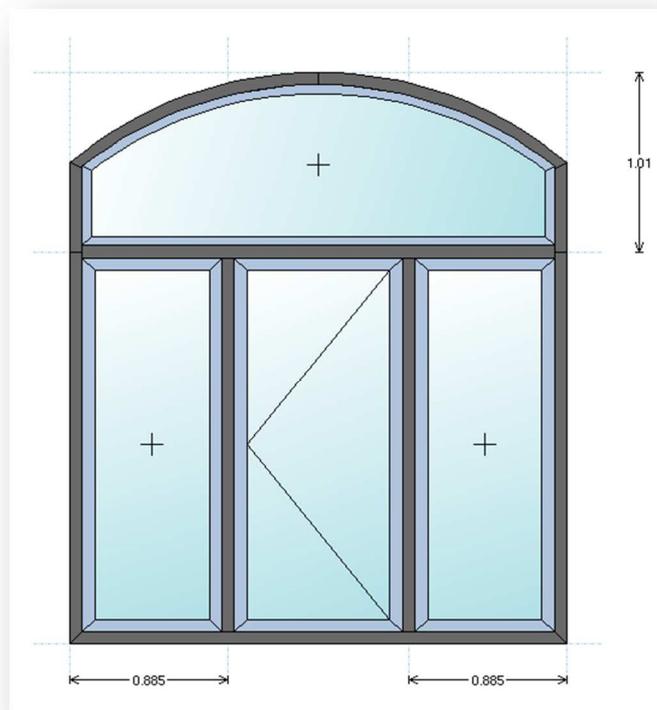
Grid parameters change the dimensions of the grid axis on which you have entered your design. If you have for example a grid with two fields, both each 1 m wide and entered a parameter for the left field, and set it to 1.5 m, this will change both fields. The Left field at 1.5 will change the right field to 0.5 m, because the overall dimensions remain unchanged.



As a grid parameter is a variable, it makes no sense to set parameters for all grid sections as a chain, because the second parameter has no effect.



Here a useful example of a design using grid parameters.



22.5.2 Frame parameter

Frame parameters give you the ability to modify a polygonal casement. See the following example of such a casement with frame parameters.

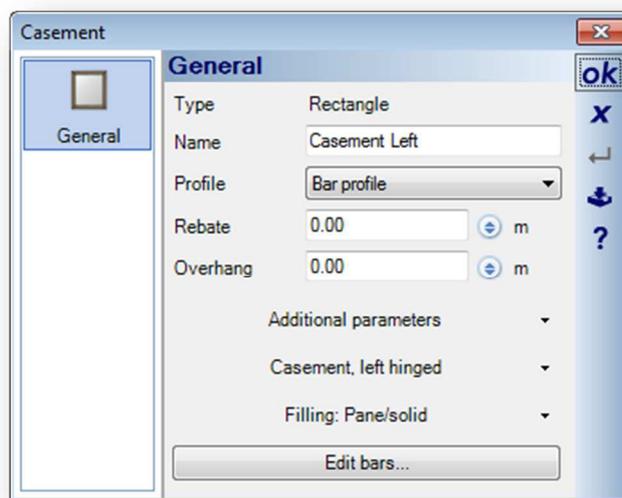
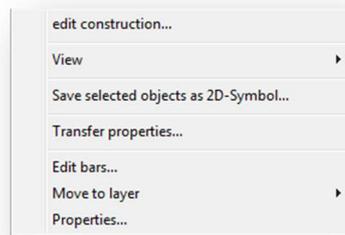
22.6 BARS

22.6.1 General

The bar topic is essentially divided into two areas:

- Creating Bars and lattice images
- Assigning bars

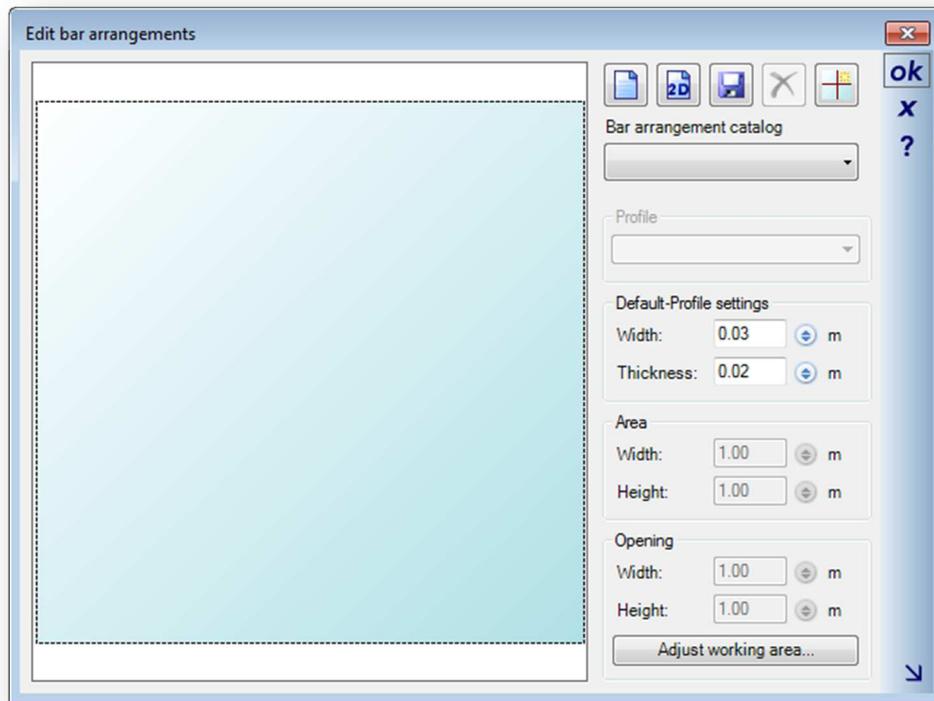
Basically, bars are always assigned to a casement. This happens via the context menu for a selected casement or on the Properties dialog for the casement.



22.6.2 Bars edit / manage

The dialogue Edit bar arrangement first opens with a preview of the application workspace, which by default are 1 x 1 m.

Bars together with the casements are can be scaled. but, it may be that you want to enter bars with fixed positions. In this case, you can use button "Adjust working area...", to transfer the current glass dimensions to the workspace.



To fill the workspace with bars, you have 3 options:

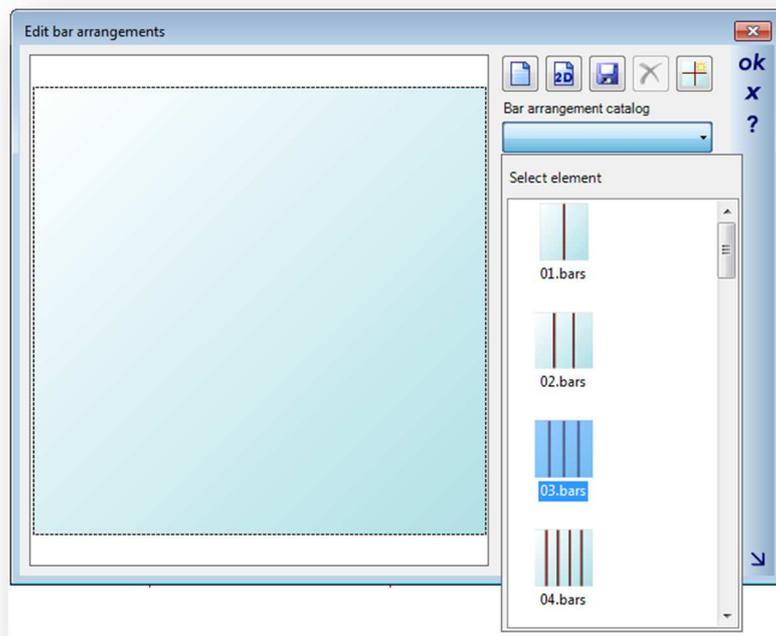
- Load a bar image from the catalog

Create a lattice image from a 2D-Symbol

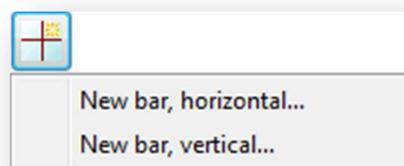
- Enter individual bars

Other elements are also selected from the catalog. You can use your own lattice images in the catalog, if you save them into the directory Installation\AEC\Bars.

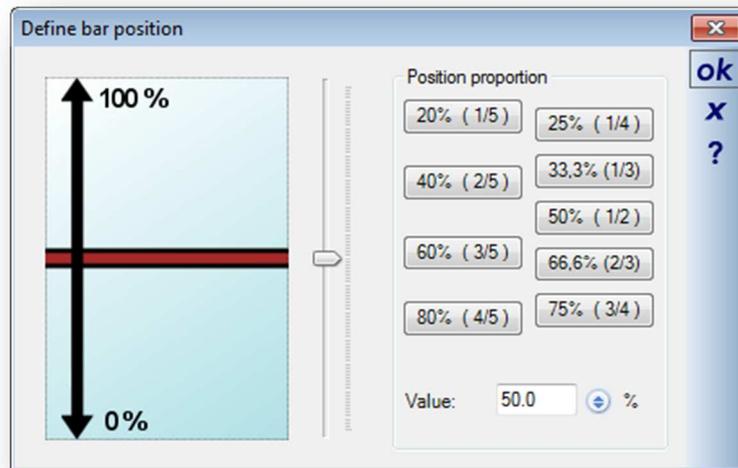
Use the  button to save your bar arrangements to the catalog for future use.



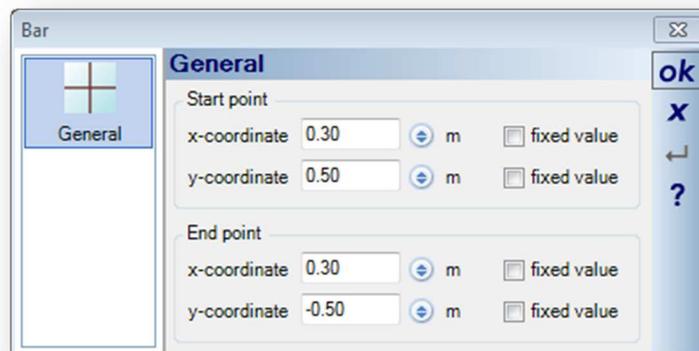
Add individual bars using the following button and the associated context menu:



The positioning is done in the dialog that then appears.

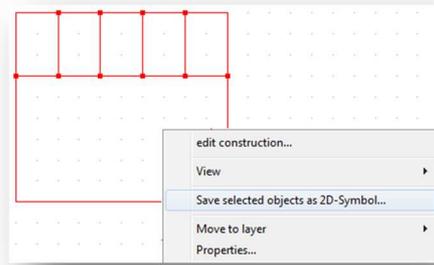


After a bar is positioned, you can change its position numerically on the following dialogue and at the same time specify whether it is fixed value. If it is not a fixed value, its position will change with the size of the casement.

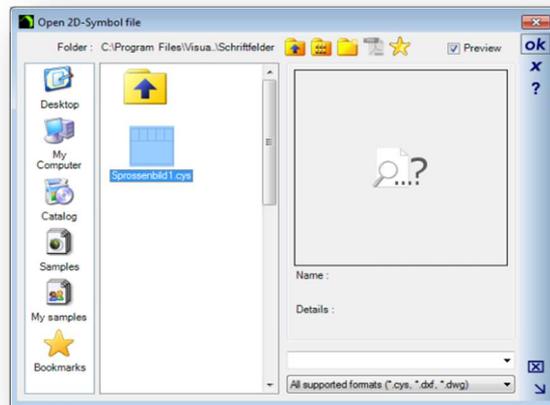


22.6.3 Draw bar images

An additional way for the creation of bar lattice images is to use the 2D of graphics tool. To do this, first draw a rectangle as a reference. Within this rectangle draw the "bars" as lines. When complete, select the entire image, right click on the image and from the context menu select 'Save Selected object as a 2D Symbol'.



Using the 2D import function  you can then import the 2D-Symbol.



22.7 SAVING AND LOADING CONSTRUCTIONS

If you want to use the construction in a project or in the catalog save the construction in the path C:\Program Files\Visual Building\AEC\WindowConstructions,. The preview visible in the catalogue is created directly from the design view, but you might need to increase the view size to obtain a sufficiently large preview.

The Window Construction editor loads the saved constructions in it's native file format (*.con) and files in an appropriate text format which describes the construction in a manner rebuilt for us. If you are or were an ArCon user and had created your own window macros (*.afm), you can also load and convert these.

23 2D-DXF / DWG IMPORT

The 2D-DXF/DWG Import feature was originally a plug-in, but is now supplied as standard with:

Visual Building Professional
Visual Building Premium

This feature is not supplied with:

Visual Building Basic

You can however easily upgrade to Visual Building Professional- contact Visual Building Ltd now.

23.1 GENERAL

2D-DXF/DWG Import provides functions for importing 2D-DXF and 2D-DWG files with options to select layers defined in an object, and to modify the dimensions of the object. The imported files can be inserted directly as 2D symbols in plans.

23.2 STARTING 2D DXF / DWG IMPORT

If you are using the Toolbar user interface the DXF/DWG Import is activated using the menu for **File>Import**.

If you are using the Ribbon bar user interface, the DXF/DWG Import is activated using the Application drop down menu, where you will find the **Import** menu. Click on **Import** and you will then have the option to select **2D-DXF/DWG** files.

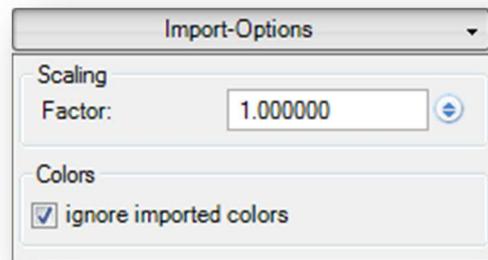
Note that for the Import - **2D-DXF/DWG** menu to be active, you must have an empty 2D view open, into which you are intending to import your file.

The menu entry automatically opens the Open 2D Symbol file dialog in which the file to be imported can be selected. Select the .dxf / .dwg file and then click **OK**. Depending upon the file size, the file will take a few seconds to load, but its loading progress is displayed.

23.3 2D DXF / DWG IMPORT USER INTERFACE

In the **General** area of the dialog, the path and the name of the file being imported are shown, together with the number of 2D elements contained in the file.

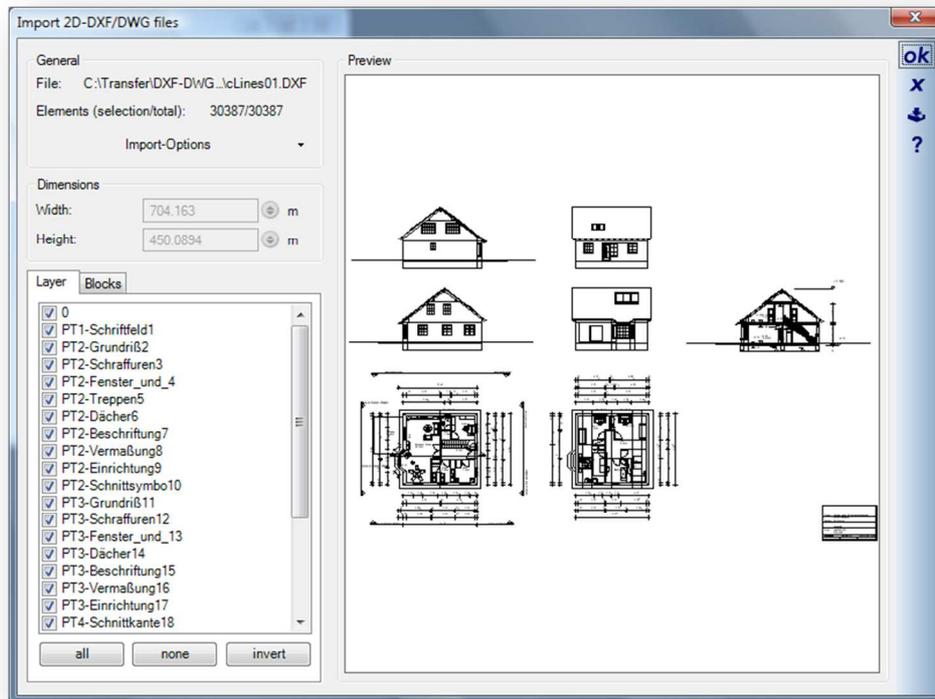
The current dimensions of the elements contained in the file can be modified by specifying a scaling factor under **Import Options**.



Setting the option for **ignore imported colours** results in all elements being imported with their colour set to black, irrespective of the properties of the original file.

Depending upon the structure of the DXF / DWG file, all layers and blocks are presented in a list from which they can be selected. The content of the import can be restricted by deactivating elements that are not required. The selected elements are shown automatically in the preview.

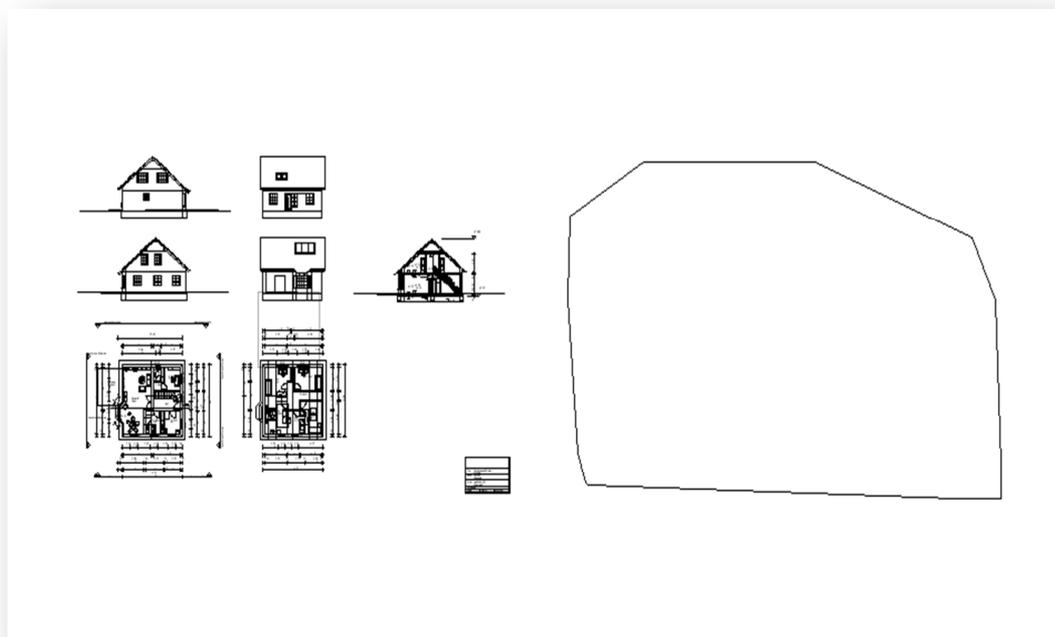
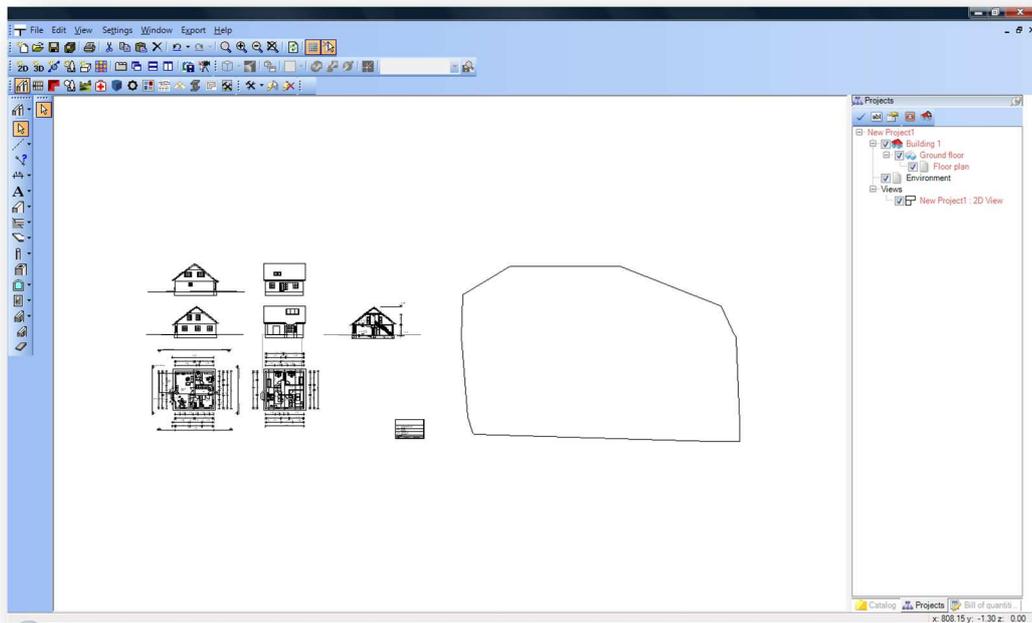
The complexity and clarity of the drawing will depend upon the dxf / dwg author and program used to create the original file. If you are not familiar with the structure of the file we recommend you examine it using a free tool such as **Auto Desk's DWG TrueView**, which will allow you to display the drawing and identify the layers you require.



23.4 INSERTING AN IMPORTED SYMBOL

The 'Import' function is terminated with a click on 'ok', and the outline of the imported drawing is attached to the cursor as a preview. A left mouse-click inserts the symbol into the open 2D view. The positioning of the symbol is only terminated when the **Esc** key is pressed, or using the context menu activated with a right mouse-click. It is therefore possible to insert as many copies of the 2D drawing as required as part of a single import operation.

The following illustration shows on the left a symbol which has been inserted, and to the right of it the preview which is attached to the cursor. The reference point of the symbol attached to the cursor can be changed by pressing 'Ctrl + w'.

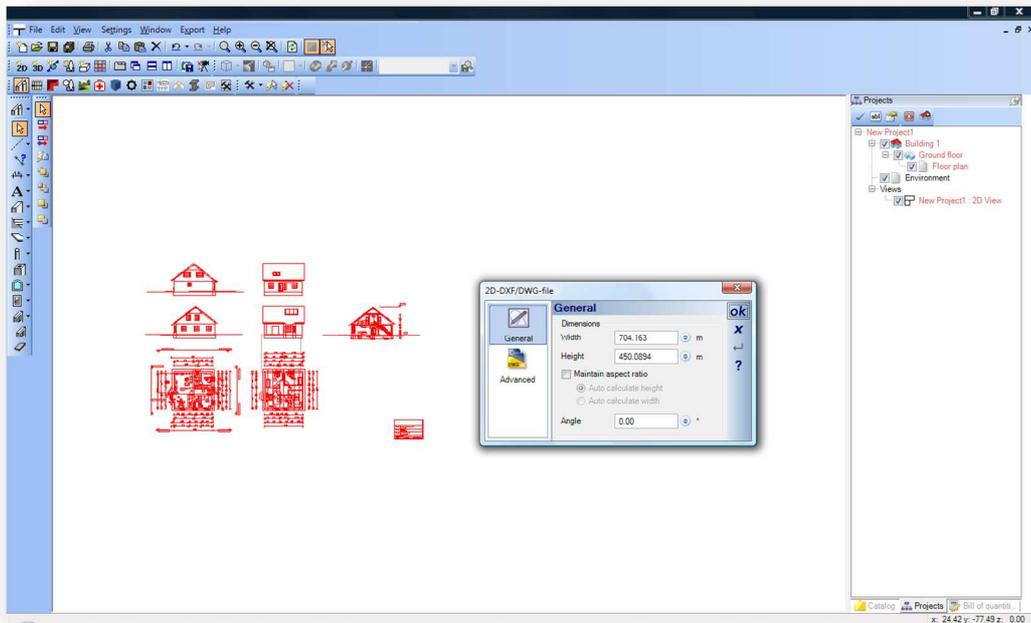


23.5 PROPERTIES OF SYMBOLS

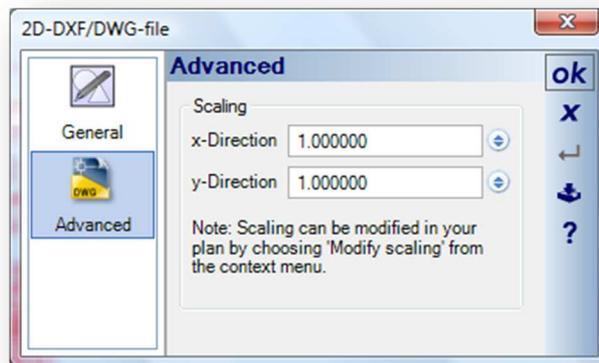
Imported DXF / DWG files are inserted as 2D symbols with extended properties.

The properties dialog is activated by a double-click on the selected symbol or using the context menu opened with a right mouse-click.

The absolute values for the dimensions of a symbol can be changed under 'General' in the properties dialog.



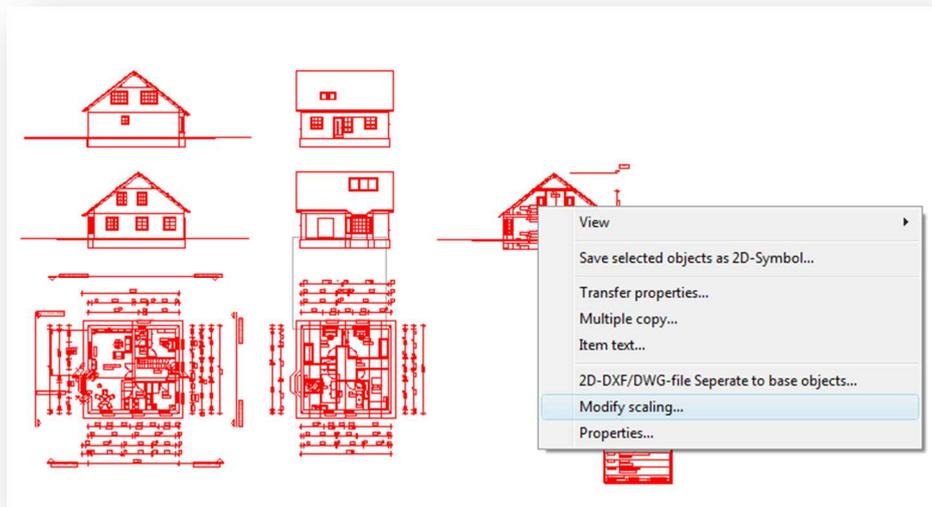
Under 'Advanced' a scaling factor for the symbol in the x and y direction can be specified.



23.6 SCALING SYMBOLS IN THE PLAN

An additional possibility for scaling symbols is provided using the context menu opened with right mouse-click when a DXF 2D symbol has been selected.

Input is performed using the mouse to enter 2 points, a start and an end point. These define a length whose value is shown in the 'Adjust scale' dialog. Here you can specify precisely the length required. A click on **OK** results in the size of the complete symbol being adjusted to reflect the value entered.



23.7 SAVING IMPORTED SYMBOLS

Unlike 'normal' 2D symbols, the symbols imported from DXF / DWG files are saved directly in the project.

If it is required that a symbol be available for use in other projects, the file can be saved as a 2D-symbol in the appropriate catalog. This is carried out for a selected symbol using the context menu entry for 'Save selection as symbol file'.

24 2D-DXF / DWG EXPORT

The 2D-DXF/DWG Export feature was originally a plug-in, but is now supplied as standard with:

Visual Building Premium

This feature is not supplied with:

Visual Building Basic

Visual Building Professional

You can however easily upgrade to Visual Building Premium - contact Visual Building Ltd now.

24.1 GENERAL

2D-DXF/DWG Export provides functions for exporting 2D-DXF and 2D-DWG files.

24.2 STARTING 2D DXF/DWG EXPORT

The DXF/DWG Export is activated via the menu for **Export>2D Formats>2D DXF/DWG Export**. The menu entry automatically opens the Export 2D DXF/DWG dialog.

The dialog displays a preview of your current project to be exported.

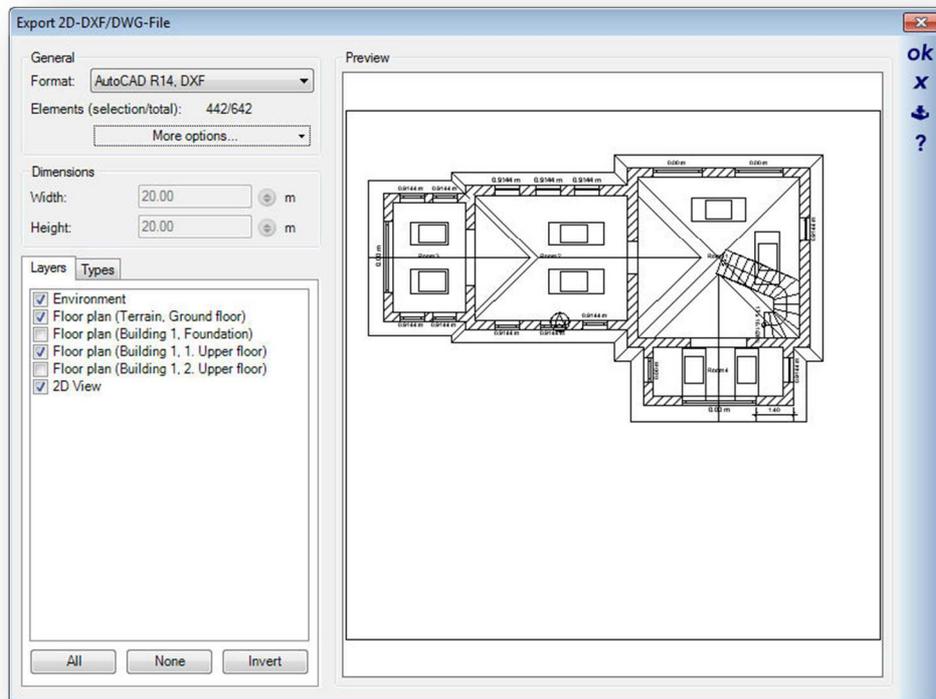
In the General section you can select the export format which ranges from AutoCAD R09 DXF to AutoCAD 2010 DWG.

The More options drop down allows you to export any colours used in your plan and also an option to include hatching.

The **Layers** tab enables you to select only specific floor plans to be included within the export.

The **Types** tab enables you to specify which features and components should be exported.

Select **OK** and the Save dialog is activated allowing you to specify where you will save your exported file.



25 PLAN LAYOUT

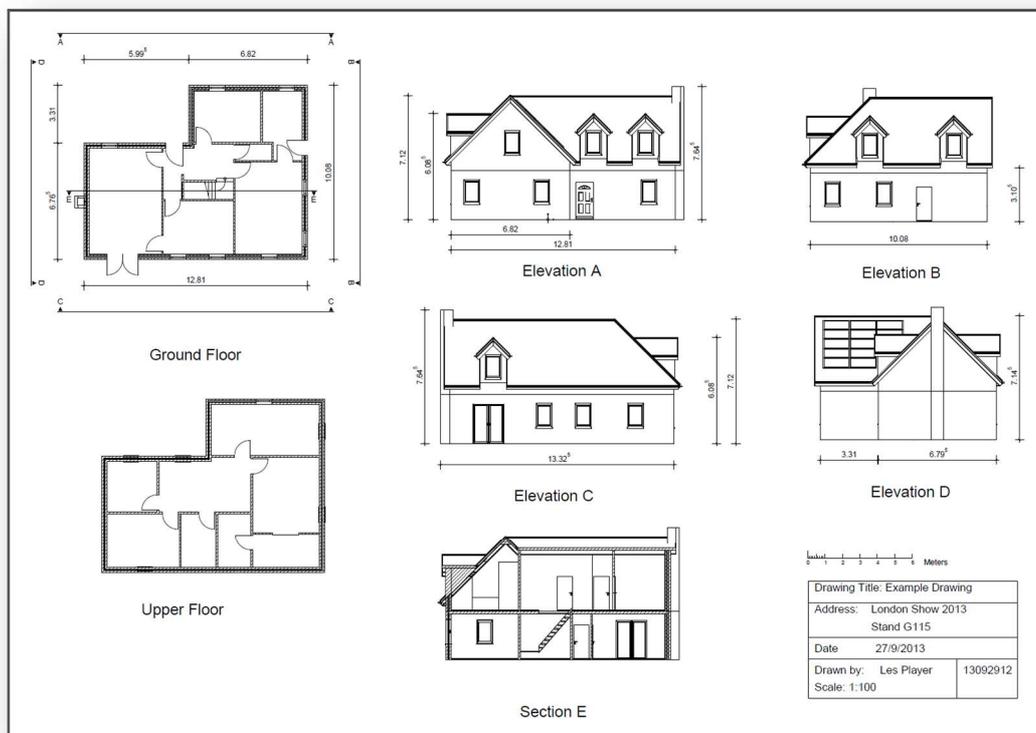
The Plan Layout feature was originally a plug-in, but is now supplied as standard with:
Visual Building Professional
Visual Building Premium

This feature is not supplied with:
Visual Building Basic

You can however easily upgrade to Visual Building Professional- contact Visual Building Ltd now.

25.1 GENERAL

The plan layout plug-in provides functions for the layout, design and presentation of plans and drawings.



As a fully integrated plug-in, it uses the current project data and construction details directly, and is not independent of the model of the building.



The plan layout is integrated in the plug-in toolbar in the software. The Plan layout tool is located in the **Ribbon bar – 2D & Layout tab – Plan layout group**. It is also located within the **Plugin toolbar**.

Since plan layout provides an extended view it requires that a project is open, otherwise the button is deactivated.

25.2 PLAN VIEWS AND PLAN PARTS

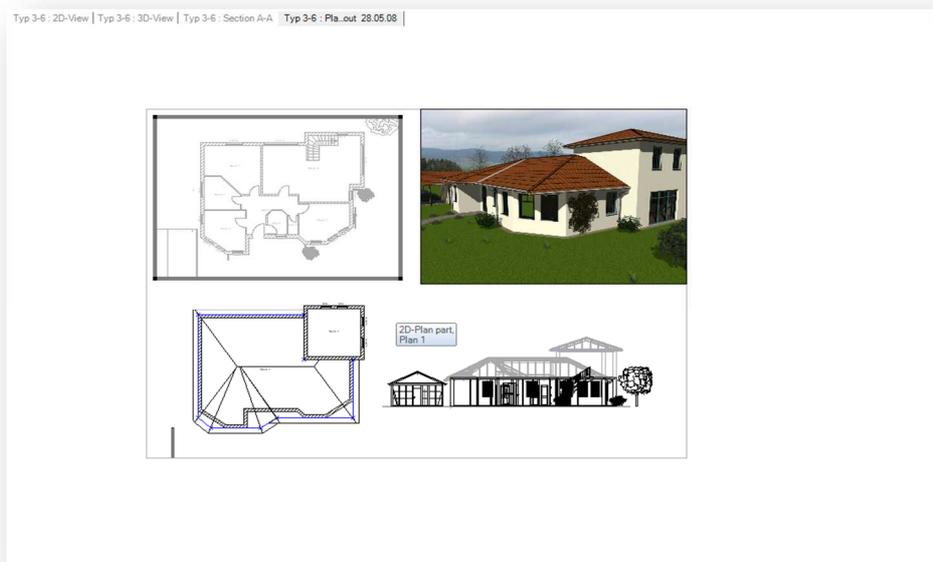
Plan views differ from conventional views in that they can contain several views - so called plan parts. Plan Parts represent 'normal' views, from which they are a copy.

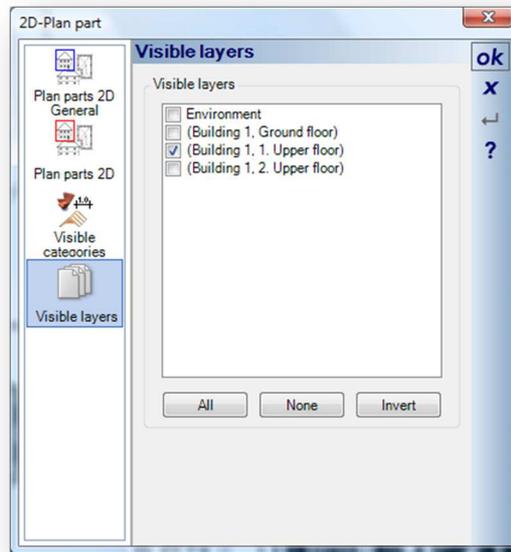
Plan views and plan parts also possess different properties. In a plan view the plan view itself or one of the parts can be active. Active plan parts are indicated by a frame with corners, which can be used to reposition or change the size of the plan part.

If a plan part is active, actions such as zooming, scrolling or changing properties only apply to this part in the plan view. If no plan part is active then these actions apply to the entire plan view.

Note: Closing a plan view corresponds to closing a view in the software, i.e. the view no longer exists and cannot be restored. All components, such as the layout of plan parts, the use of 2D elements such as images and text blocks, are no longer valid.

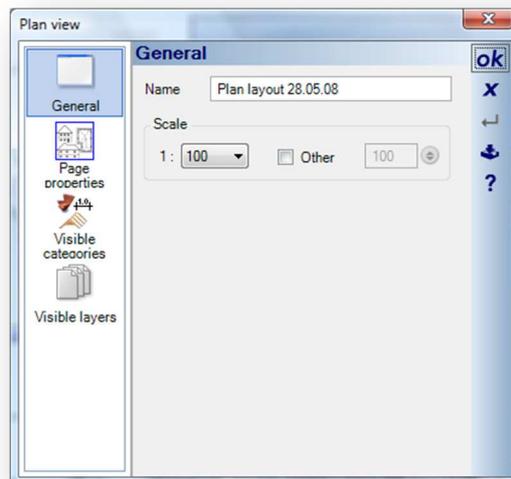
The following illustration shows a plan view with an active plan part.





25.3 CREATING A NEW PLAN VIEW

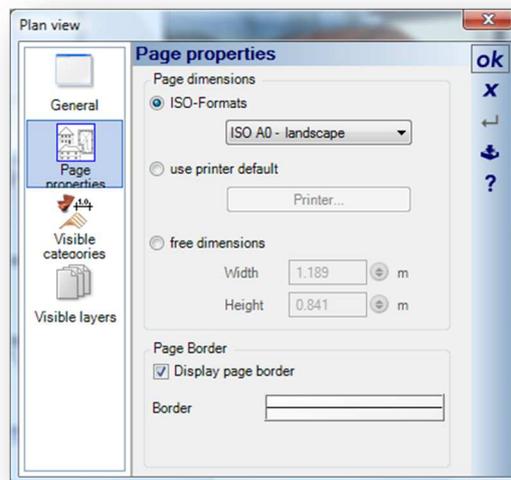
A new plan view is created by clicking on the  button. First the properties dialog appears.



Under 'General' you can allocate a name and specify the scale of the plan view. The scale of the plan view has no effect on the scale of the plan parts. You can therefore create a plan view with a scale of 1:100 and insert into it parts having a different scale.

25.3.1 Page Properties of a Plan View

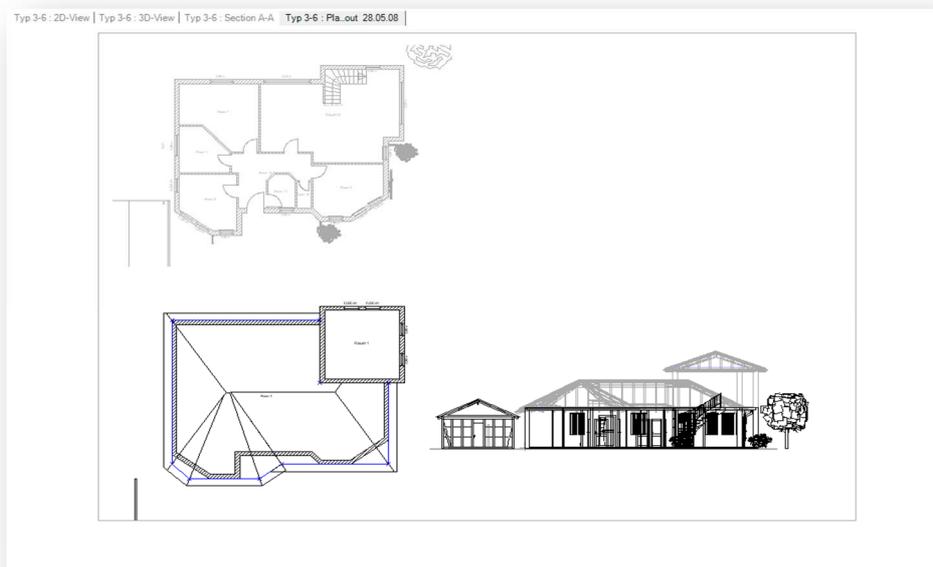
Under 'Page Properties' you can specify the format of the plan view and optionally define the printing of a page border which can be used for orientation purposes.



25.3.2 Visible Categories of a Plan View

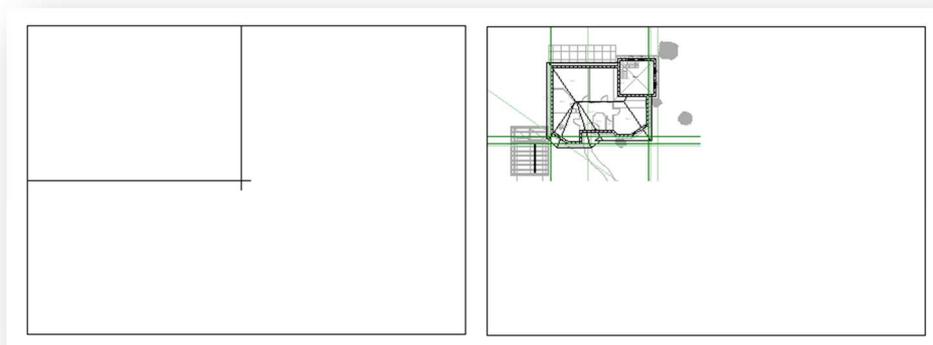
The visible categories of a plan view are defined in the same way as in the standard software. These categories have no effect on the visibilities of the individual Plan Parts, which are specified for each part independently.

If for example you deactivate the 2D graphic elements in the plan view shown previously, only the text block and the inserted image are no longer visible.



25.4 ADDING A NEW PLAN PART TO THE PLAN

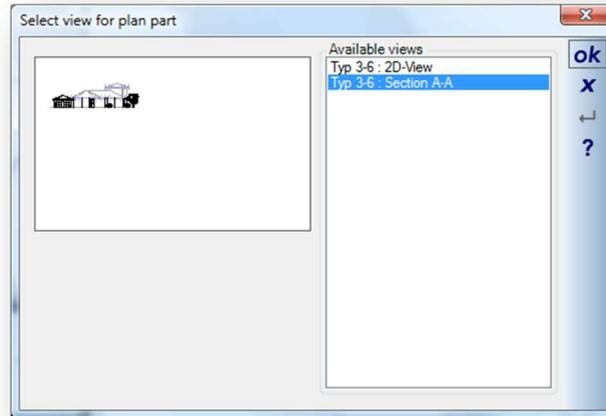
 This button activates the function to insert a new plan part in the plan, using the mouse to define a rectangle which determines the dimensions and position of the new part. A second mouse-click results in a complete 2D top view of the current project with all its components being inserted into the new plan part. The following illustration shows on the left the insertion of the part, and on the right the result for a particular project after the rectangle has been defined.



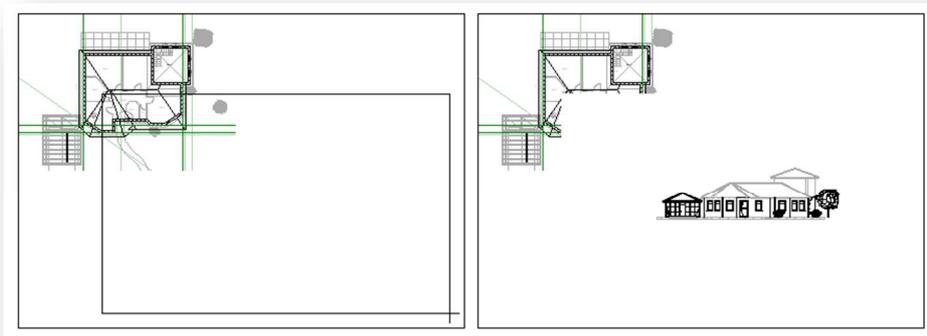
25.5 ADDING AN EXISTING VIEW AS A PLAN PART

Unlike new plan parts, when an existing view is inserted all its current visibilities are taken into account. Existing views can also be cross sections, whereas in a new plan part only 2D top views are allowed.

A click on the  button activates the dialog in which the desired view can be selected.



A list of all 2D top views and cross sections which exist for the project, and a preview of the selected view, is presented here. After exiting from the dialog with 'OK', the part is attached to the cursor and can be positioned as required in the plan view. The dimensions of the part are by default those of the original view. On positioning the plan part the reference point can be changed in the usual way with 'Ctrl+w'.



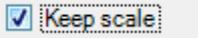
The size of the partition can be modified subsequently if necessary.

25.6 DELETING AN ACTIVE PLAN PART

If a plan part is active in the plan view, indicated by a border surrounding it, then it can be deleted using the  button.

25.7 SCALE OF PLAN PARTS/ REMOVING SCALING

Basically all plan parts in the plan are shown to scale. This also means that generally zooming is not possible in a plan part.

However, by deactivating the 'Keep scale' feature, the view within a plan can be enlarged or reduced in size. The  option must be deactivated in the properties dialog for the plan part, which can be activated using the context menu opened with a right mouse-click. In this way the contents of plan parts can be used, which would otherwise not fit onto a page because of their dimensions and scale.

25.8 ENLARGING / REDUCING / REPOSITIONING PLAN PARTS

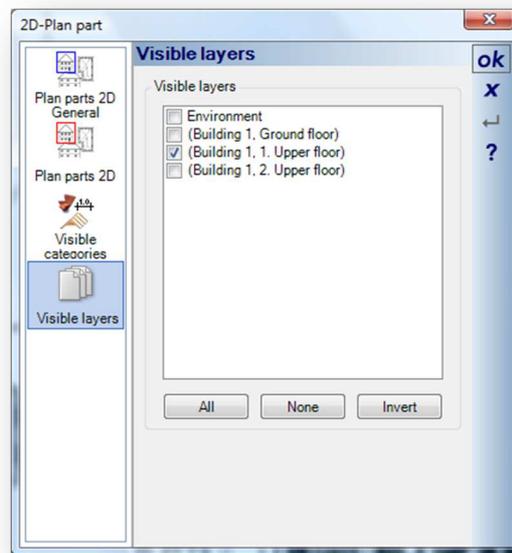
If a plan part is active it can be repositioned or its size changed using its rectangular border. Move the cursor to one of the corners of the rectangle until the appropriate cursor function is shown.

The cursor functions conform to the standard Windows functions for Enlarging / Reducing / Repositioning a window. A left mouse-click starts the desired action. The new size or the new position of the part is again indicated by a rectangle. A further left mouse-click terminates the action. Only now are the contents of the plan part refreshed, not continuously during the action.



25.9 VISIBILITIES IN PLAN PARTS

As with other views in the software, the visibility of elements within a plan part can be defined using categories or visible layers. The appropriate dialog can be activated using the context menu opened with a right mouse-click when a plan part is active.



25.10 EDITING PLAN VIEWS WITH OTHER FUNCTIONS

Certain standard functions of the software, such as text, guidelines, 2D drawing functions, 2D symbols from the catalog etc., can also be used in plan views. These functions help in the construction and design of the plan and facilitate the insertion of objects such as images, photos or text blocks which are provided in the CAD Software.

25.11 REFRESHING VIEWS AND PLAN PARTS

Plan Parts are copies of views and of the project from which they were generated. Changes to construction or other components in a 'normal' view are automatically incorporated in the Plan Parts.

25.12 ZOOMING AND SCROLLING IN PLAN VIEWS AND PLAN PARTS

Zooming and scrolling in plan views and Plan Parts is performed in the same way as in 'normal' views in the software, however the actions depend on which part of the plan is currently active. If a plan part is active then zooming and scrolling only apply to this part. If no plan part is active then the actions apply to the entire plan view.

Note: Zooming within a plan part is only possible if the 'Keep scale' option is deactivated. Further information on zooming and scrolling using key combinations and the mouse wheel can be found in the user guide for the basic version.

26 3D CONSTRUCTIONS

This was originally the 3D Construction Plug-in and is now a standard feature of the Visual Building Professional and Premium versions.

One of the most important and versatile features available is the free-form 3D modelling, which is included in the Professional and Premium versions of the software. 3D modelling not only offers you the possibility to construct your own 3D objects for the catalogue, but also increases the construction capabilities of the software over and above those provided by the supplied building components.

3D constructions can be created by combining 3D elements, known as solids, of which there are four different types:

-  Primitive solids: Basic predefined solids e.g. cube, cylinder, pyramid.
-  Extrusion solids: Created from a closed 2D contour for which a height is specified.
-  Rotation solids: Created from a closed 2D contour which is rotated about a specified axis.
-  Sweep solids: Created from a closed 2D contour which follows a defined path.

Once a solid has been created in this way, it can be edited further using merge and union, or Boolean operations, to form new 3D construction.

A 3D construction can then be selected and saved as a 3D object in the catalogue using the '**Export-3D Formats-3D Object file**' menu. The 3D construction can remain unchanged in the project and be saved with the project, or can be saved as individual entity in a special catalogue. The preference on how the 3D construction is saved is described later with the aid of examples.

26.1 SOME EXAMPLES FOR THE USE OF 3D CONSTRUCTIONS

Applications for the use of 3D constructions are almost unlimited. Obvious examples, apart from creating 3D objects for the catalogue, are construction and decorative elements in, on or around a building, such as:

- Carports
- Patio roofs

- Drainpipes
- Steel girders
- Balconies
- Mouldings
- Baseboards
- Half-timbering
- Roads
- Fences
- Bespoke roof constructions

The following images show a building project with and without 3D objects created from 3D constructions, with the exception of the car, people and trees, which come from the catalogue.

The example with 3D constructions:



In this project the following types of solids were used:

Sweep solids: For the window, cornice and foundation mouldings, the road and pavements, the drainpipes, the balustrade parapet and the balustrade footing.

Rotation solids: For the balusters on the balcony.

Extrusion solids: For the stoop, the canopy, parts of the fence and on various balcony elements.

Primitives: Cubes for the balustrade pillars, spheres for the steps, cylinders for the columns....

The same project without 3D constructions:



This is an external balcony with sweep solids for the steel supports, the handrail and the sides of the platform. The remainder is made up of cubes.



This is a carport: From cubes and a sweep solid for the fascia board.



This is a Rose arch: Cubes for the trellis and extrusion solids for the timber structure.



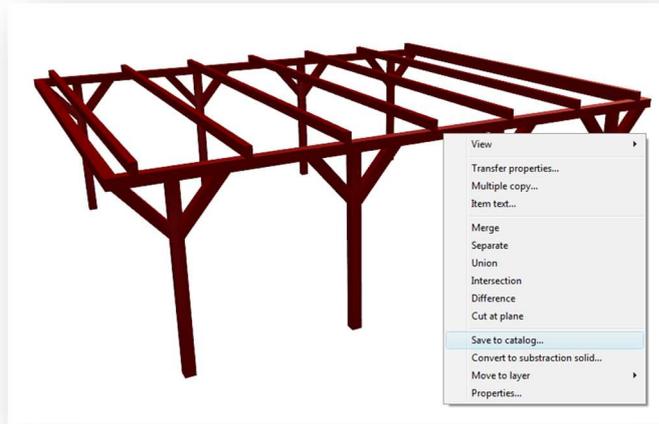
These are various planters created from rotation solids:



26.2 SAVING 3D CONSTRUCTIONS / CATALOGUE

When a 3D construction is selected it can be saved in the catalogue by activating the context menu with a right mouse click.

All 3D constructions, including those provided with the software and the examples shown previously, are saved in the construction elements catalogue  (directory \AEC\Solids). If required, you can create your own sub-directories to save new 3D constructions. The files of 3D constructions have their own file format *.solids. The directory in the catalogue is called 'Solids', as is the folder in the preview. As with 3D objects, 3D constructions can be easily inserted and positioned using drag and drop.



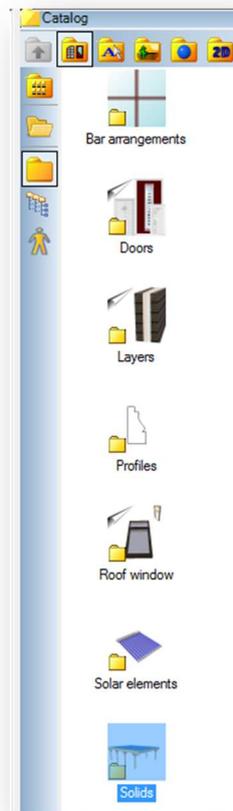
Note that if you have difficulty locating your saved objects in the windows folder structure, you must remember that windows no longer saves files into your main C: drive directory but into a virtual folder. This is the Windows User Account Control (UAC) introduced with Windows Vista. It aimed to improve the security of Microsoft Windows by limiting all application software to standard user privileges until an administrator (you) authorise it by elevation. In this way, only applications trusted by you may receive administrative privileges, and malware should be kept from compromising the operating system.

The path for this is normally:

Yourname\AppData\Local\VirtualStore\Program Files\Visual Building Pro\AEC\Solids

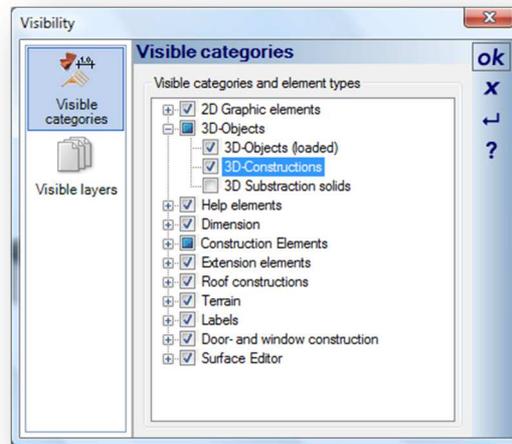
When you think it should be:

C: \Program Files\Visual Building Pro\AEC\Solids



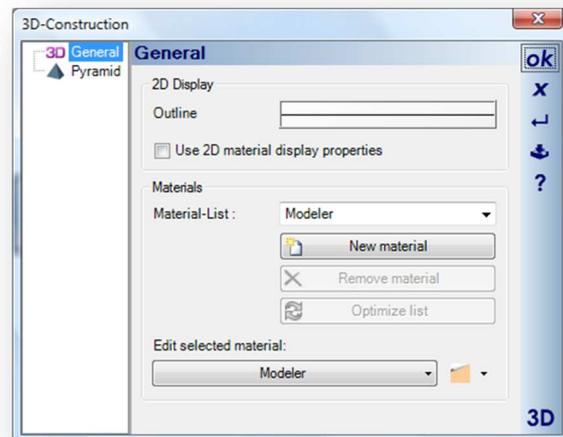
26.2.1 Visibility of 3D Constructions and Subtraction Solids

Both elements can be set as visible or invisible under '3D Objects' in the visibilities dialog.



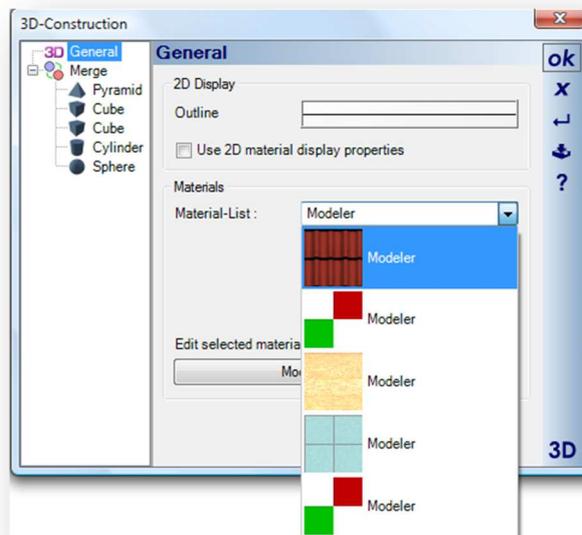
26.2.2 2D Representation of 3D Constructions

As with most other construction elements, 3D constructions use materials which determine both their 3D and 2D representation. Here however, the 2D representation is deactivated by default, since the normal filled or hatched representation would interfere with modeling. If required, the 2D representation can be activated in the dialog by ticking 'Use 2D material display properties'.



26.2.3 Materials of 3D Constructions

Each component of a 3D construction has its own material. Even if a visualization material from the catalogue is applied to a 3D construction using drag and drop, internally a new material is created. If 3D constructions are merged or are the result of Boolean operations, the materials for the complete structure are listed. This list is shown in the dialog with a preview of the materials.



New materials will result from the use of drag and drop, but can also be created directly by clicking on the 'New material' button in the dialog. The name of the material can be changed if required in the materials dialog, activated by clicking on the 'Edit selected material' button. A name can then be allocated to the material to enable it to be more easily identified in the dialog.

An option is also provided to optimise the material list. With this option all identical materials are combined as one. This means, however, that if the material is altered the changes apply to all elements which use this material, which may well be the intention.

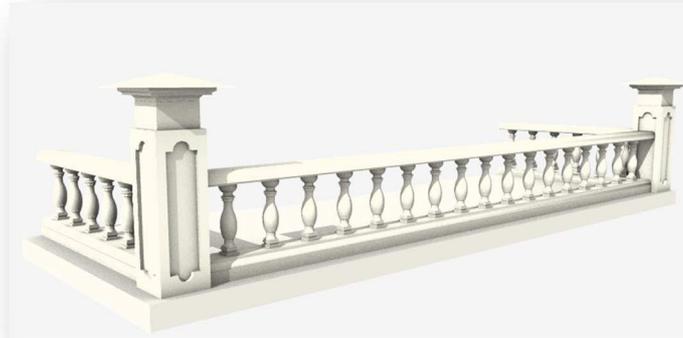
For example: A 3D construction includes four steel supports on to each of which a steel material from the catalogue has been added individually via drag and drop. As a result four separate materials are created in the list. This means that for future changes a new material has to be dragged onto each of the four supports. If the list is optimized these materials are combined as one, which is then common to all four supports. If a new material is subsequently dragged onto one of the supports, then the same material is automatically applied to all the other supports.

26.2.4 What to use - 3D Objects or 3D Constructions?

In many cases it is advisable to save user-created 3D constructions as 3D objects and simply use them in the same way as other 3D objects. There are two reasons for this:

- Better performance
- Easier positioning and scaling

An example: We want to create a balcony with a balustrade. The balusters are modeled using the functions available for rotation solids.



All 3D constructions included in a project are always completely reconstructed and recalculated when the project is loaded or changes are made to them. However a finished 3D object is simply loaded and displayed. The processing of the rotation solids in this example would, depending on the system, take about 10 seconds each time. On the other hand, loading the balcony from the catalogue as a complete 3D object only takes about 1 second. This demonstrates the better performance in using 3D Objects instead of 3D Constructions.

It is therefore recommended that the balcony be constructed with the following steps:

1. Input the platform as a cube or extrusion solid.
2. Create a baluster as a rotation solid.
3. Save the baluster as a solid, in case it needs to be changed at a later point in time.
4. Save the baluster as a 3D object in the catalogue.
5. Input the balustrade footing as a sweep solid.
6. Position a baluster as a 3D object. Use the multiple copy function to create further balusters.
7. Input the parapet as a sweep solid.
8. The balustrade pillars should also be created as solids, and saved and inserted as 3D objects.
9. Now select all the components in a 2D plan view with the mouse using a rectangle.
10. Save the complete balcony in the catalogue using the 'Output>3D formats>3D object' menu.
11. Since we have a mixture of 3D objects and 3D constructions it is not possible to save the balcony in its entirety as a 3D construction in the catalogue. Therefore, the project file should also be saved for later changes.

26.3 PERFORMANCE, RESOLUTION, NUMBER OF SURFACES

With various rounded solids such as spheres and cylinders, and also with rotation solids, it can easily happen that 3D objects with a large number of surfaces are created which are not totally necessary, and which only serve to put an unnecessary load on the system or make the task more difficult later. Therefore, it is advisable at the start to check the number of surfaces of a 3D construction from time to time and to adjust certain parameters, such as the number of segments for spheres and cylinders, or the number of curved segments in the contour of a rotation solid, to meet the actual requirements.

The model of a baluster is created from two cylinders with a diameter of 2 cm and a sphere with a diameter of 4cm. If a sphere with the standard settings of 16 x 16 segments and two cylinders each with 16 segments are used, then the baluster as a 3D object has in total the following surfaces:

2 x 60 surfaces for the two cylinders
480 surfaces for the sphere
Total: 600 surfaces per baluster.

If 30 balusters are used for the banister, then alone this part of the banister has 18,000 surfaces. Surfaces that are not only represented in 3D, but which also have to be calculated for a alternative 2D representation in plan views and 2D representation in cross-sections. If the setting for the cylinders is changed to 6 segments and for the sphere to 8 x 8, then the allocation of surfaces is as follows:

2 x 20 surfaces for the two cylinders
112 surfaces for the sphere
Total: 152 surfaces per baluster.

That means 4,560 surfaces for 30 balusters, i.e. 13,440 less surfaces. With the small diameters involved the difference would be hardly noticeable anyway, as long as a close-up view of the banister is not calculated. For each 3D object the number of surfaces is shown in its properties dialog.



3D-Object	
Surfaces:	480
Points:	242
Materials:	1
Textures:	1
Sub objects:	1

Therefore, depending on the model, always check the number of surfaces, and only create those surfaces that are necessary for the particular application.

26.4 2D CONTOURS AND PROFILES, THE BASIS FOR ROTATION, SWEEP AND EXTRUSION SOLIDS

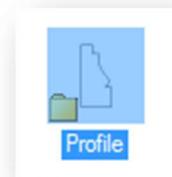
To allow for 3D constructions, various enhancements were made to the functions of the 2D graphic plug-in. The most significant enhancements are:

- Adjustable segmentation for spheres, ellipses and arcs.
- Automatic generation of contours, i.e. the formation of closed polygons from lines, polylines and arcs.
- Splitting polygons into line segments.
- Accurate scaling of polygons, 2D symbols and images.

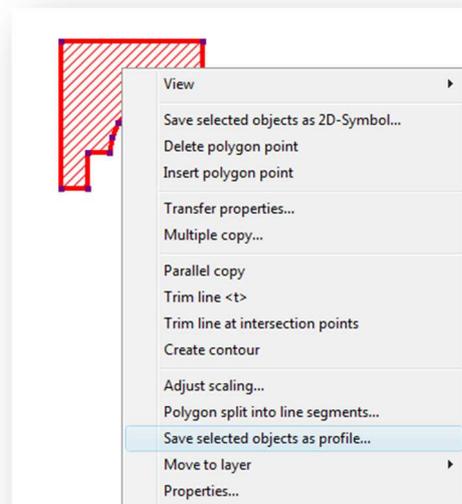
Any contour can be created with the aid of these functions, and from it a solid for use in modeling.

26.4.1 Saving Contours and Profiles

All closed polygons / contours, including the examples provided, are saved in the in the construction elements catalogue  (directory \AEC\Profiles). If required, you can create your own sub-directories to save these files. The files have their own file format *.profile. The directory in the catalogue is called 'Profiles', as is the folder in the preview. These files can be accessed in the dialog of sweep solids, or be simply inserted and positioned when planning using drag and drop. Profiles are then inserted as 2D polygons and are immediately available for creating extrusion or rotation solids.



When a user-created contour or closed polygon is selected, it can be saved as a profile in the catalogue using the context menu opened with a right mouse click.

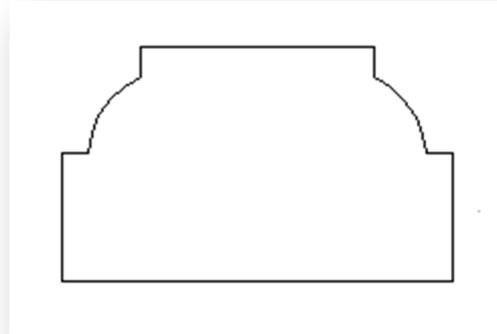


26.4.2 Inputting Contours, Creating Contours

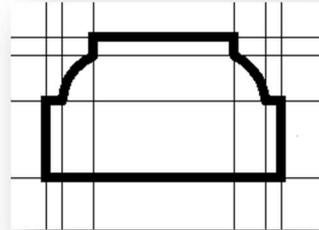
Contours are either created automatically as the result of inputting a closed polygon, or they can be generated from elements such as lines, polylines and arcs using the 'Create contour' function. A requirement for this is that the contour possesses successive endpoints and can be eventually closed.

An example:

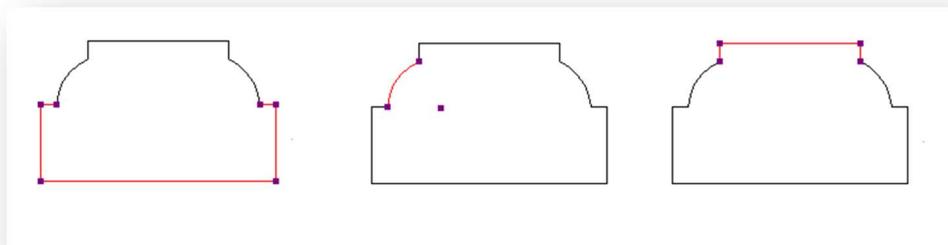
We require the following profile for a balustrade footing.



If necessary, we can create a construction aid with guidelines to enable accurate input and ensure correct proportions.

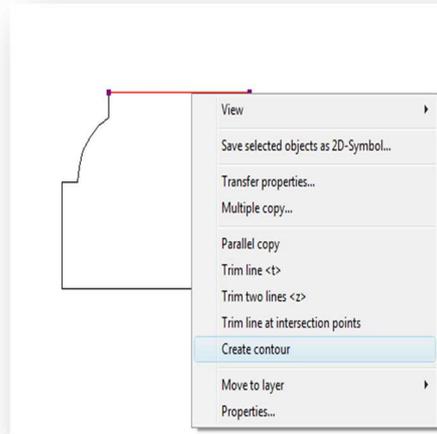


The subsequent profile consists of two polylines and two arcs (input using 3 points), whereby the ends of the polylines meet the end points of the respective arcs.

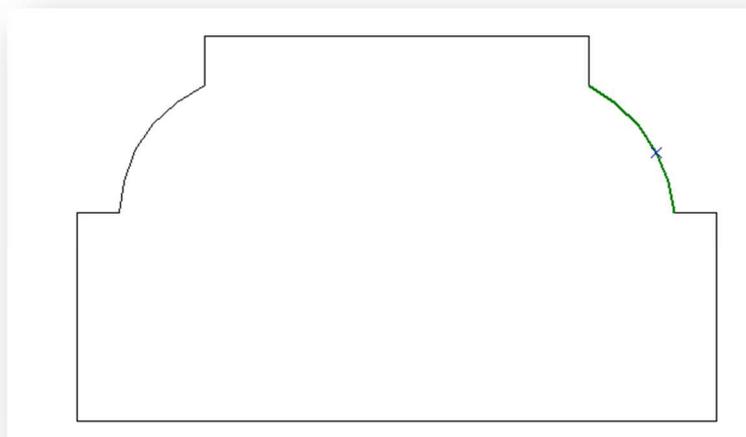


Once input has been completed the contour is created using the 'Edit 2D Graphics' toolbar or using the context menu, activated with a right mouse-click, when one of the 2D elements is selected.

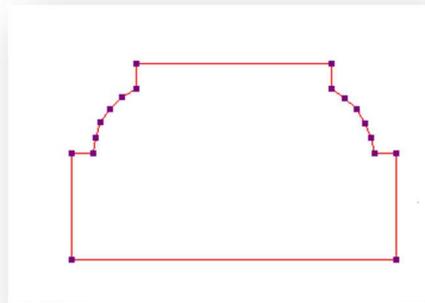
Context menu:



Toolbar: In this case an element does not have to be selected. Once the tool has been activated, the contour is created by positioning the mouse cursor over an element of the contour, which is then highlighted. A left mouse-click now starts creation of the contour.



If a valid contour is present it is automatically converted to a closed polygon and can be saved as a profile or used directly to create rotation or extrusion solids.

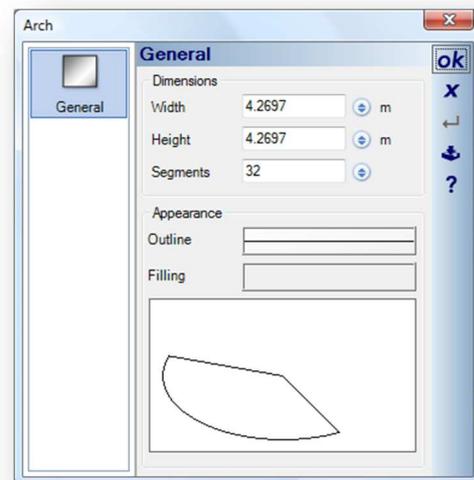


Tip: A contour is generated even if the contour is not closed. In this way paths for sweep solids can be created. However, non-closed contours cannot be saved as profiles.

26.4.3 Performance, Number of Segments in Contours and Profiles

When arcs, circles or ellipses are being used, their segmentation should be adjusted to suit requirements before they are input, see also the chapter 'Performance, Resolution, Number of Surfaces'. For instance, the number of segments of an arc has the same effect on performance as the number of surfaces. In the previous example the number of segments was set to 5, which is perfectly adequate for the application described. Were an extrusion solid to be created from this contour, it would have 68 surfaces. If the arc had 32 segments the number of surfaces would be 248.

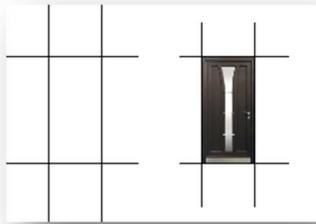
The number of segments can be changed at any time in 2D elements properties dialogs.



26.4.4 Using Images as a Basis for Modelling

It can often be helpful to use photos or sketches of the model to be created, as a basis for modeling. Here an example based on a door:

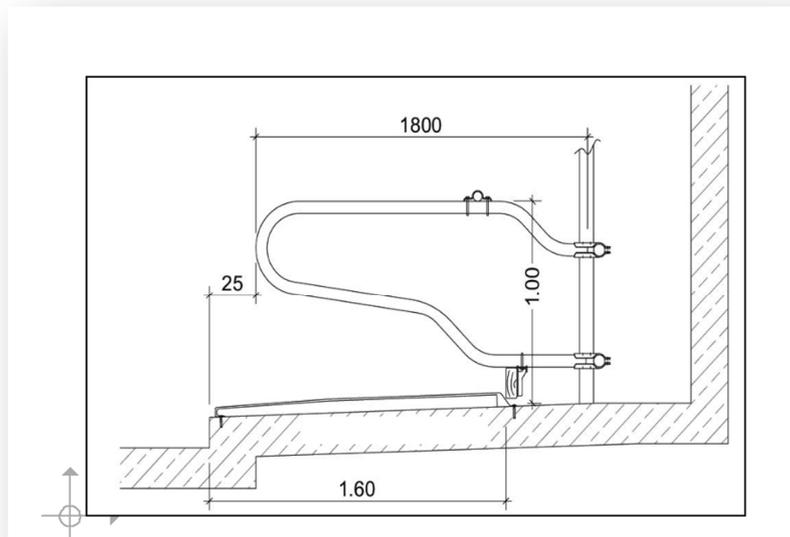
- Create with guidelines in a sectional view a rectangle with the required dimensions e.g. 2.0 m x 1.0 m.
- Create a new layer and insert in this layer, in the rectangle created, an image of the door using the 'Insert image' function of the 2D Graphics plug-in.



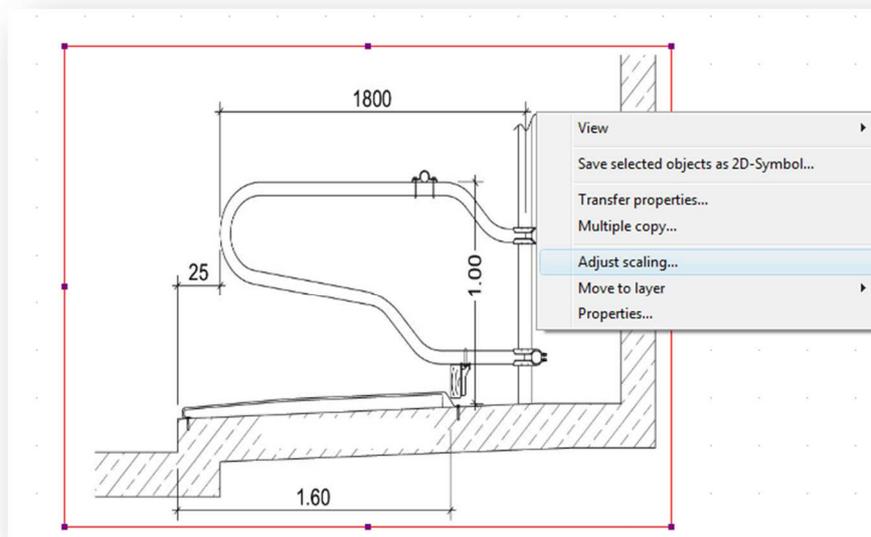
- Return to the layer in which the 3D construction is to be created. Allocating a separate layer for the 'Background' has the advantage that the image can be quickly switched on and off using the layer, and that the image cannot be selected by mistake when planning.
- Depending on the door filling, the 3D solid can now be input directly over the image, or appropriate contours can be inserted beforehand using further guidelines or 2D elements.

Alternatively, an image can be inserted without guidelines and then scaled.

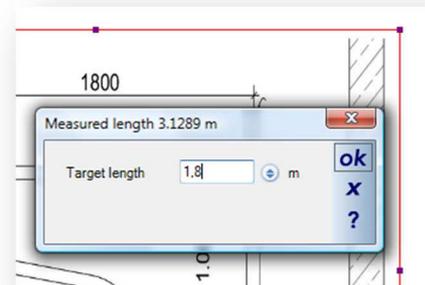
The following image is well suited as a basis for creating a 3D gate using sweep solids.



To achieve this, the image must first be scaled to the correct dimensions, as undefined dimensions and incorrect proportions result on insertion. First select the image and then choose the 'Adjust scaling' function from the context menu.



The next step is to enter a dimension from the image as a reference dimension for subsequent scaling. In this case we choose the horizontal value shown as 1800 and define the length with two mouse-clicks on the dimension in the image. Hereby, keep the 'Ctrl' key pressed to activate the angle grid and so guarantee an exact horizontal measurement of the length. On the second mouse-click a dialog box appears in which the current measurement is shown and allows input of the value from the drawing, in this case 1.80 m. A click on **OK** ends the dialog and the image is scaled to the new dimensions. We can now start inserting the sweep solids.



26.5 PRIMITIVES

Provided here are various predefined 3D solids, which can be modified using their specific properties. A specific property of a cone, for instance, is its variable radius. Basically, all primitives could also be created as extrusion or rotation solids; providing a predefined selection, however, makes input easier and is common in 3D modelling programs.

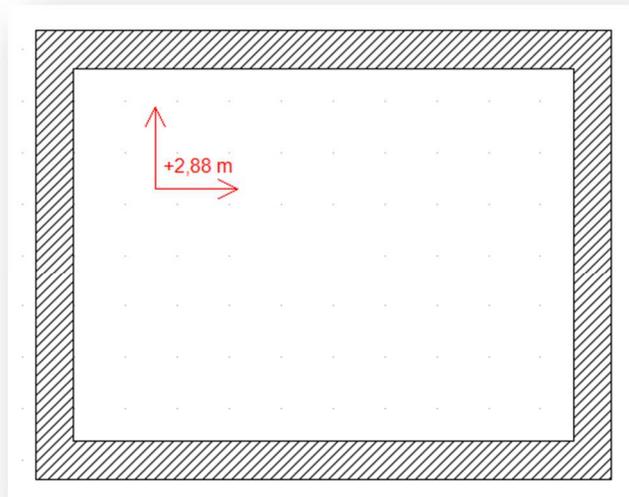


26.5.1 Inputting Primitives

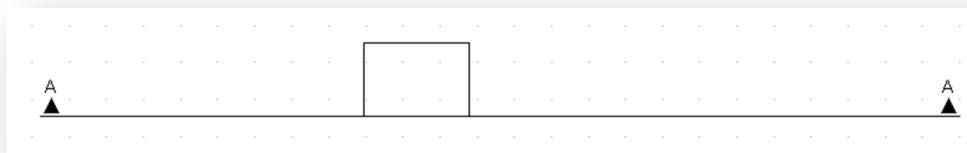
 Primitives can be input and freely positioned with the function or by inputting a rectangle which defines the width and depth of the solid. To freely position a solid it is attached to the cursor and can be dropped with a left mouse-click.

The properties of a primitive can be modified before it is inserted, in the dialog activated by a right mouse-click on its button, or using the properties context menu. While a solid is being inserted the reference point to which the cursor is attached can be changed by pressing 'Ctrl+w'.

 Insertion using a rectangle requires that a plane is defined with the first mouse click. This plane can be selected in all views, however the results differ. In a 2D plan view the cursor shows the currently calculated height before a plane is selected, in this case the floor of an upper storey, the height being 2.8 m (the height of the storey below) plus 8 cm for the floor of the room over which the cursor is positioned, i.e. 2.88 m



In a cross-section view the plane is located along the line of cut with which the view was created. If a plane is selected in a cross-section view and a solid is inserted, the result is as shown below. As a rule the solid must then be moved to its correct position in a 2D plan view.



In 3D views the plane is specified by positioning the cursor over a chosen surface. The resultant plane is then highlighted in red in the preview. This method saves further editing, for example, when the plane is the inclined surface of a roof, since the solid does not have to be subsequently positioned or rotated. With all solids, once a plane has been selected, the view can be changed for input. Therefore, the height can be determined in 3D and the solid can be input more accurately in 2D

An example: On the left the selected plane which is highlighted, and on the right a cube inserted in this plane.



26.6 EXTRUSION SOLIDS



To create an extrusion solid a contour must either be input manually as a closed polygon, or an existing contour can be used.



Closed polygon



Existing contour

Input as a polygon can be performed in any view once a plane has been selected, see also 'Inputting Primitives'.

To select a contour simply move the cursor over a surface in 3D or over a closed 2D contour, produced, for example, from a profile in the profile catalogue.

When a surface or contour is detected, it is highlighted in red in the 3D preview and outlined in green in 2D.



The solid is now created directly with a left mouse-click. The following extrusion solids result for the examples shown.



26.7 ROTATION SOLIDS

 Rotation solids are created by revolving a 2D contour about a specified axis. Surfaces are generated along the contour to form the solid. This can best be illustrated by a few examples, which all show, from left to right, the 2D contour, the result after rotation in a cross-section view, and the resultant solid.

A baluster:



A planter:



A wine glass:



Several different 3D objects can be generated from a single 2D contour by varying the segmentation and the angle of rotation.

Planter: On the left the contour and on the right after rotation with 24 segments and 4 segments respectively.



Baluster: On the left the contour and on the right after rotation by 360°, 180° and 270°, respectively.

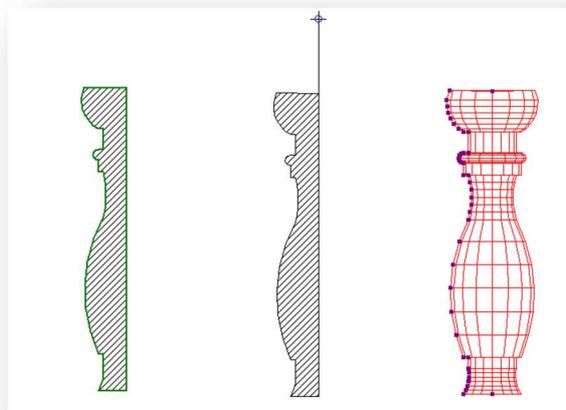


26.7.1 Inputting Rotation Solids

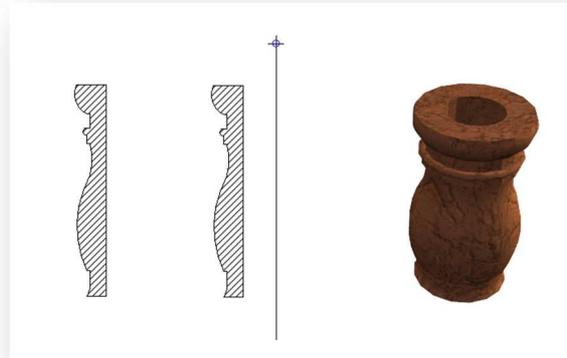
Two steps are required to input a rotation solid. First position the mouse cursor over a closed contour. When a contour is detected it is outlined in green. The contour is selected with left mouse-click. Now the rotation axis has to be input. In the example shown the contour was entered in a cross-section view. The first point of the rotation axis is defined with a click on the bottom right corner of the contour. Then the cursor is moved vertically upwards keeping the 'Ctrl' key pressed to activate the angle grid, to ensure that the axis is drawn accurately. The length of the axis, however, is not important. The axis is completed with a second mouse-click and the rotation solid is immediately calculated and created.

Here the process showing the individual steps from left to right:

- Select the contour.
- Input the rotation axis, the first, lower point has already been input.



If the rotation axis is not entered directly along the contour but instead at a distance from it, the result is a solid with, in this case, a cylindrical opening in the middle.



26.8 SWEEP SOLIDS

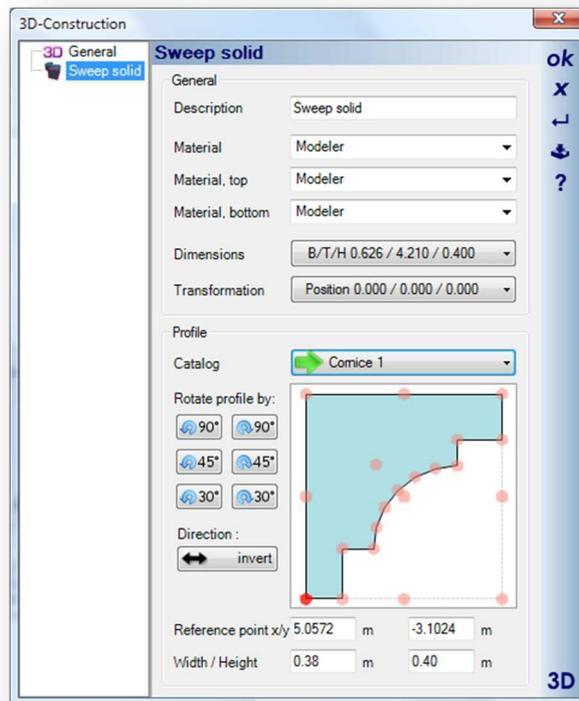
 Sweep solids result from 'sweeping' a contour along a predefined path. The path can be defined in one of three ways.

-  Polyline: Produces a sweep solid which is 'open' at the start and end, and which can be used to create, for example, baseboards in a room which cannot form a closed solid since they start and end either side of a door frame.
-  Polygon: Produces a closed solid in which the end points meet and which can be used to create, for example, ceiling mouldings at the junction of wall and ceiling.
-  Contour / Path: Produces a solid which follows a contour or path made up of 2D elements. Several individual 2D elements must first be combined to form a contour. This option is useful for producing, for example, a path consisting of lines and arcs, as would be required to create a drainpipe.

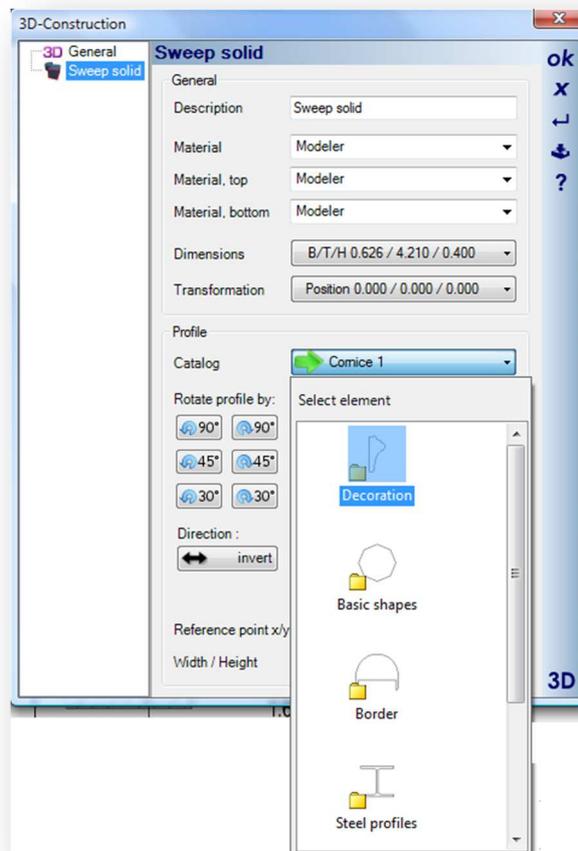
26.8.1 Inputting Sweep Solids

The first step for inputting a sweep solid using polylines or a polygon is to select a plane in a 2D or 3D view. This is a very easy way to position a solid. For example, a molding can be positioned underneath a ceiling by simply clicking on the ceiling support.

The choice of profile can be performed directly on input, or can be specified or changed any time later in the properties dialog for sweep solids.

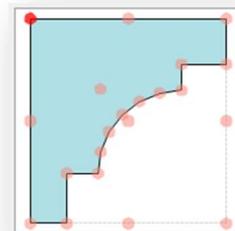


A profile can be selected from the catalogue components shown above the sketch in the dialog.



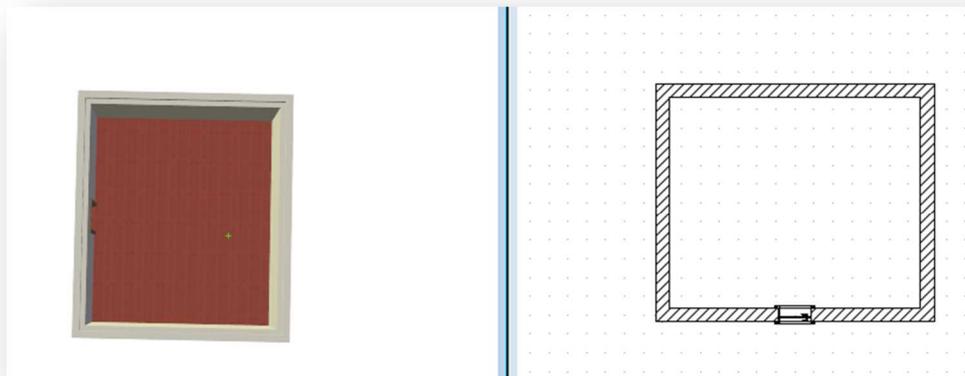
The sketch shows the contour of the profile with its reference points. A reference point can be selected in the sketch with the mouse. To enter a molding under a ceiling, the reference point at the top left corner would be selected.

On or after input the profile can be rotated, scaled or its direction of input changed.



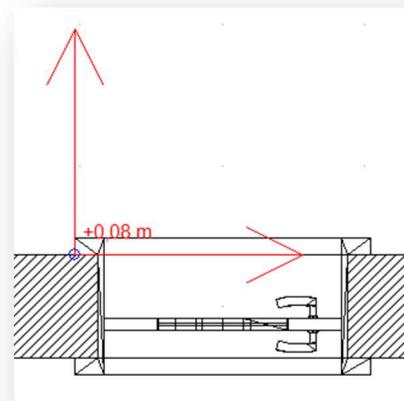
26.8.2 Polylines, Example for Baseboards

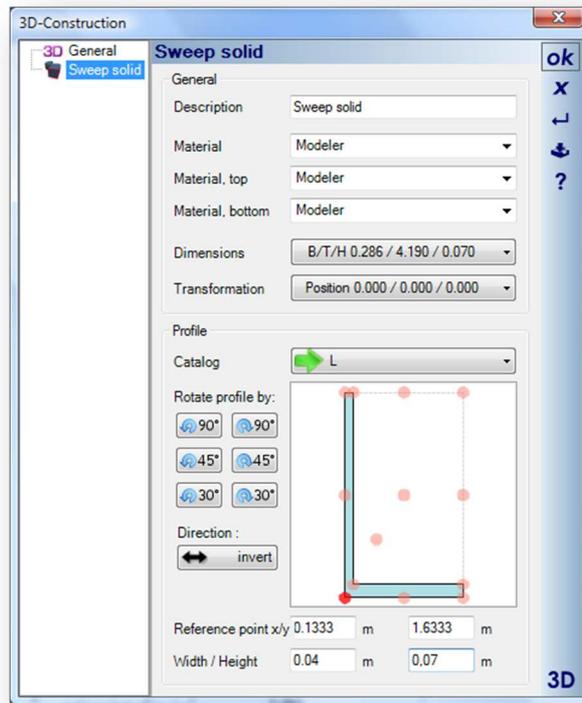
 To input baseboards we first select in the 3D view the floor of the room as the plane and confirm this with a left mouse-click.



Next, we select in the 2D plan view the left corner of the door frame as the first point. For this purpose we have changed the 2D representation of the door from standard to wire-frame in the door dialog under 'Top view'.

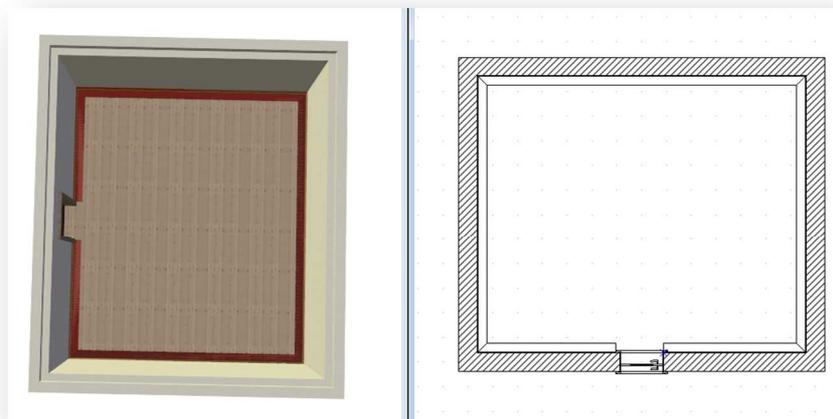
Now we choose the profile of the baseboard in the solid's properties dialog activated using the context menu, opened with a right mouse-click. We select an 'L' profile and modify the settings for width and height shown below the sketch. In the sketch we select the bottom left corner of the profile as the reference point and close the dialog with 'OK'.



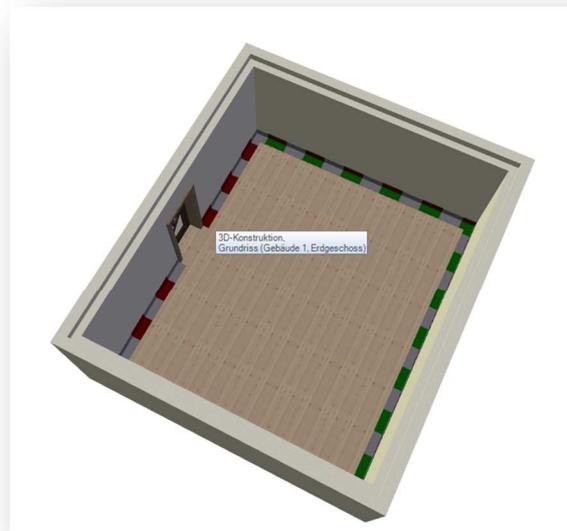


Finally, we 'sweep' the polyline over the corners of the room to the other side of the door frame. The resultant sweep solid appears as a preview in 3D and 2D while it is being created. A final mouse-click on the door frame, followed by 'Enter', completes the input and creates the sweep solid.

Note: In the example shown, the dimensions of the baseboard were modified so that it was more visible in the preview during input.

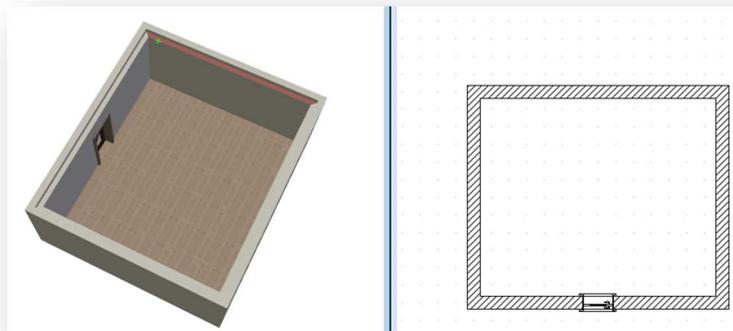


The finished baseboard:

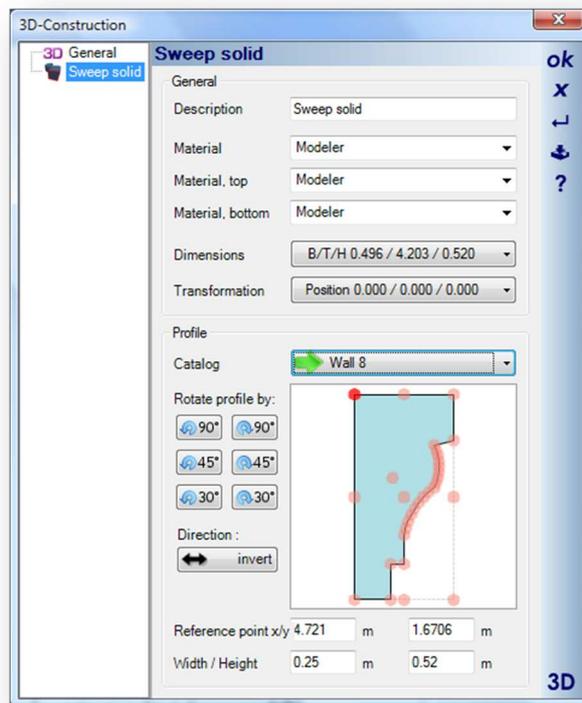


26.8.3 Polygon, Example for Ceiling Moulding

 To input ceiling moldings we first select in the 3D view the ceiling support at the top of a wall as the plane, and confirm this with a left mouse-click.

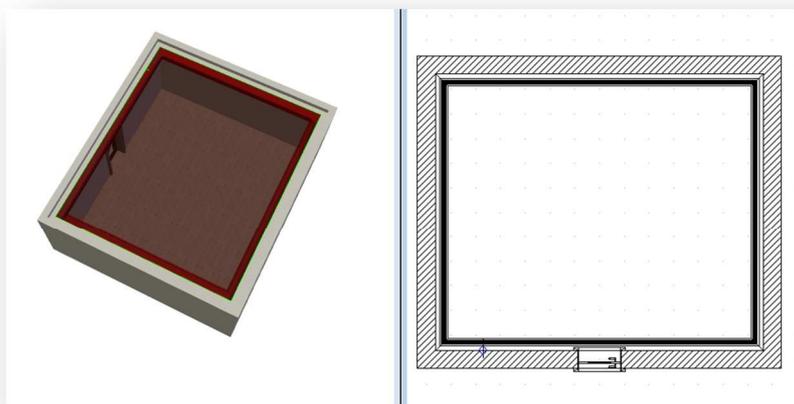


We begin input of a closed polygon by setting the first point at any corner of the room. Now we choose the profile of the molding in the solid's properties dialog activated using the context menu, opened with a right mouse-click. We select a 'Decoration' profile and, if necessary, modify the settings for width and height shown below the sketch. In the sketch we select the top left corner of the profile as the reference point and close the dialog with 'OK'.



Finally, we enter the polygon over the corners of the room. The resultant sweep solid appears as a preview in 3D and 2D while it is being created. 'Enter', completes the input and creates the sweep solid.

The preview during input:



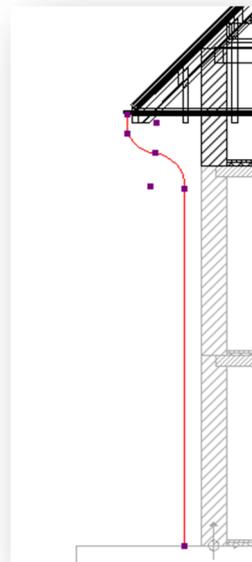
The finished moulding:

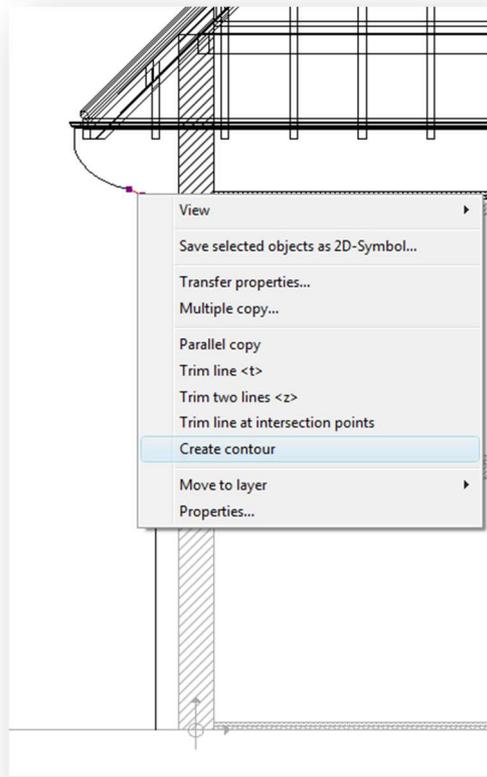


26.8.4 Contour / Path, Example for a Drainpipe

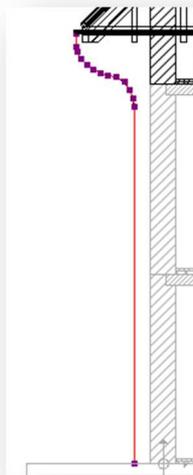
 First, we define the contour of the drainpipe in a cross-section view using 2D elements from the 2D Graphics plugin, i.e. lines and arcs. It is important that the end points of the 2D elements meet, as otherwise a contour or path cannot be created. The following example shows the contour made up of two lines and two arcs (input with 3 points). On input, the number of segments for the arcs was set to 6, see the chapter 'Performance, Number of Segments'.

Now select one of the 2D elements, right click on it and then select 'Create contour' in the context menu.





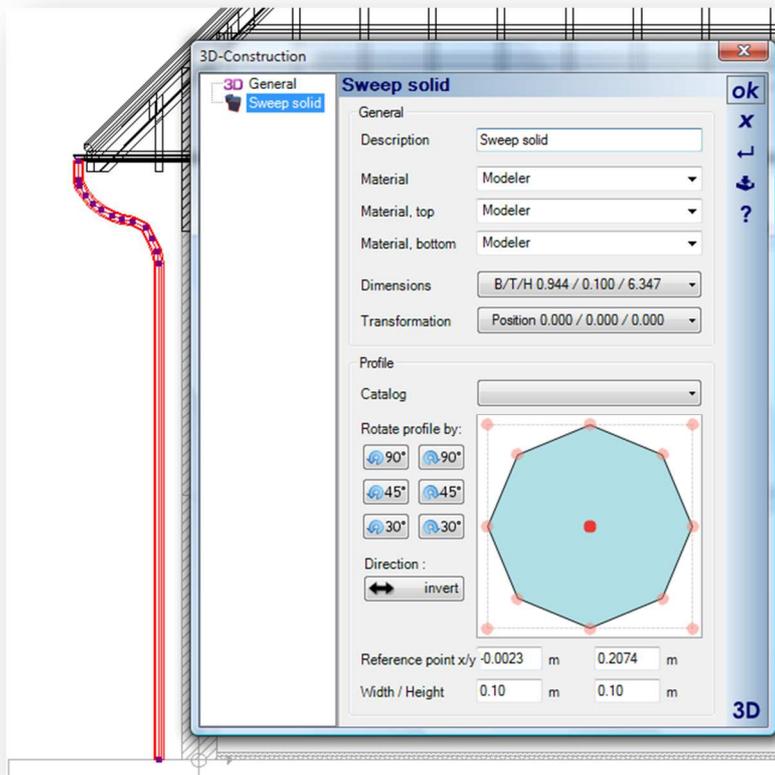
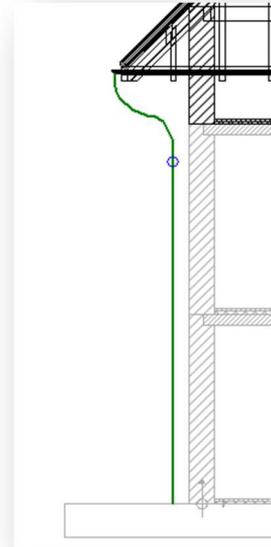
The resulting contour:



Next from the 3D Contours toolbar select **Sweep Solid** and then **Select 'Contour / Path'**  as input option for the sweep solid and position the cursor over the contour, which is highlighted in green as soon as it is detected.

A left mouse-click completes the input and creates the sweep solid. Right click on the highlighted object, and select **Properties**, to activate the 3D Construction properties dialog. Select the Sweep solid, under 3D General tree.

In the Profile section, select a profile from the catalog, in this case an 8 sided profile. In the width and height boxes enter 0.07m to set the diameter of the pipe.



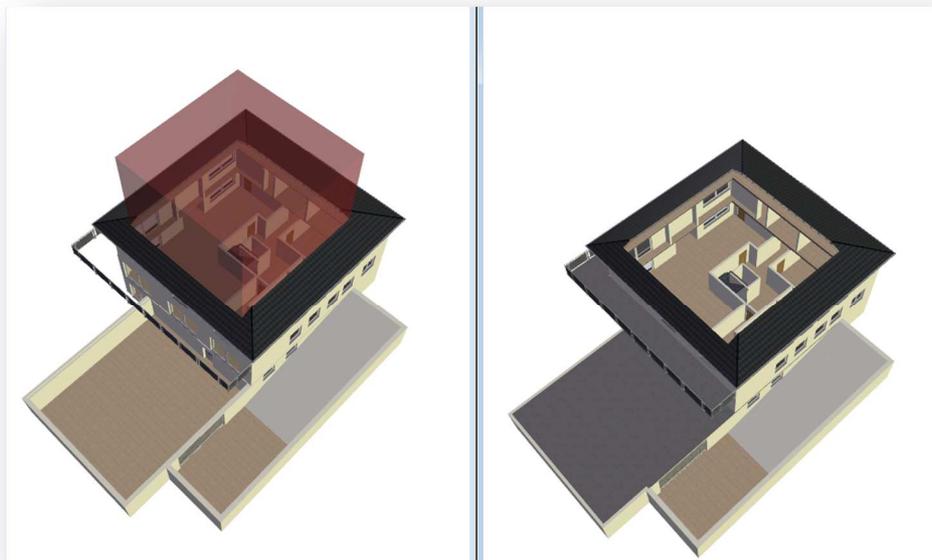
26.9 SUBTRACTION SOLIDS

 As the name implies, subtraction solids are intended for subtraction from other solids using Boolean operations. 'Cube' and 'Plane' are provided as standard subtraction solids in the toolbar of the 3D Construction plug-in, and further, it is possible to convert existing 3D constructions to subtraction solids. This function is available using the context menu when a 3D construction is selected.



Subtraction solids are generally valid globally for the entire project and all its components. These subtraction solids are not intended for use in modeling, but for creating a 3D section or plane through a 3D model. For modeling, other tools such as the Boolean operations are provided.

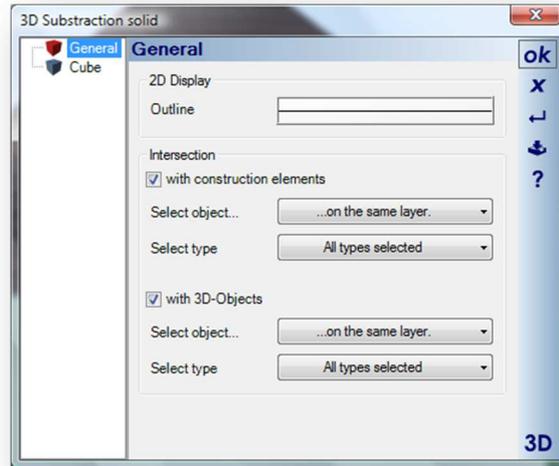
An example, the 'Cube' subtraction solid in a building:



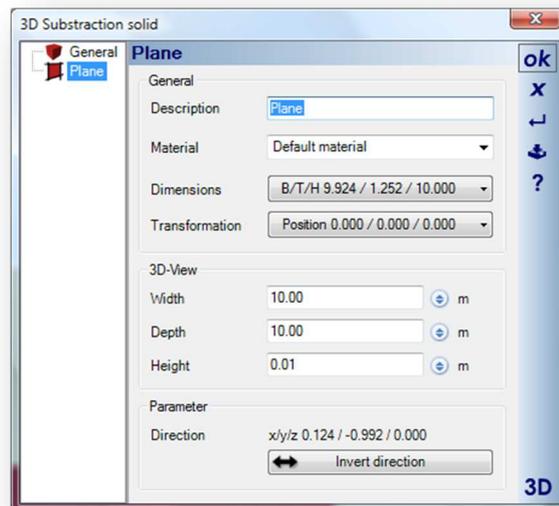
In the example shown the cube was subtracted from all layers of the building. In the view on the left the cube is still visible, while on the right it is set as invisible in the visibilities dialog. The cut-out representation, however, has no effect on the 2D representation in the plan view.

Note: Processing for such operations is very complex, and depending on the project can take several minutes. Before creating such views the project should first be saved, as depending on the system the available main memory is also an important factor.

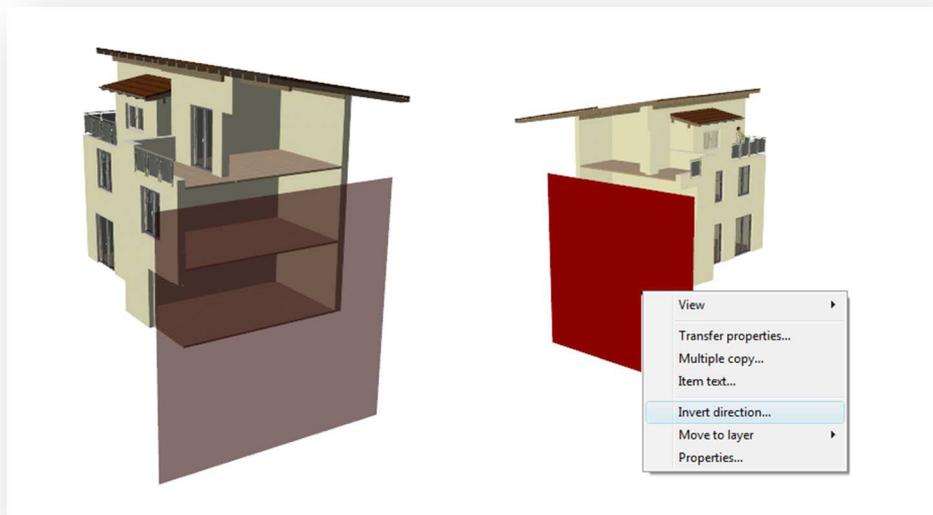
The scope of the subtraction can be set in the properties dialog for a subtraction solid. Here can be specified which types of construction element and which layers are to be affected by the subtraction solid.



Planes remove elements depending on the direction in which they are input, i.e. to the right of their direction of input. Therefore, the direction of input of a plane can be subsequently changed using the 'Invert direction' button in the dialog, or using the context menu.

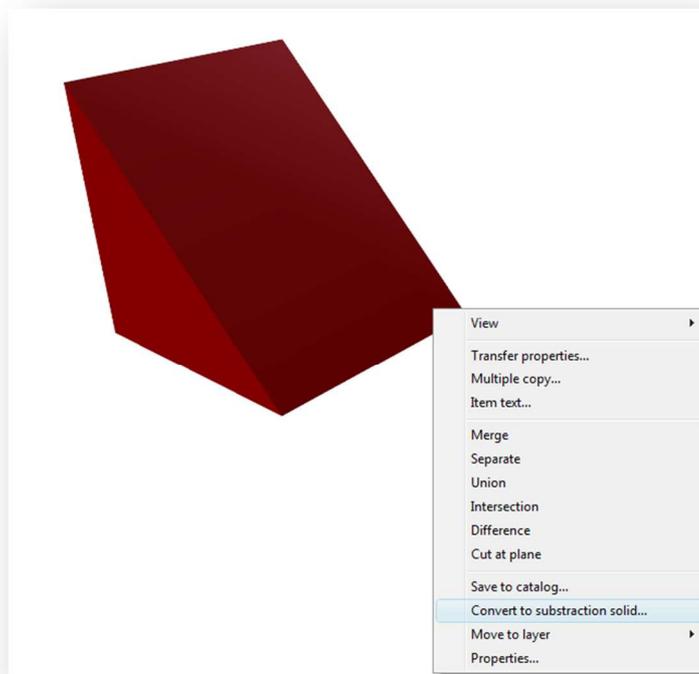


An example with the direction of input reversed:



26.9.1 Converting 3D Constructions to Subtraction Solids

Any 3D construction in the project can subsequently, when it is selected, be converted to a subtraction solid using the context menu activated with a right mouse-click.



After the conversion has been performed the solid is shown in red, becomes transparent, and automatically intersects the specified elements in the layer in which it was input. It retains the properties of the original solid, and the options for specifying the types of construction element and layers to be intersected are added to the properties dialog.

26.9.2 Examples of the Use of Subtraction Solids

We would like to show here a few examples of the use of subtraction solids. Generally, before a subtraction solid is input it is important to consider in which layer it is to be inserted. This particularly affects the processing time required for the 3D model.

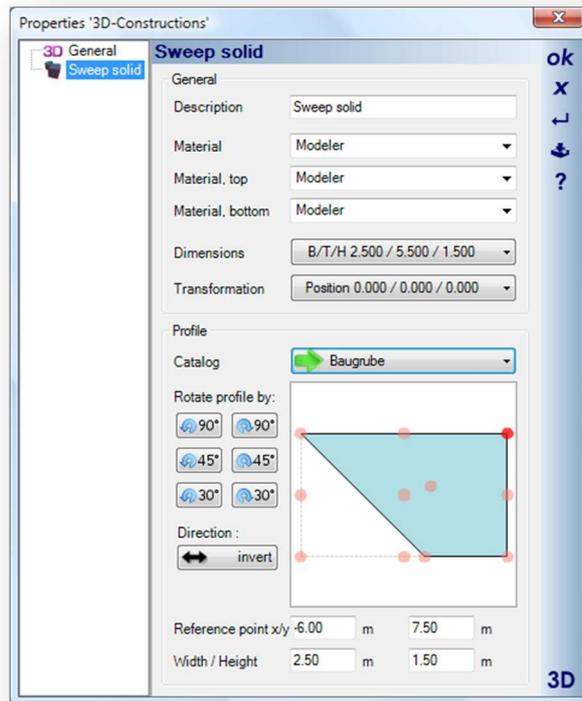
An example: We want to use a subtraction solid, for example a wedge for a ramp, to remove a part of the 3D terrain. In this case the solid should be input directly in the 'Environment' layer. The default settings for the subtraction solid to only include elements in the current layer means that it intersects automatically with the terrain, and only the terrain. If the solid were to be input in the ground floor of the building instead, and only later the 'Environment' layer activated in the properties dialog of the subtraction solid, it would mean nevertheless that it initially intersects all elements of the ground floor. An action that is not necessary in this case and which only costs processing time.

26.9.3 Example of a Subtraction Solid in the Terrain

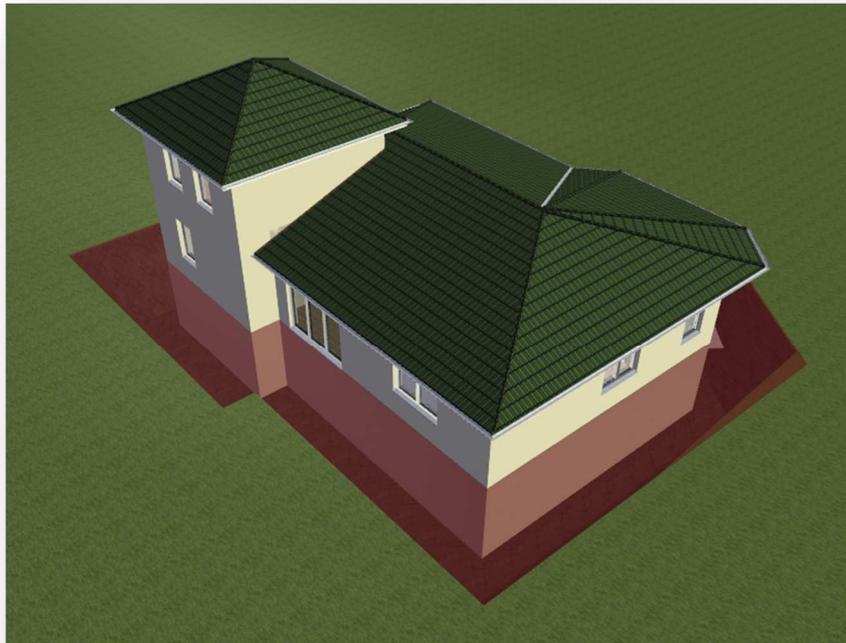
In this example input consists of the following steps:

- Draw a 2D contour for the cross-section of the construction pit and save it as a profile.
- Switch to the 'Environment' layer.
- Input a sweep solid as a closed polygon with the profile of the construction pit.
- Convert the sweep solid to a subtraction solid.
- Set the subtraction solid as invisible in the visibilities dialog.

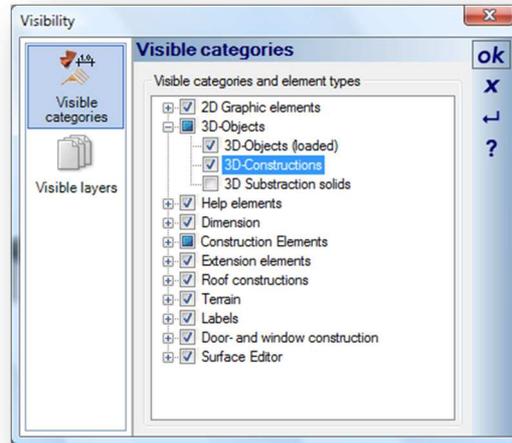
The dialog for the sweep solid showing the profile of the construction pit:



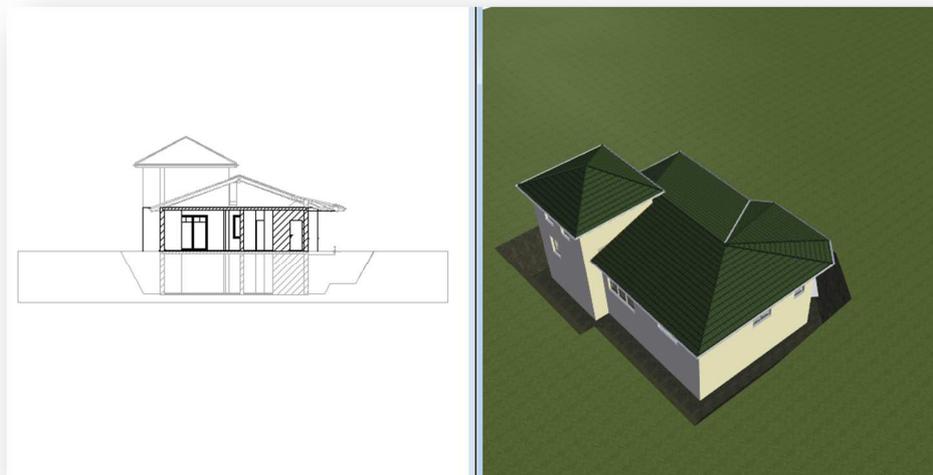
The view after the sweep solid was converted to a subtraction solid:



Setting the subtraction solid to invisible:



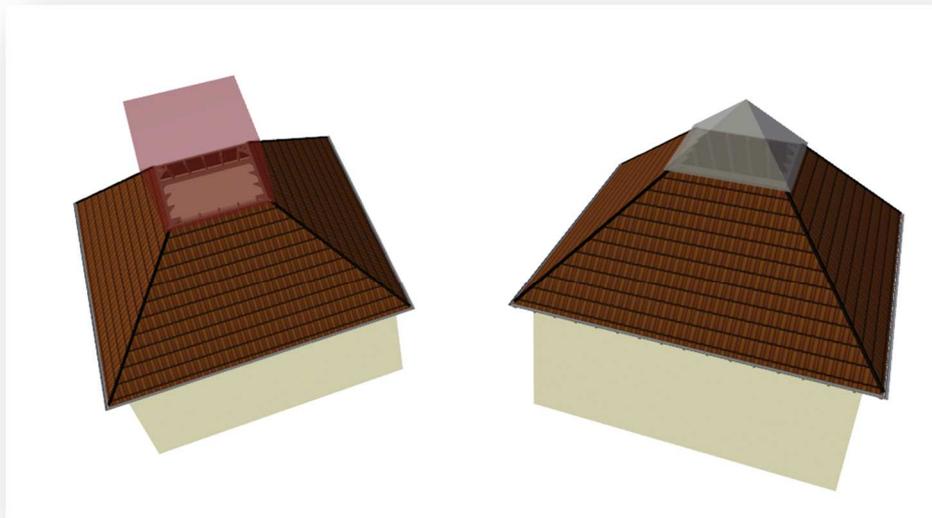
The result:



26.9.4 Example of a Subtraction Solid in Roofs

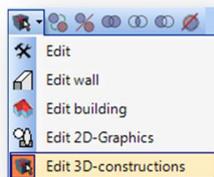
In this example input consists of the following steps:

- Input a cube in the upper storey.
- Convert the cube to a subtraction solid (left illustration).
- Create, for example, a pyramid as a skylight.
- Set the subtraction solid to invisible in the visibilities dialog.

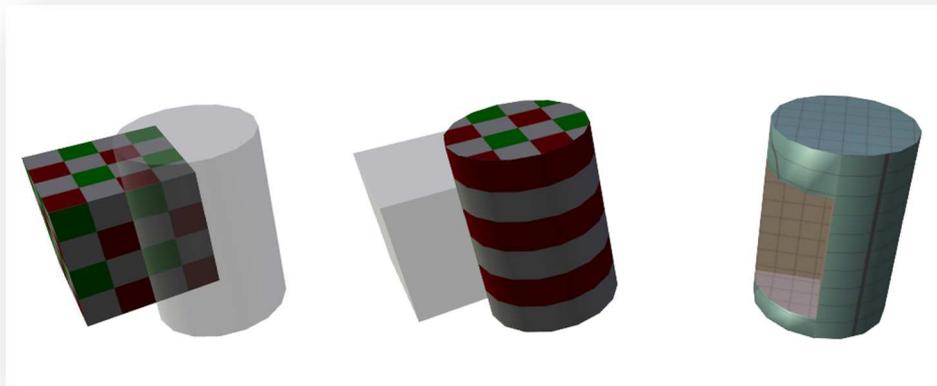


26.10 EDITING / BOOLEAN OPERATIONS

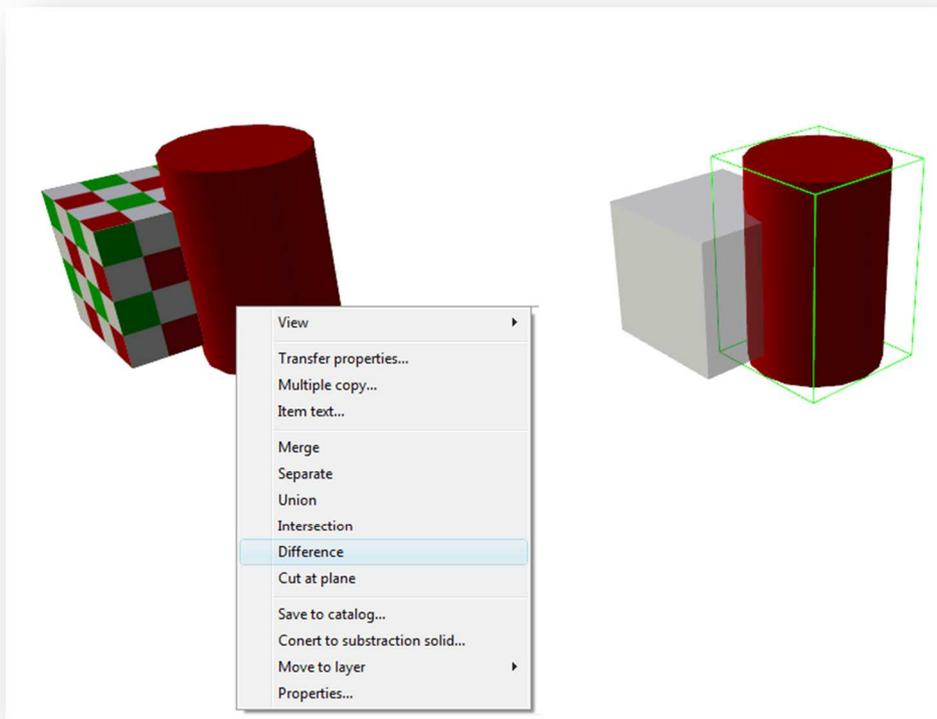
The functions for editing 3D constructions are found in the toolbar of the same name and in the context menus when a 3D construction is selected.



Both options differ somewhat in their usage. For instance, if the 'Difference' function is selected using the toolbar, two operands must be specified using the mouse. When the cursor is positioned over the 3D construction it becomes transparent. Here the process from left to right; the first operand is the cylinder, the second operand the cube, and the result is that the cube is subtracted from the cylinder (the material was changed subsequently).



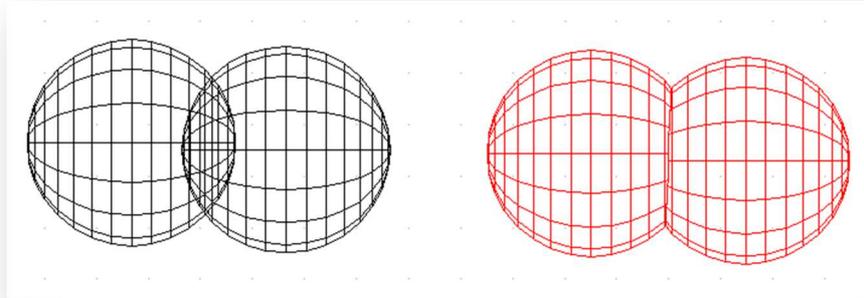
Alternatively, the 'Difference' function can be activated using the context menu; first select the cylinder to set it as the first operand, and then select the cube.



26.10.1 Merge / Union

To be able to process a 3D construction as an entity, we as a rule need not only to be able to trim solids but also to merge or unify them. The difference between these two operations is

shown in the following illustration. On the left the result of the 'Merge' function, on the right the result of the 'Union' function:



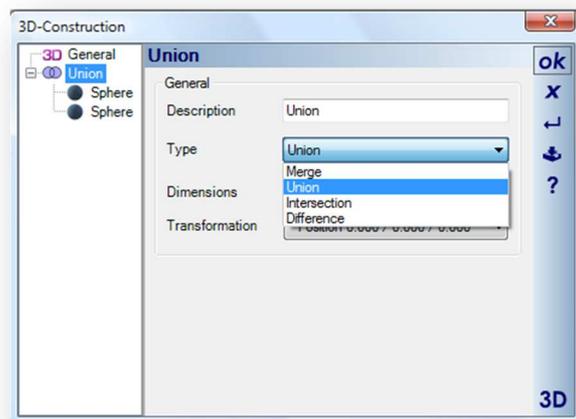
To put it simply, both solids remain unchanged when they are merged and only form an entity for further processing, whereas when solids are unified the parts and surfaces which are common to both solids are removed.

The following is a general rule for our 3D modelling functions:

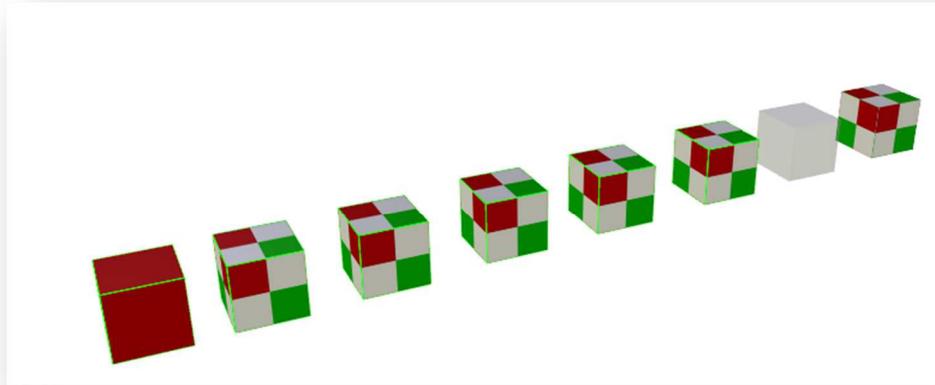
- Solids, which do not penetrate each other, must be merged.
- Solids, which penetrate each other, must be unified.

As we can see, the illustration above is not quite correct and only serves to demonstrate the operations.

When one of the two functions is activated, the software attempts to establish which of the two operations is best suited for the particular case and then performs internally the function which it has determined. It can therefore happen that the 'Merge' function was selected but internally the solids are processed with the 'Union' function. This may not always be correct, as for performance reasons the function is determined based on the bounding box of the objects. If this results in incorrect processing then the type of operation should be changed in the '3D construction' dialog.



Multiple 3D constructions can be merged in one operation by keeping the 'Shift' key pressed during selection. The solids which have been selected for the operation are outlined in green. The operation is completed by pressing 'Enter'

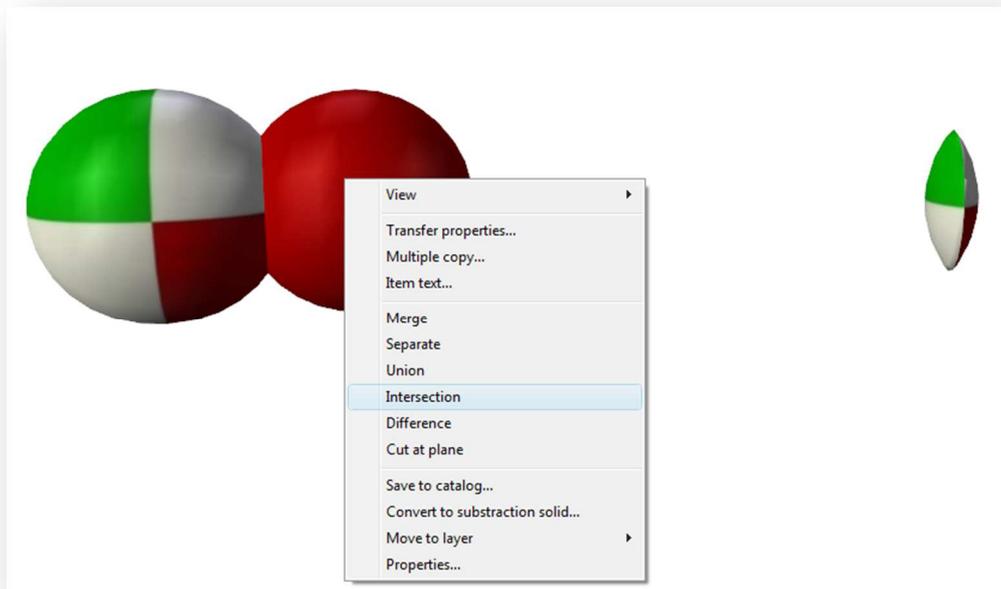


26.10.2 Separate

3D constructions, which have been merged or are the result of Boolean operations, can be dismantled again using the 'Separate' function. The 3D construction is dismantled starting at the top of its hierarchical structure. Depending on the depth of the structure it may be necessary to use the 'Separate' function several times in order to dismantle the entire structure.

26.10.3 Intersection

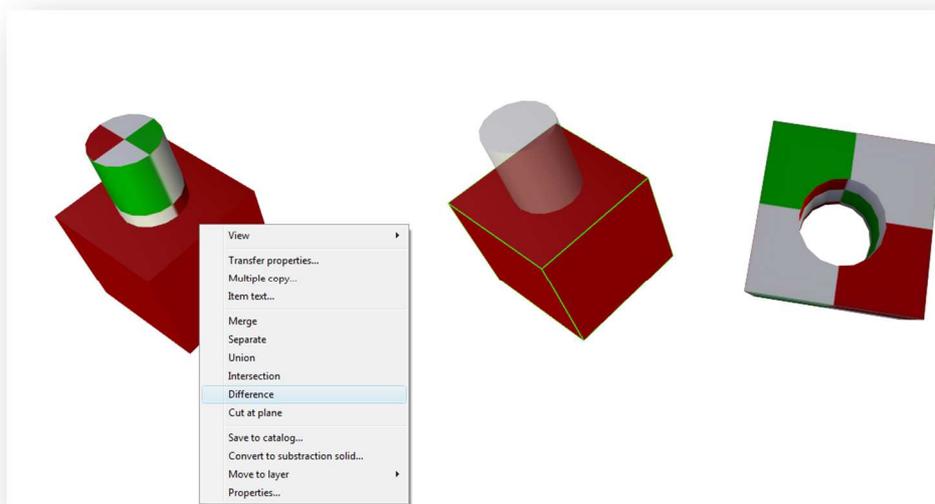
The result of this operation is a solid which represents the common part of the two operands. In the case of two spheres which intersect, the result is a lens.



26.10.4 Difference

Probably one of the most often used operations is 'Difference'. This enables one 3D construction to be subtracted from another.

Here an example with a cube and a cylinder, whereby, from left to right, the cube is selected as the first operand, the cylinder as the second operand and the result.



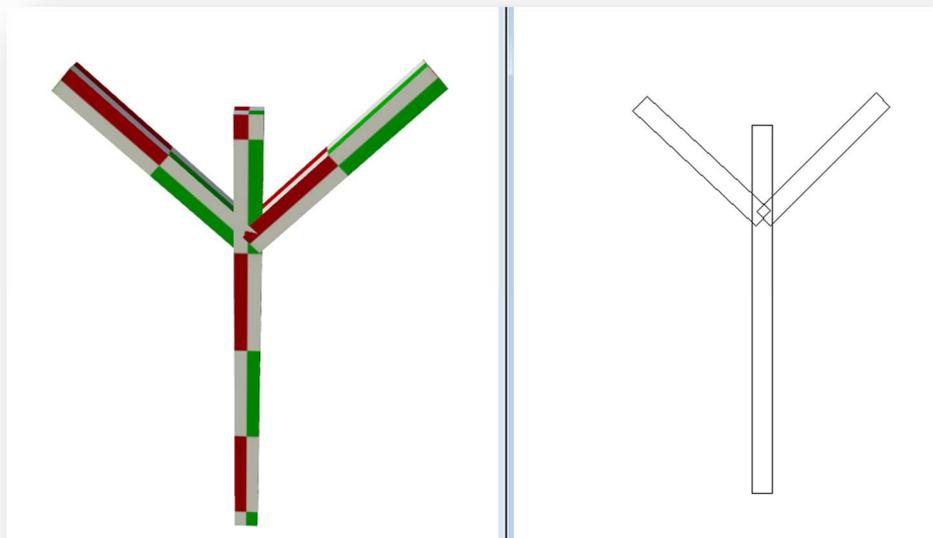
26.10.5 Trimming at a Plane

Another operation, which can be very useful for 3D construction, is the trimming of a solid at a plane. The plane is selected from the surrounding 3D scene with a mouse-click.

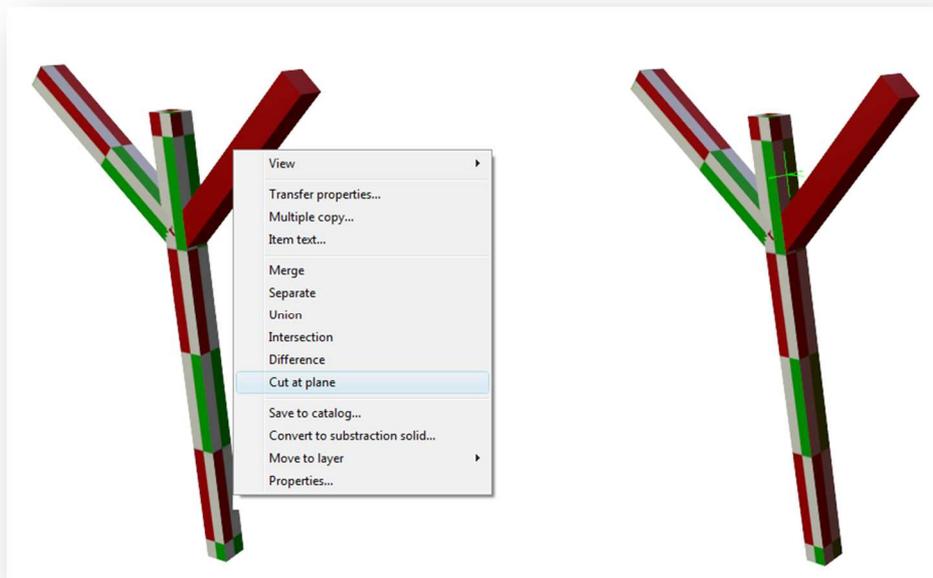
We can best demonstrate the procedure with an example.

We want to construct a carport and have first created a post with an upper brace using cubes.

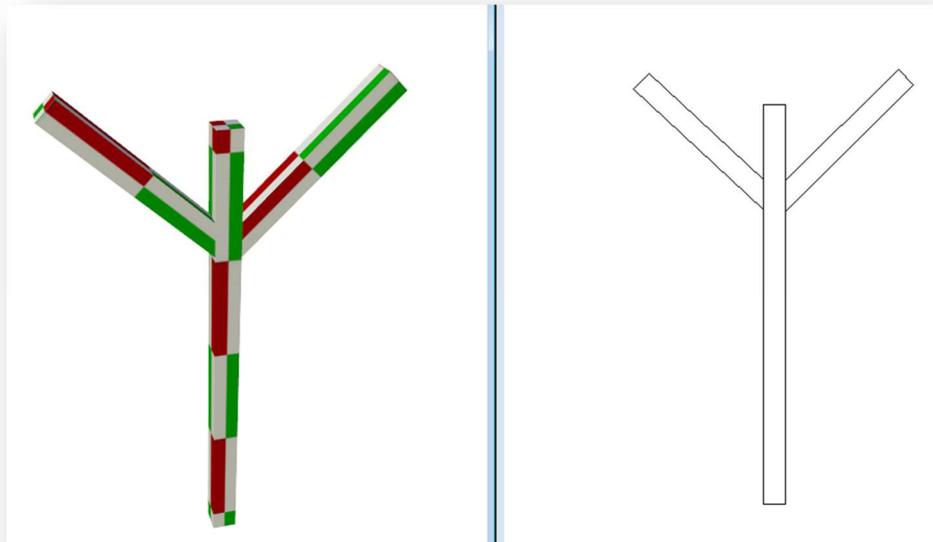
We now have the following 3D construction:



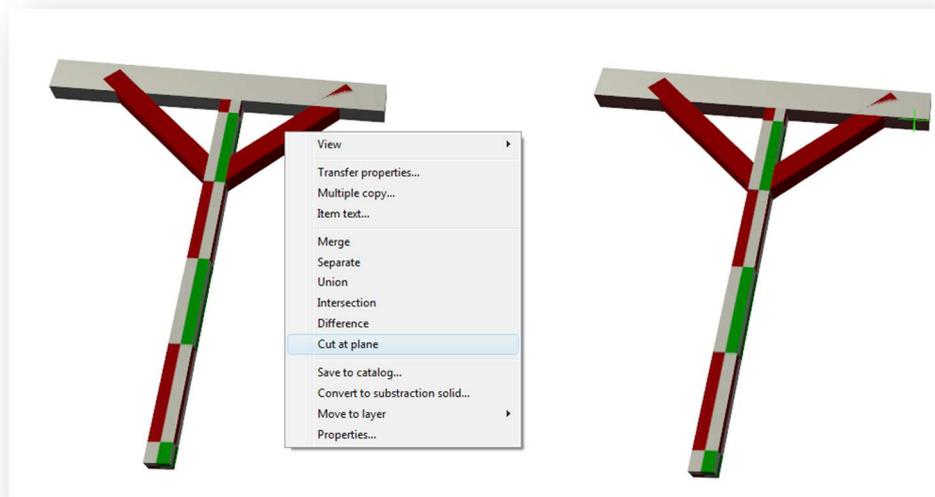
The braces must now be trimmed where they meet the post and also to match the height of the post. First we select the operand and then the surface / plane, at which it is to be trimmed. On the left the selected operand and on the right the selected plane, in this case, the side of the post.



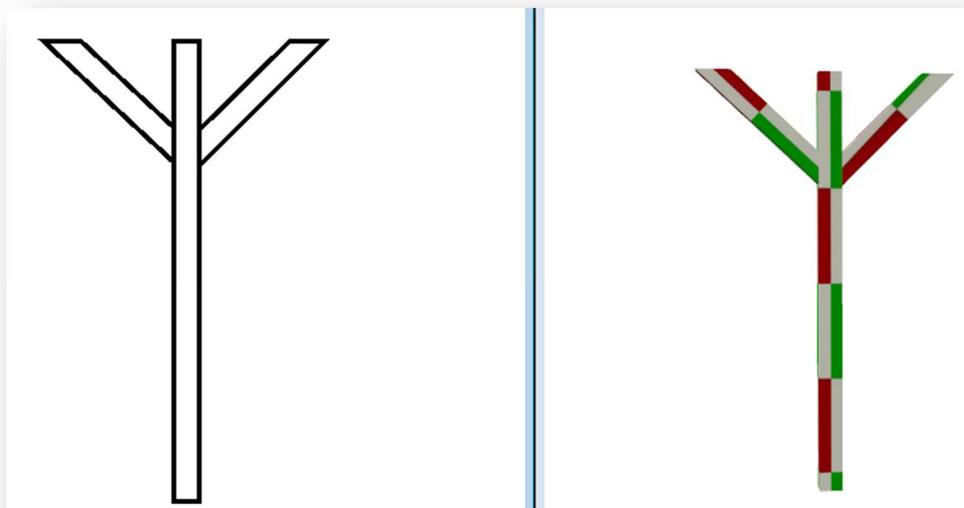
We then repeat the procedure for the brace on the other side. The result now looks like this:



The braces must now be trimmed to match the height of the post. To select the plane we could use the beam above the post, which has been added here as an example. First, however, we select both braces so that the trimming operation only has to be performed once. As the plane we select the underside of the beam.

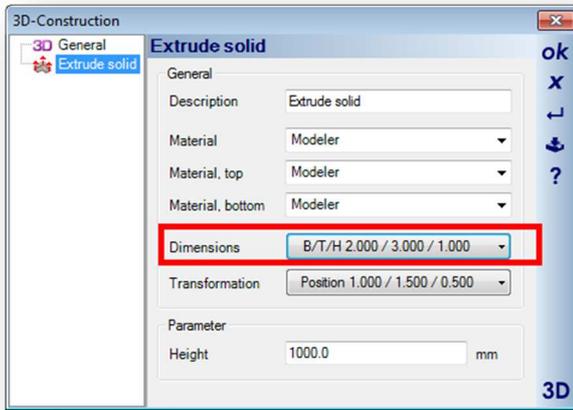


The result:



26.11 DIMENSIONS

You will find several of the 3D Construction dialogs have a field button named **Dimensions**.

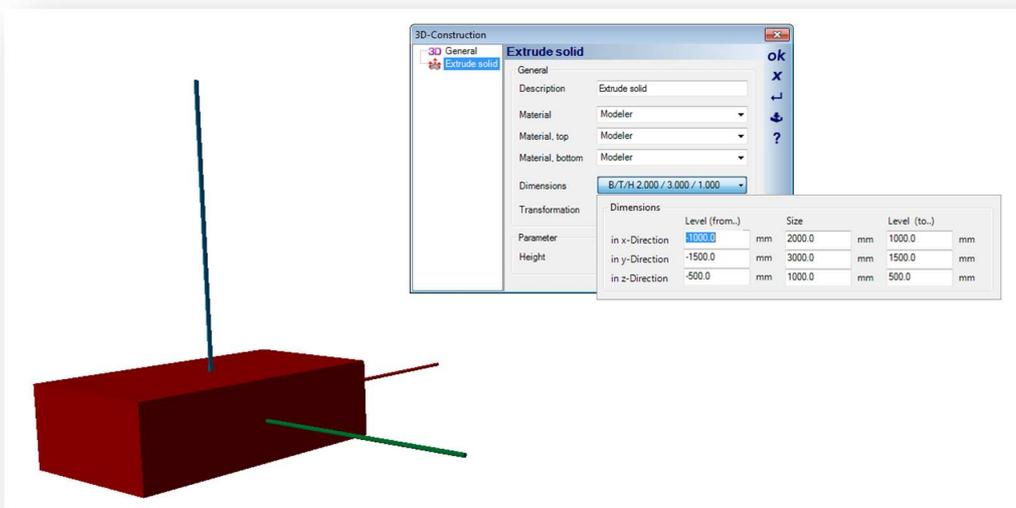


This button shows the current dimensions of the 3D Construction object. If you click on this button you are provided with more information and control:

The following is the data for a block measuring 2000 mm x 3000 mm x 1000 mm high.

Dimensions					
	Level (from..)		Size		Level (to..)
in x-Direction	0.0	mm	2000.0	mm	2000.0
in y-Direction	0.0	mm	3000.0	mm	3000.0
in z-Direction	0.0	mm	1000.0	mm	1000.0

The Level (from..) and Level (to...) shows the position of the block relative to the Origin point, and the difference is therefore its length. If you edit the Level (from...) or Level (to...) you don't

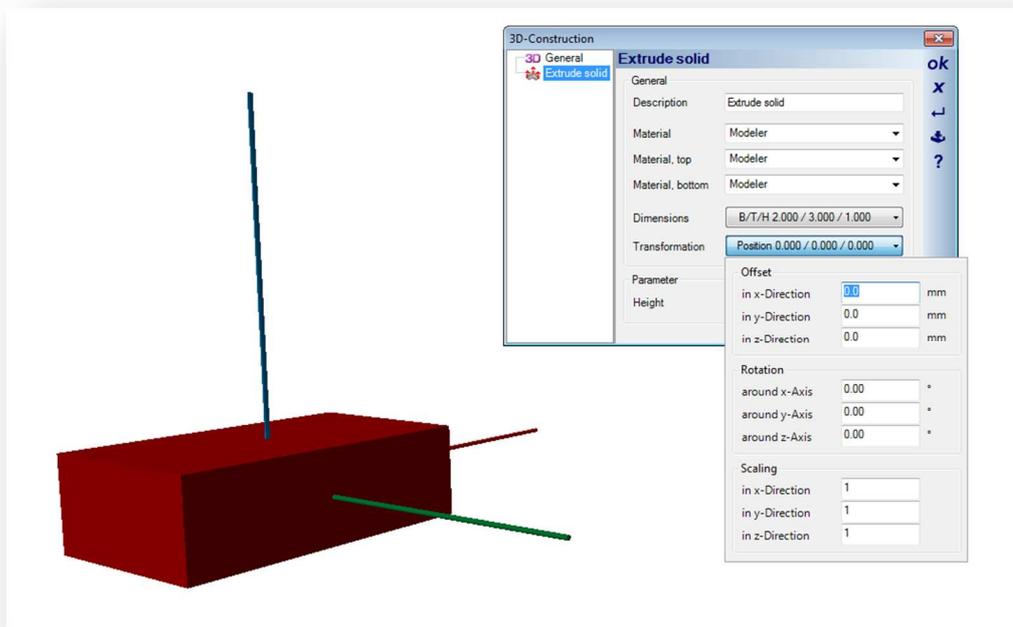


change the Size. What you add to the Level (from...) is removed from the Level (to...). To change the length of the dimension, you must edit the Size field. However when you edit the Size field the Level fields are automatically updated

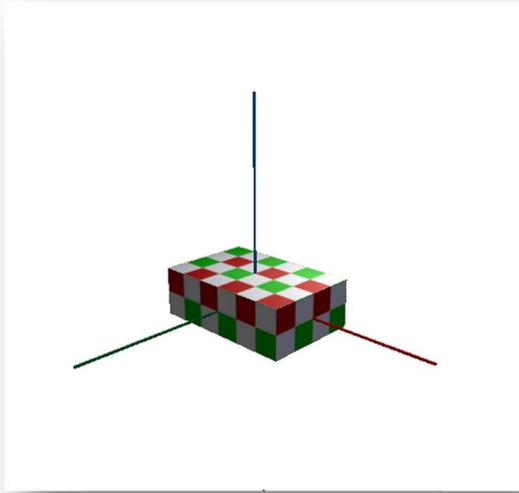
26.12 TRANSFORMATION

The Transformation button works in a similar way and displays the following properties:

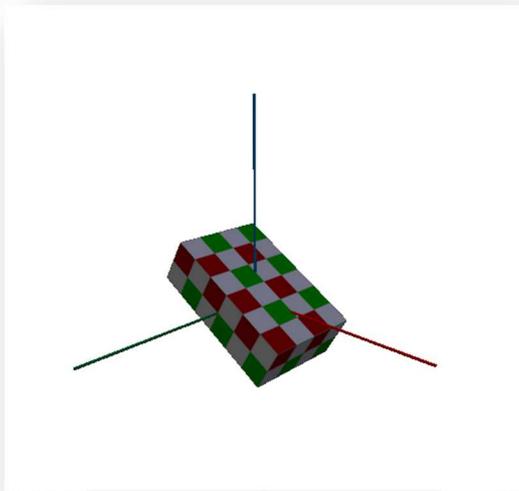
The Offset fields are modified by the Level fields in the Dimensions button.



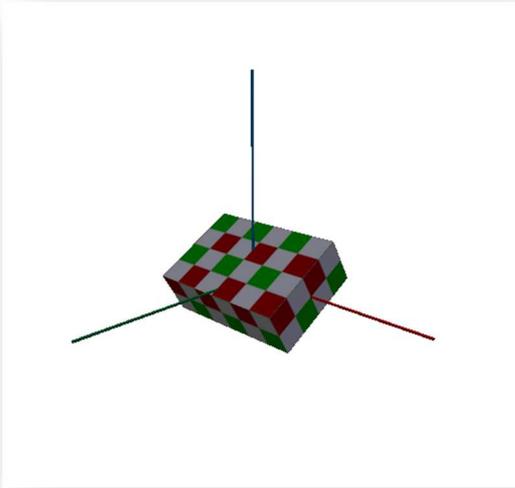
Rotation



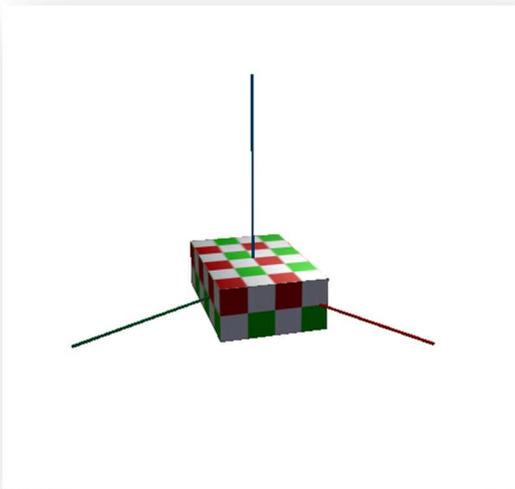
No rotation in any axis. Please note that the x y z axis elements are nit a standard feature and were easily created for the purpose of this example.



Rotate the object 30 degrees around the x-axis



Rotate the object 30 degrees around the y-axis



Rotate the object 30 degrees around the z-axis

27 3D CONVERTER

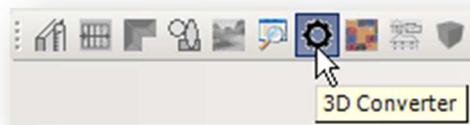
The 3D Converter was originally a Plug-in, but is now a standard feature of Visual Building Professional, and Premium.

This feature is not part of Visual Building Basic versions. You can easily upgrade to Visual Building Professional- contact Visual Building Ltd for details.

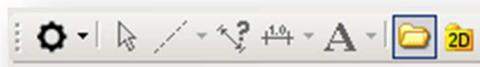
27.1 TOOLBAR

The 3D converter basically provides functions to enable the use of 3D models from other software products. Existing models can be loaded, edited, and stored in other formats. It is therefore useful to all users who possess models, are able to create or obtain them, and at those users who wish to use this software in addition to the other 3D visualisation applications they generally work with.

The 3D Converter is activated by clicking on the 3D Converter icon in the Plugin toolbar:



The 3D Converter “What” toolbar will then appear, normally in the left vertical toolbar, but this is variable depending on where you may have previously placed it:



The main 3D Converter is activated by clicking the Browse icon; however there is an additional 2D representation tool that will allow you to edit the default 2D symbol representation of a 3D object. This tool will create an automatic 2D symbol from the 3D object. You can choose to convert a single object or an entire folder and all its contents.

If some objects already have 2D symbols you may choose to overwrite them or not.

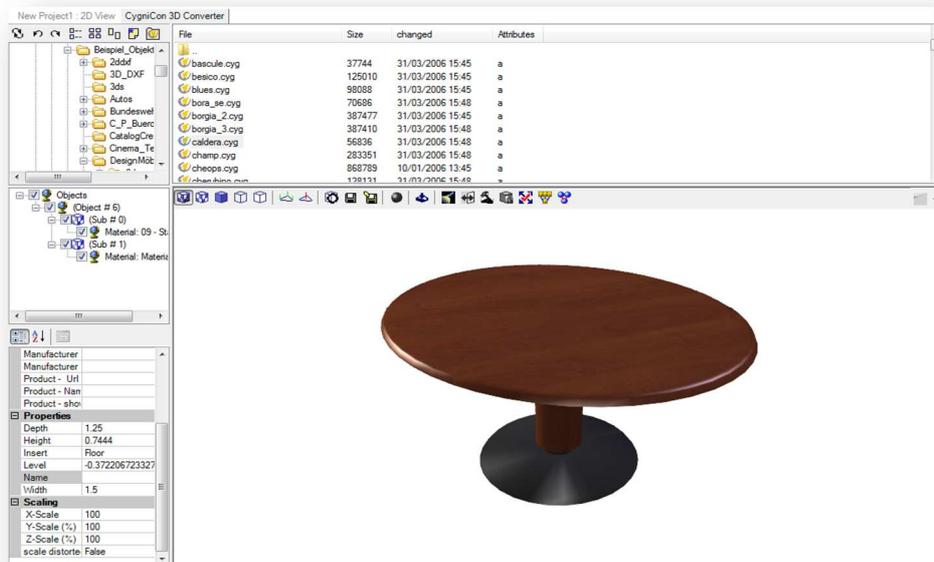
27.2 RIBBON BAR

The 3D Converter is activated in the Ribbon bar via the **3D Functions** tab – **3D Converter Group** – **Browse** tool. Note that this tool is only available in the Visual Building Professional and Premium versions.

27.3 THE 3D CONVERTER USER INTERFACE

The work area of the 3D converter is divided into four basic areas.

- An area to select a file
- A tree view of sub-objects, materials and light sources
- An area for properties
- A 3D preview with buttons for editing functions



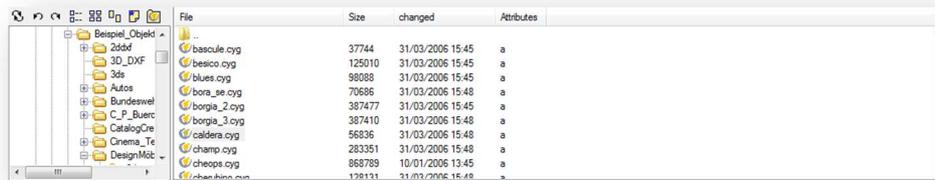
The standard catalogue remains visible in the right-hand margin, since textures and materials from the catalogue can be added using drag and drop to sub-objects in the 3D preview of the converter.

It is not possible to directly select 3D objects from the catalogue. The objects from the catalogue can be loaded via the File Selection window (top left window).

The four windows are separated by so-called splitters, and can be individually made larger or smaller by positioning the cursor on a border and then adjusting the size.

27.3.1 The File Selection Area

This area allows you to navigate through the directory structure in order to select a file. The buttons in the top icon bar provide the usual functions for displaying directories and for switching between previously used directories. The Show Catalog button can be used to switch directly to the default directory for objects in the catalog.



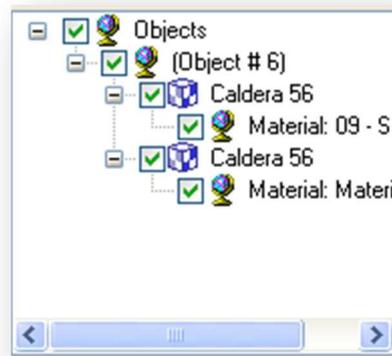
27.3.2 The Tree view of Sub-Objects, Materials and Light Sources

3D objects can be made up of several sub-objects, each of which forms a separate entity. For example a table can be created from a table-top and a base. The number of sub-objects and their arrangement is defined when the 3D object is created and cannot be changed in the 3D converter.

However, it is possible to set sub-objects as invisible using the check boxes in the view. When the object is saved, invisible sub-objects are automatically removed. It is therefore possible to create different versions of objects which consist of sub-objects, by removing individual sub-objects.

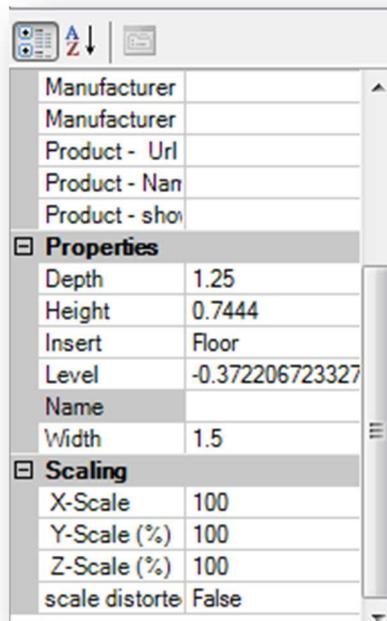
Sub-objects can have their own names, under which they are listed in the tree view. If sub-objects do not have their own names they are allocated the name of the object and numbered sequentially. If you click on a sub-object in the tree view it is highlighted not only in the tree view but also in the 3D preview.

Each sub-object is automatically allocated a material, which is also shown in the tree view. A double-click on the entry for the material opens the materials dialog. Light sources are shown in the tree view in exactly the same way as sub-objects, irrespective of whether they were already a part of the object or were created using the 3D converter.



27.3.3 The Properties Area

The properties area provides numerous settings for the 3D object and is divided into sections for specifying documents, properties, information and scaling.



The Document Section

In this section a PDF file, can be assigned to an 3D object and thus remain a part of the object should it be passed on to customers or other users. The pdf file is then stored as part of the *.cyg file, The PDF files can be used, for example, to incorporate pictures, catalog pages, technical data or installation or assembly instructions for the object. The PDF files can be displayed in various places in the CAD software. This provides the user or recipient of the file with additional information concerning the object

To add a document simply click on the field next to 'Document' and load the PDF file using the 'Open File' dialog.

If a document is already contained in the object the 'Available' property changes to 'True'.

The Properties section

The properties you can edit here are:

- Name: Specifies the logical name which, if present, is displayed in the CAD Software instead of the file name.

- Insert Position: Defaults, which are used when positioning objects in the CAD Software. 'None' specifies at any height, 'Floor' on the floor, 'Ceiling' on the ceiling' and 'Fixed' at a fixed height.
- Level: A predefined height for the object when it is positioned in the CAD software.

The Scaling Section

The current dimensions of the object are shown and can be changed here. The settings in the 'Scaling' section also apply here. If '**Scale distorted**' is set to 'False', then all dimensions of the object are altered proportionally.

For example: You load an object with the dimensions 100x100x100 (height, width, depth). The 'Distorted Scaling' property is set to 'False' i.e. is not allowed. You change the height from 100 to 1 meter. All other values are also changed automatically to 1 meter. If The **Scale distorted** property were set to 'True', then the object would be 1 meter high and 100 meters wide and deep. Scaling functions in the same way in the associated section, except that here scaling is specified as a percentage and not in absolute values.

Objects need to be scaled relatively often. Frequently data is received from systems which export 3D objects with different scaling factors. It is not uncommon for 3D objects to be several 100 meters in size when loaded from the original data. You should always pay attention to scaling and adjust it accordingly.

The Information Section

In this section article and manufacturer's data can be allocated to the object, and can be shown in the CAD Software in the properties dialog for the object,.

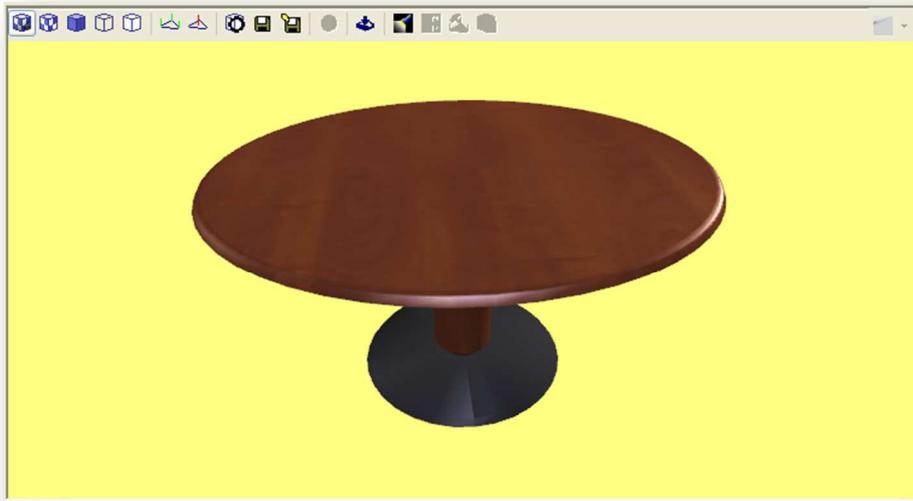
This data corresponds to that of the 'Chunk' editor in the CAD Software and is described in the documentation for the basic software.

This is where you can assign a web link to each object, allowing a user of the object to obtain additional information about the product or manufacturer of the product.

27.3.4 The 3D Preview Window with Editing Functions.

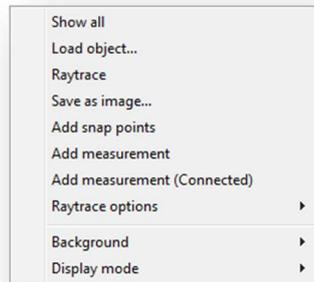
Various tool icons are located in the top icon bar of the 3D preview window. The buttons are grouped together as follows:

- Display mode
- Displaying perpendiculars from points and surfaces.
- Saving an object
- Editing functions



27.3.5 The 3D Preview Context Menu

A right mouse click in the 3D preview activates the standard context menu:



27.4 EDITING AND CONVERTING OBJECTS

27.4.1 Saving Objects

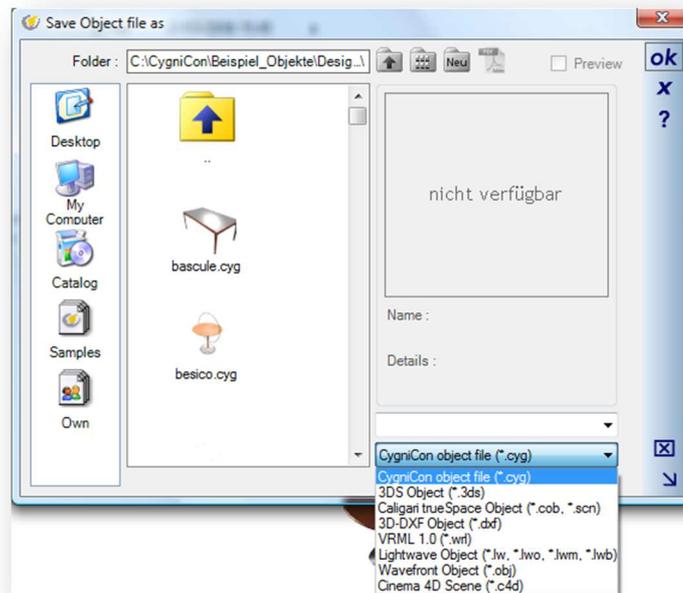
Saving as a Visual Building Object (*.cyg)

With  this button the object is stored as a Visual Building (*.cyg) object without any further processing. The file for the Visual Building Software object is created in the same

directory from which the original file was loaded. The filename also remains unchanged; and the filename extension is changed to '.cyg'.

Saving in other Formats

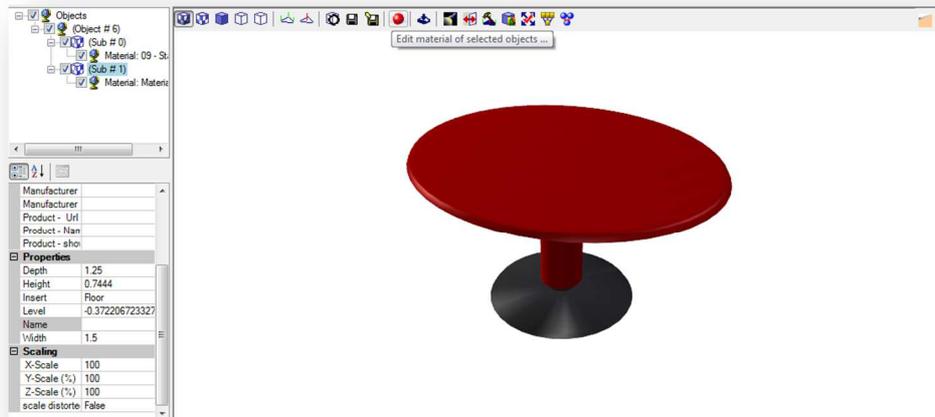
 The button activates the dialog for 'Save object file as', which allows the choice of a target directory, the specification of a filename, and the selection of a target format from a list in the bottom right margin. The appropriate extension is automatically appended to the filename according to the file format selected.



27.4.2 Changing the Material of Sub-objects

 The button is only active when an object or a sub-object has been selected in the 3D preview. An object is selected with a left mouse-click in the preview. Selected objects are shown in red.

Alternatively, the material editor can be activated with a double-click on the material entry for the sub-object in the tree view on the left of the preview.



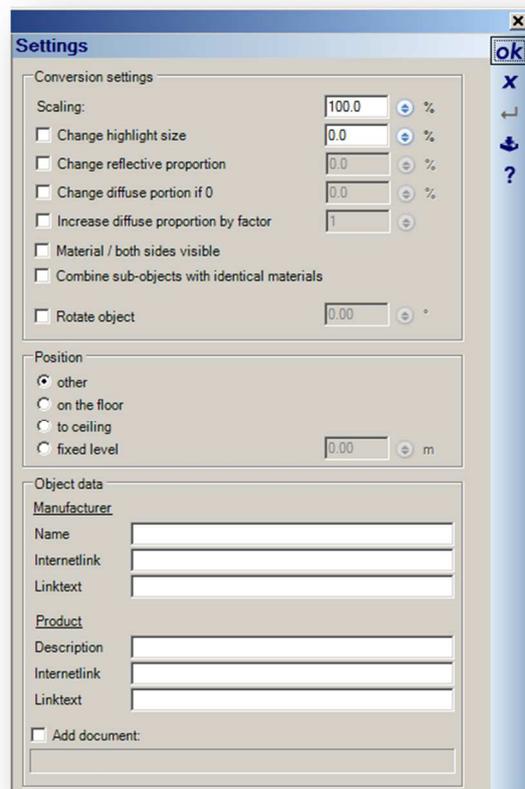
Materials and textures provided in the catalog can be moved to the selected sub-object using drag and drop.

27.4.3 Default Settings

To avoid having to re-enter the same settings for each object which is to be converted, certain default values can be specified in the 'Settings' dialog. The default values defined here also apply in the case of batch conversion.



The button activates the dialog for 'Settings'.



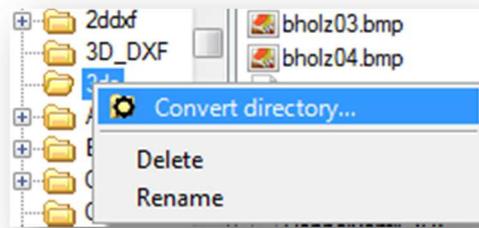
If you generally receive or use objects which need to have their scale adjusted by a specific scale, then this value can be specified here under 'Scaling'. The same applies for the option for the placement of the object when it is used in Visual Building.

'Object Data' provides details of the manufacturer of the product, and of the article itself. All values specified here can also be entered individually in the properties area of the converter. The default values basically help to simplify use of the converter.

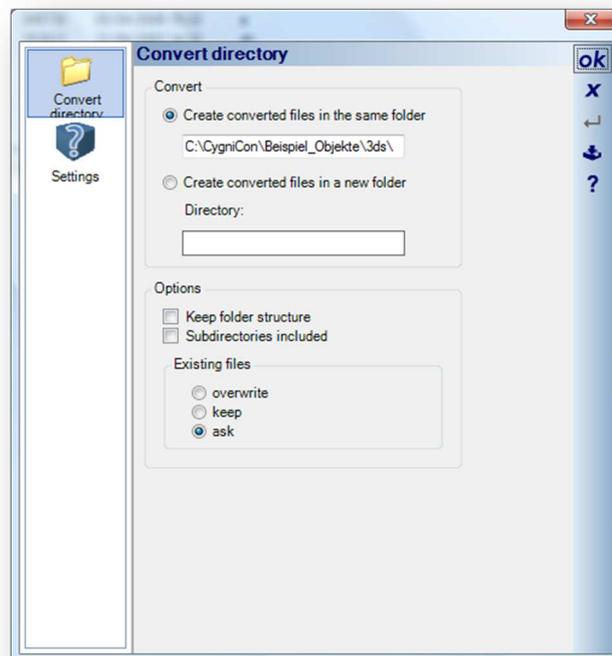
Note: In order to save these values permanently, i.e they are still available after a restart of the Software, you must click on the 'Save as default' button before exiting the dialog.

27.4.4 Converting Complete Directories

If you have a large number of objects in the same format, which generally can be converted with the 3D converter into the .cyg format without any further editing (e.g. *.3DS), it is possible to convert automatically the entire contents of the directory. Select the directory entry in the explorer area of the converter and click on the right mouse button.



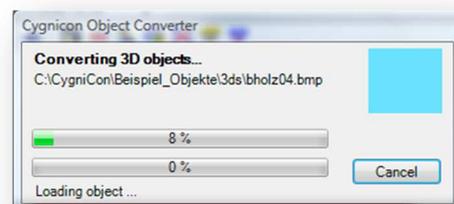
A click on the context menu entry for 'Convert Directory...' activates the following dialog.



You can specify here whether the results of the conversion, the new CAD Software objects, should be saved in the same directory or in a new directory, and whether sub-directories should also be included in the conversion.

Default settings, which are allocated to each new object, can be defined under 'Settings'.

A click on **OK** starts the conversion. During the conversion a progress bar indicates the status of the operation.

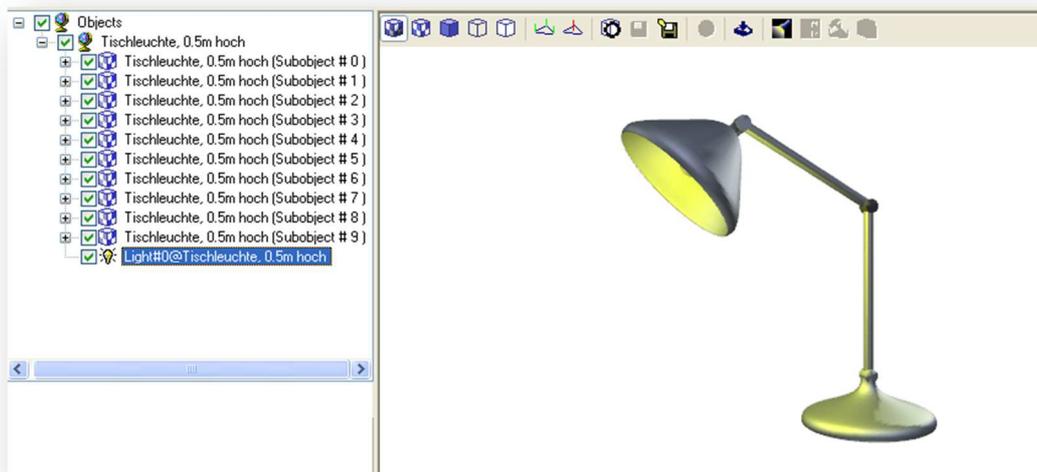


27.4.5 Light Sources

 The objects to be converted may contain light sources, which can be processed and have their properties changed in the 3D converter. Additionally, new light sources of one of the four supported types can be added to any object.

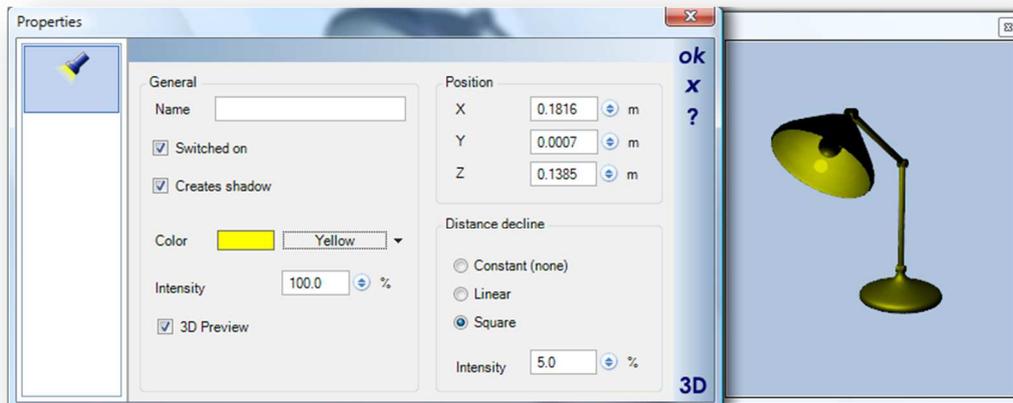
Editing Existing Light Sources

If an object contains one or more light sources, their presence is shown in tree view of the object hierarchy, to the left of the preview.



A double-click on the entry for the light source activates the properties dialog for light sources. The dialog varies in some respects depending on the type of light source. However, the basic procedure is the same for all light sources. If you double-click on an object with a light source in the CAD Software, a properties section for the light source is shown in addition to the normal properties of the object. Hence such properties as 'Switched on' and 'Create shadows' can be specified. Generally, these properties are activated by default in the converter. When planning it may be necessary to switch off light sources, or prevent them casting shadows if the light source only serves to increase overall brightness.

The light source itself is not shown in the CAD Software visualization. However, it is shown in the 3D preview, since in this case its position and, depending on the type of light source, its direction and angle can be adjusted.



Apart from positioning the light source numerically using coordinates, you can also position it directly in the 3D preview using the mouse by placing the cursor on the 'light source object' and dragging it, keeping the left mouse button pressed. The numerical coordinates for the position of the light source are automatically updated to follow its movement.

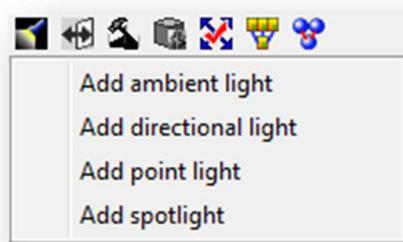
Depending on the origin of an object with a light source, it can occur that it is not visible in the 3D preview, although the visibility option has been activated. The reason for this might be that the light source is too far away from the object, in this case check the coordinates, or that the light source is located within the object itself. This is allowed in some applications.

This is exactly the case in the example shown from the CAD Software catalog. The light source is located within the sub-object for 'light bulb'. This means that in the 3D visualisation you see no effects whatsoever resulting from the light source. The light is reflected within the sub-object and does not shine out. Therefore light sources must be located outside an object, or the material of the object which surrounds the light source must be transparent. As non-visible light sources in the 3D preview cannot be moved initially using the mouse, they must first be positioned outside the object by means of the numerical coordinates.

The properties for 'Distance decline' define to what extent the light becomes weaker, dependant on the method, the distance and the amount of dimming specified.

Adding New Light Sources

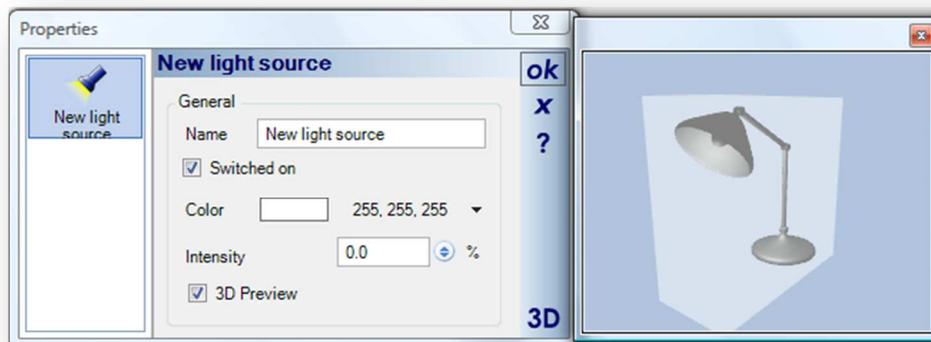
A left mouse click on the  button opens a context menu to select the type of light source.



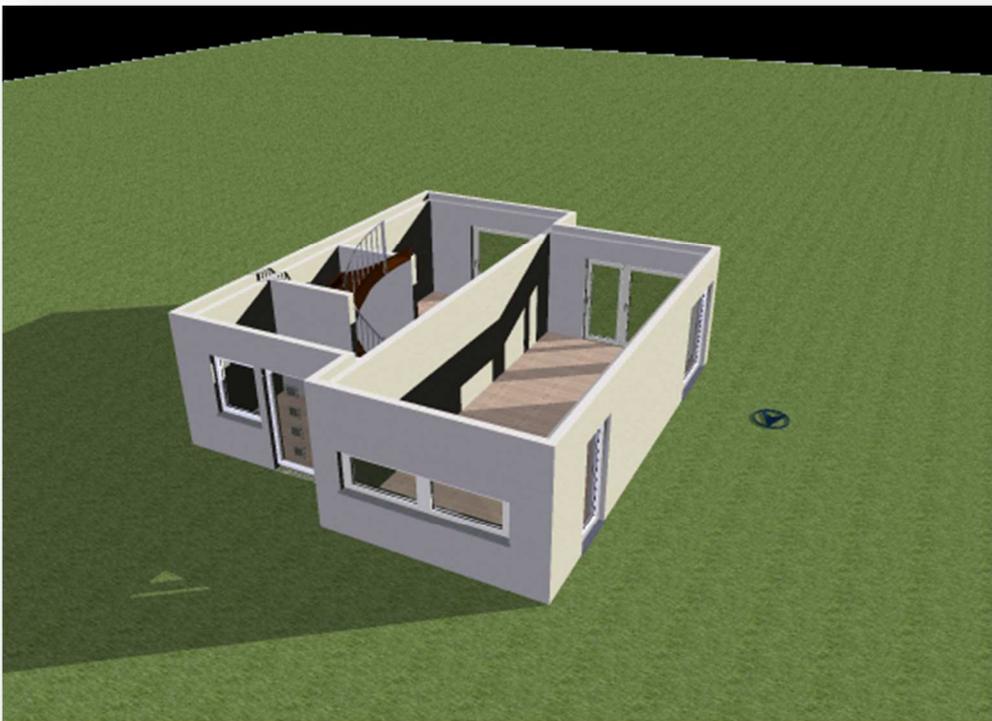
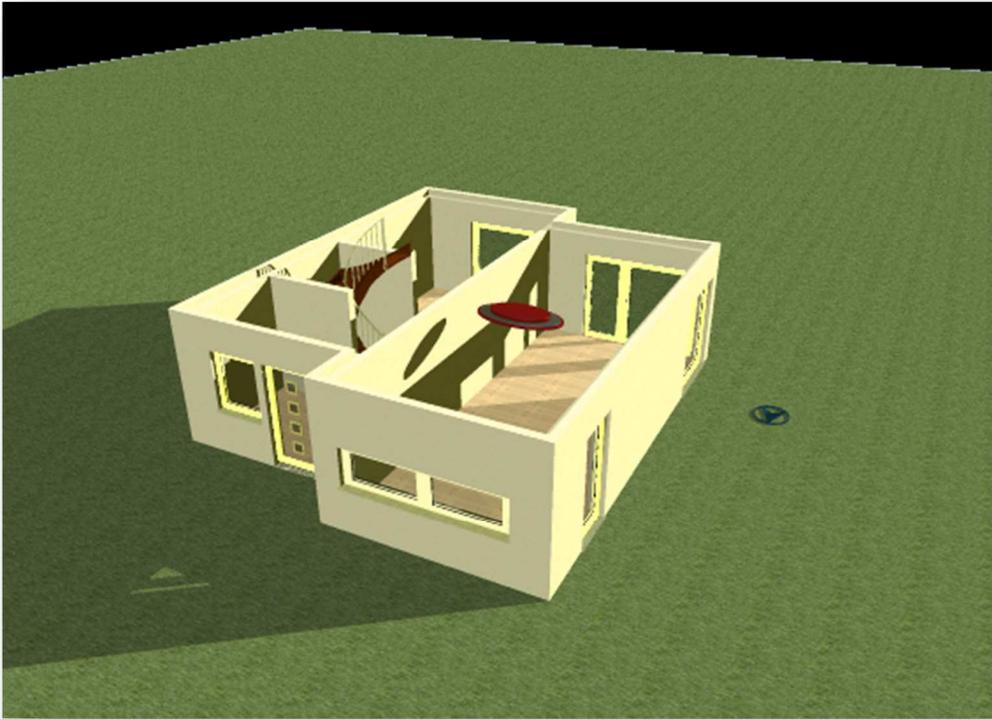
After an entry has been selected, the dialog associated with that particular type of light source is activated.

Ambient Light Sources

Ambient light sources illuminate all areas of a scene uniformly, and thus increase the overall brightness. They do not cast shadows; therefore this option is not available. The effects of an ambient light source are independent of the position of the 3D object to which it belongs. The only purpose of the 3D object is to enable the properties dialog for light sources to be opened and for the object (the light source) to be positioned from the catalog using drag and drop. The preview in the properties dialog also has no relevance for the object.

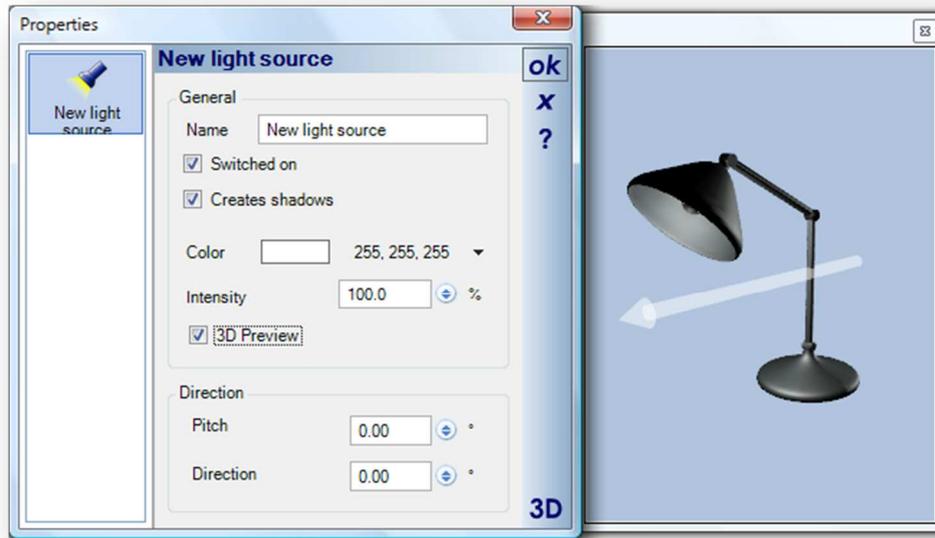


The effects of an ambient light source are shown in the following two illustrations, the first with and the second without an ambient light source.



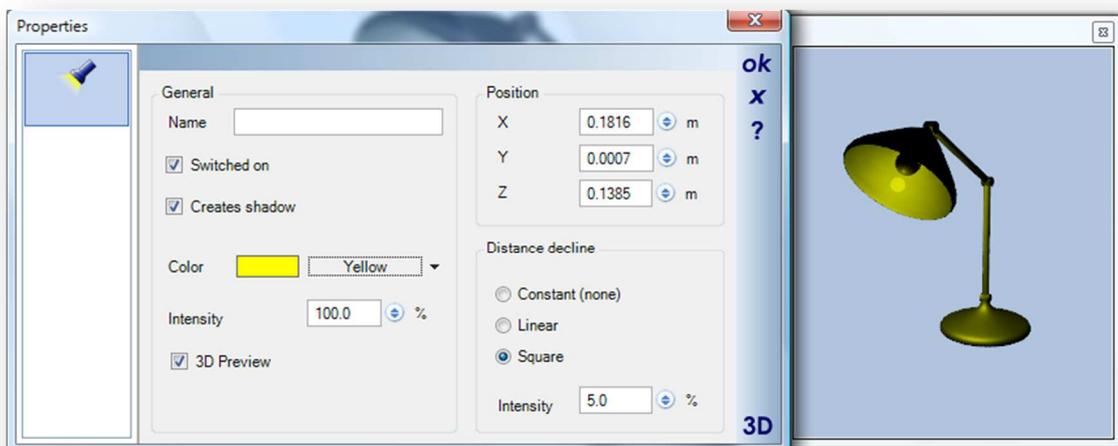
Directional Light Sources

Directional light sources illuminate the scene from only one direction, and are 'internally' infinitely distant from the location of the observer or the building. The sun is an example of a directional light source.



Point Light

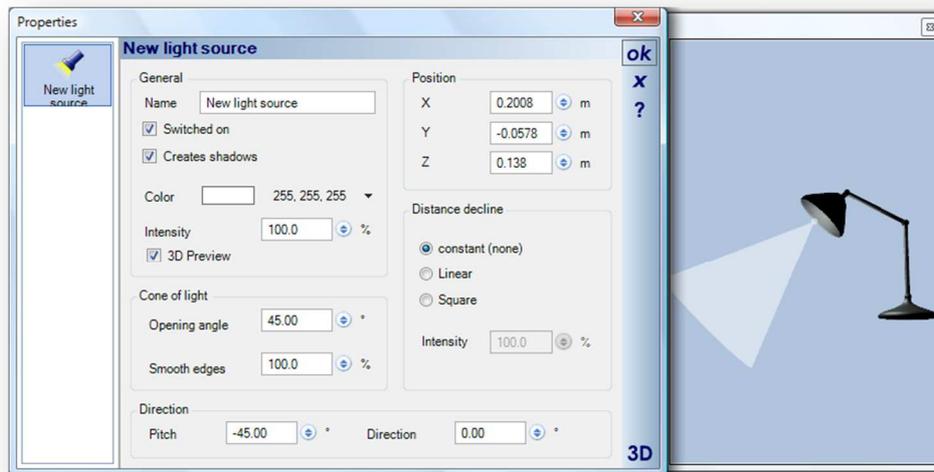
Point light sources have a predefined position in the object and are the closest representation of real lamps which form a part of furnishings. The light shines in all directions around the light source.



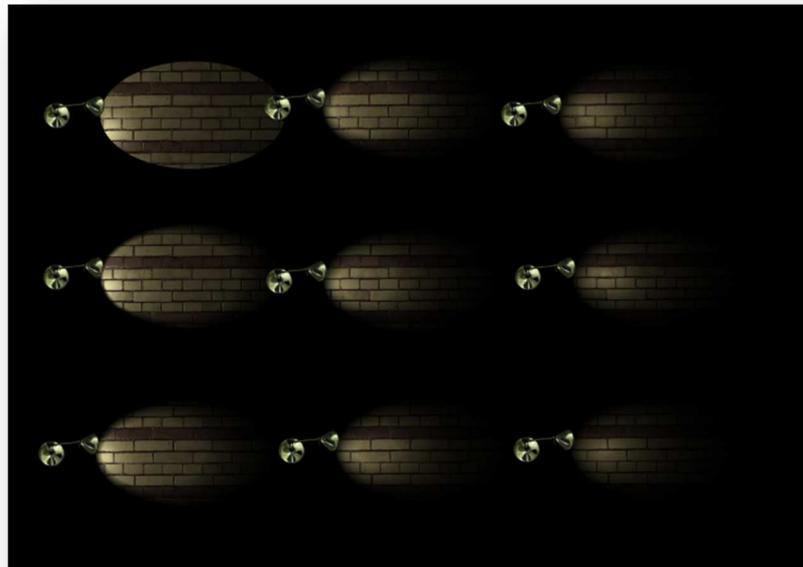
Further information about positioning the light source can be found in the section entitled 'Editing Existing Light Sources'

Spot Light

As with punctual light sources, spot lighting also has a predefined position in the object and therefore also represents a real lamp. However the light does not shine in all directions as for a punctual light source but is cone-shaped with a defined direction, angle and beam width.



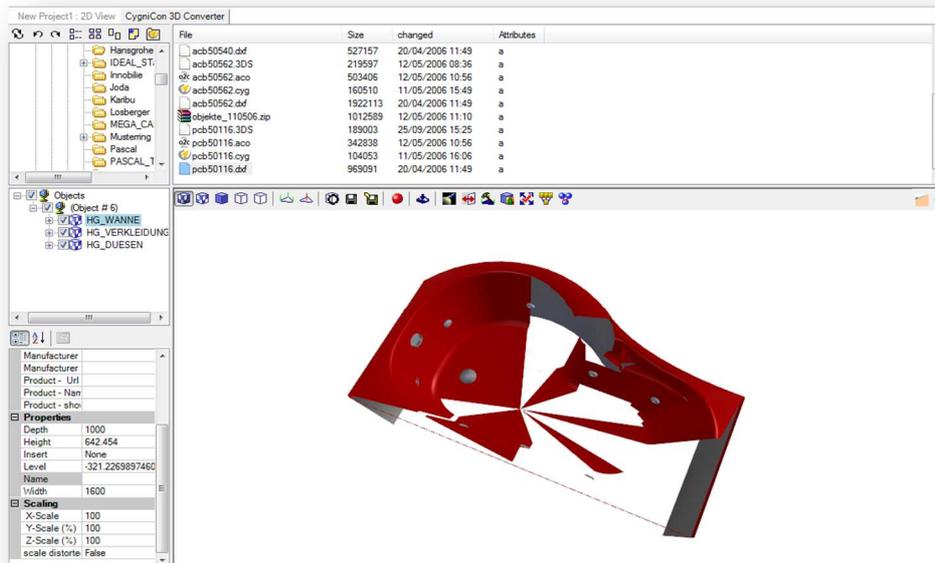
The properties for 'smooth edges' and 'Distance decline' can be used to create specific effects, as shown in the following example.



Further information about positioning the light source can be found in the section entitled 'Editing Existing Light Sources'.

27.4.6 Visibility of Surfaces

 Occasionally, 3D objects are to be converted in which some surfaces, or the surfaces of sub-objects, are not visible.

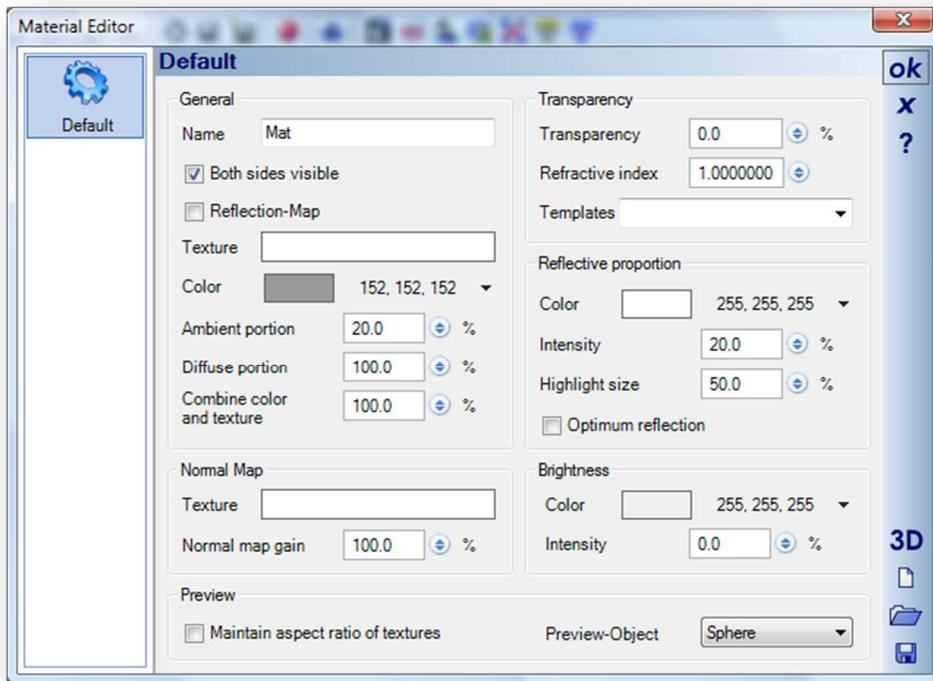


The 3D converter provides two functions which enables the use of such objects.

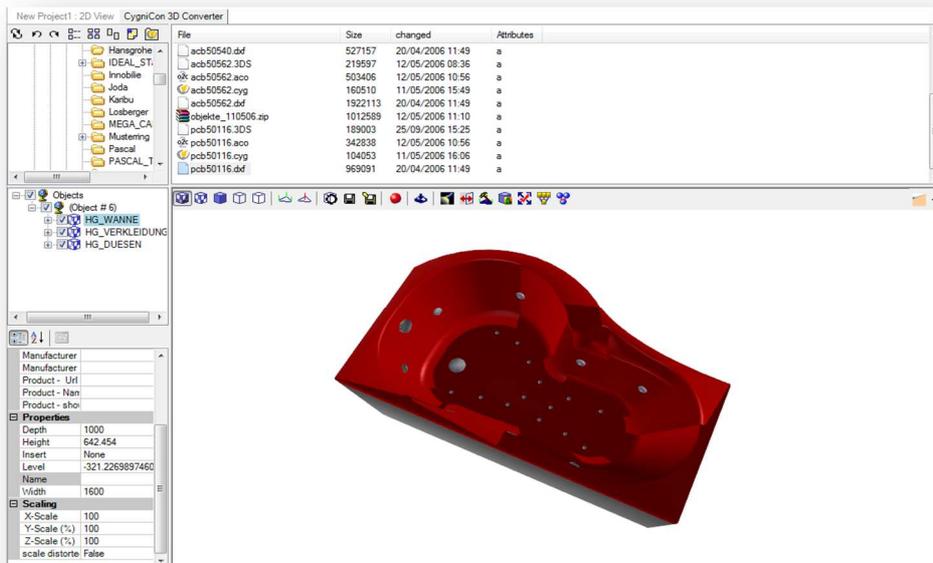
If the object consists of several sub-objects and all surfaces of a sub-object are incorrectly orientated, the visibility of all surfaces can be reversed using the  button. In this case the object or sub-object must first be selected.

This, however, would have no effect for the example shown, since only one sub-object is present and within this object some surfaces are invisible. It is not possible to edit individual surfaces in the converter. Reversing the visibility of the surfaces in the example, would only make the currently invisible surfaces visible, and vice versa.

In the properties dialog for materials  we see that it is possible to specify that both sides are visible for a material.



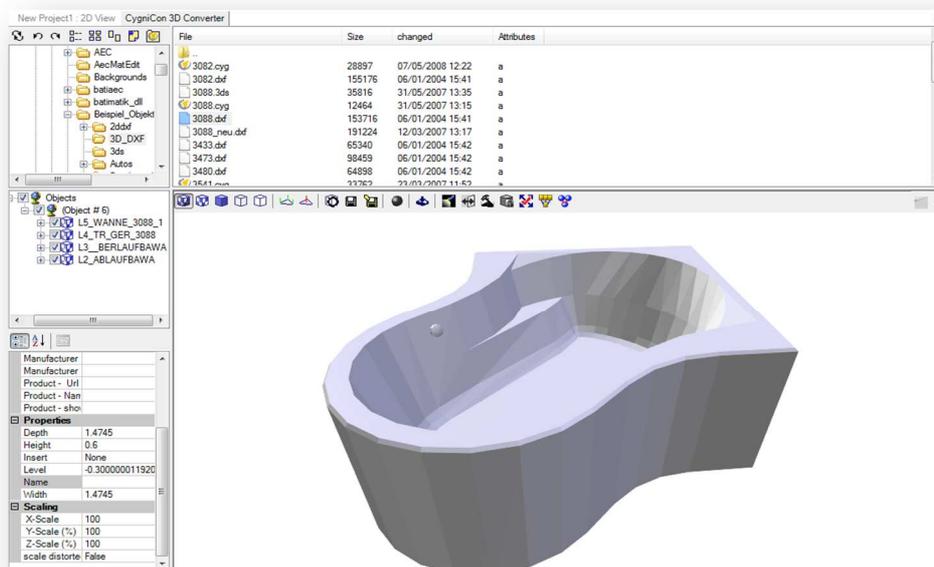
Activating **Both sides visible** for the material results in both surfaces being shown, independent of their orientation, and results in filling holes that may have occurred due to material orientation.



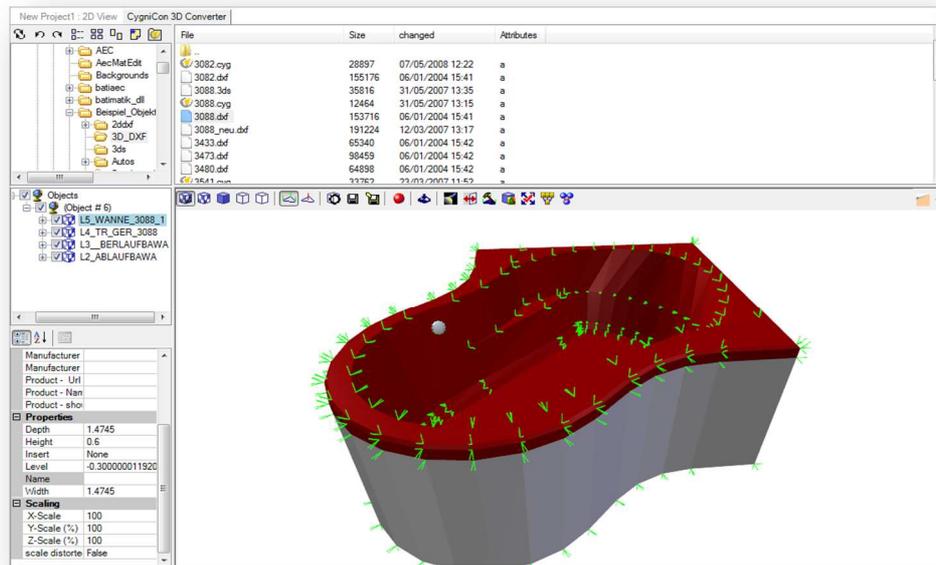
27.4.7 Recalculating a normal

What is a Normal? In all 3D software, a Normal is a calculation of a vector that is perpendicular to the surface. The Normal is used to render the surfaces direction towards a light source effectively giving a direction for the rays bouncing off and thus creates the illusion of 3D. The exact science of Normals and their associated geometry is beyond the scope of this manual, but the internet has many examples and explanations of how to use Normals.

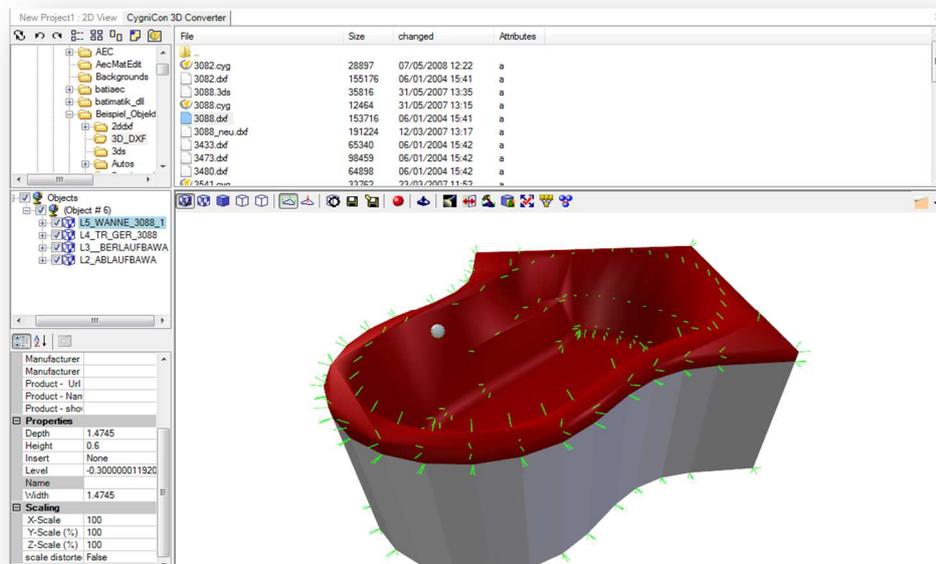
Just as frequent are objects which appear 'angular' in the visualization. This is often the case for sanitary objects which have in fact rounded or curved surfaces.



The factor that determines this effect are the normals, which can be displayed for checking by clicking on the  button.



As can be seen in the illustration, at each point where surfaces meet several points normals are displayed, which cause the 'angular' effect in the visualisation . For a selected sub-object the normals can be recalculated by clicking on the  button. Instead of several normals a subsequent check shows only one.



After a recalculation, the transitions between surfaces now appear rounded in the visualization, which is also the case for the edges of the object.

27.4.8 Recalculating Texture Coordinates

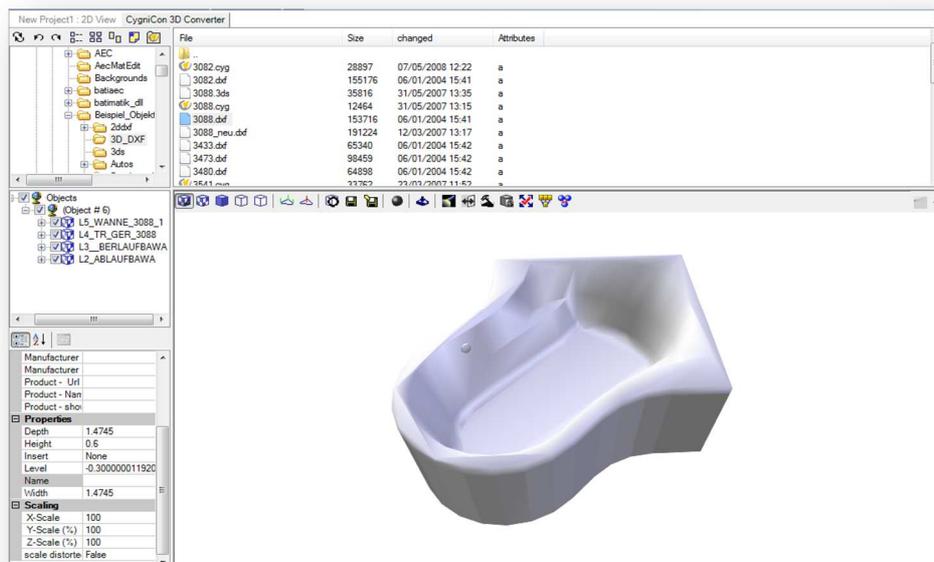
Certain 3D formats such as 3D-DXF do not support material properties or texture coordinates. In order to be able to later allocate materials or textures to these objects in the software, the required texture coordinates must first be calculated. There are three options available to do this.



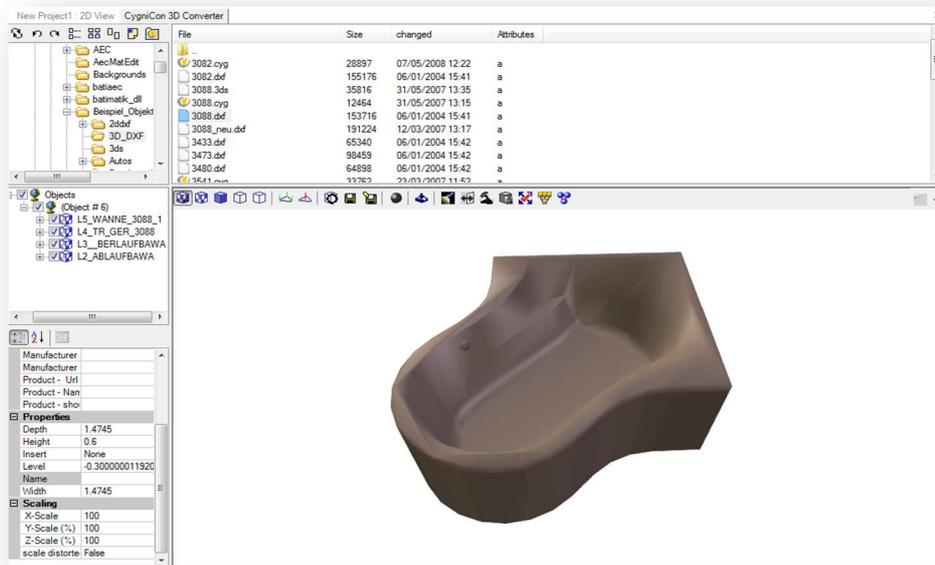
The option to use depends on the shape of the object or sub-object for which the coordinates are to be calculated. The result is always only an approximation. A 3D modelling program would be required to achieve an exact and more detailed result. Nevertheless, many objects can be formatted in this way for visualization and use in the CAD Software.

The results can be best shown in an example:

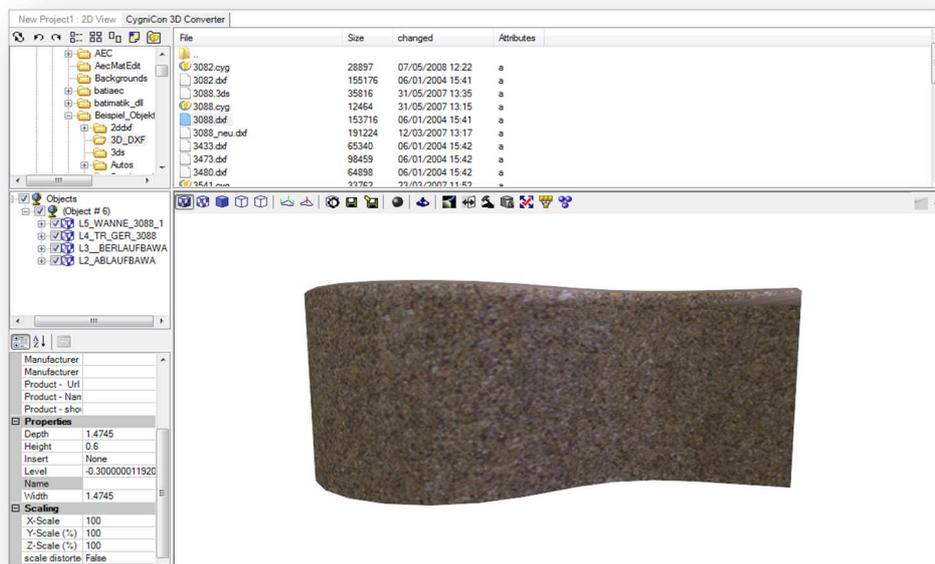
First of all a file without textures is opened, in the example a 3D DXF file.



Next we allocate a texture from the CAD Software catalog to the object with drag and drop, in the example a 'sand' texture.



The appearance of the object has in fact changed, but not as we would normally expect in the CAD Software. The structure of the 'sand' is not visible because the texture coordinates are incorrect. If we recalculate the coordinates with the 'Planar' option, we see the following result.



After the coordinates have been calculated they can be modified, as in the CAD Software, with the dialog for texture coordinates . Further information about this can be found in the documentation for the standard software.

28 AREA CALCULATION

The **Area Calculation** feature was originally a plug-in but is now supplied as standard with:
Visual Building Professional
Visual Building Premium

This feature is not supplied with:
Visual Building Basic

You can however easily upgrade to Visual Building Professional- contact Visual Building Ltd now.

28.1 OVERVIEW

The 'Room Data Sheets' plug-in for calculating areas and quantities enables the depiction of quantities and areas in 2D and 3D views, and includes functions for creating reports according to two different living space calculation types.

The following data or evaluations are provided for use in room data sheets:

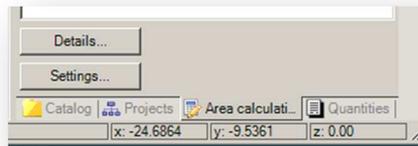
- Floor area
- Living space
- Net floor area < 1,5 m
- Net floor area > 1,5 m
- Total net floor area
- Room volume
- Net cubic capacity

In addition, the data specified can be produced for the following construction elements:

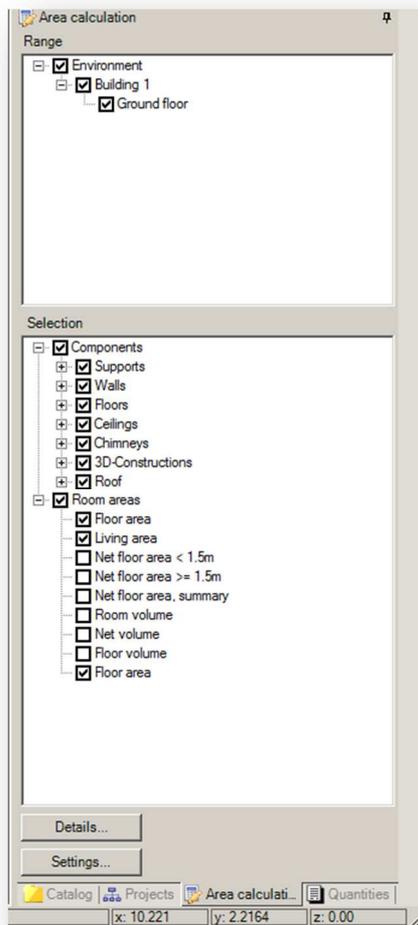
- Floors: Floor area and volume
- Walls: Footprint, skin-surface area and volume
- Ceilings: Ceiling area and volume
- Chimneys: Footprint, skin-surface area and volume
- Pillars: Footprint, skin-surface area and volume

28.2 CALCULATING AREAS

Area Calculation is activated by a left mouse-click on the tab labelled **Area Calculation** located in the same window as the catalog and the project manager.



28.3 USER INTERFACE

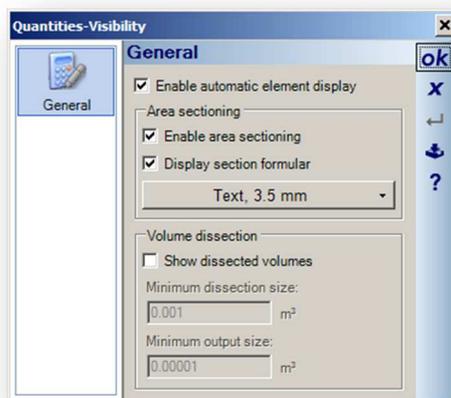


The user interface consists of two tree views; **Range** and **Selection**. The required range, construction elements, and quantities are activated and deactivated using the check boxes in the tree.

Visualisations can be produced for buildings, floors or individual apartments. The visibility of deactivated objects remains unchanged.

The **Selection** tree view can be used to select elements which are to be displayed within the selected range.

28.4 SETTINGS



If the option for 'Enable automatic element display' is activated, then quantities and construction elements that have not been selected appear transparent or are invisible, otherwise they will also be displayed normally.

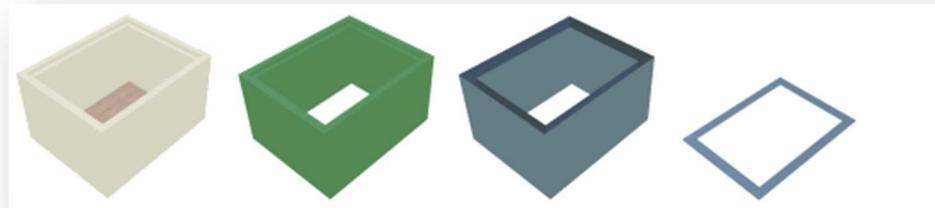
In the section for 'Area sectioning' you can specify whether or not areas should be divided into sub-areas. If so, areas are divided up according to the formula for segmentation and are shown in different colours.

The formulas used for segmentation can also be displayed and their text properties modified if necessary.

28.5 REPRESENTATION

28.5.1 Construction Elements in the 3D View

Quantities are represented by different colours in the 3D view. The actual representation of a quantity is shown below using walls as an example.



Normal View

Volume

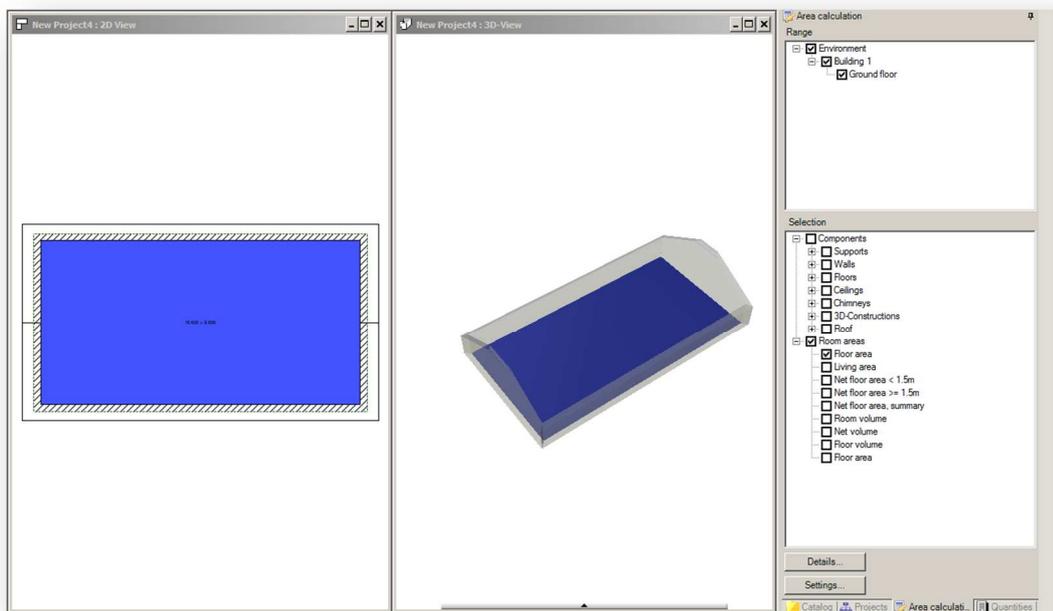
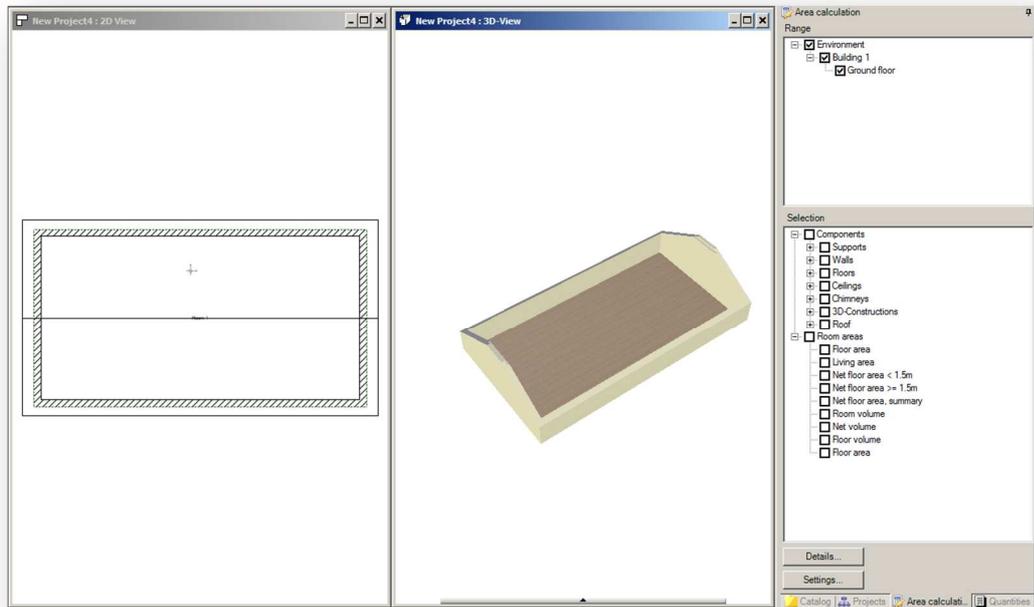
Surface shell

Contact area

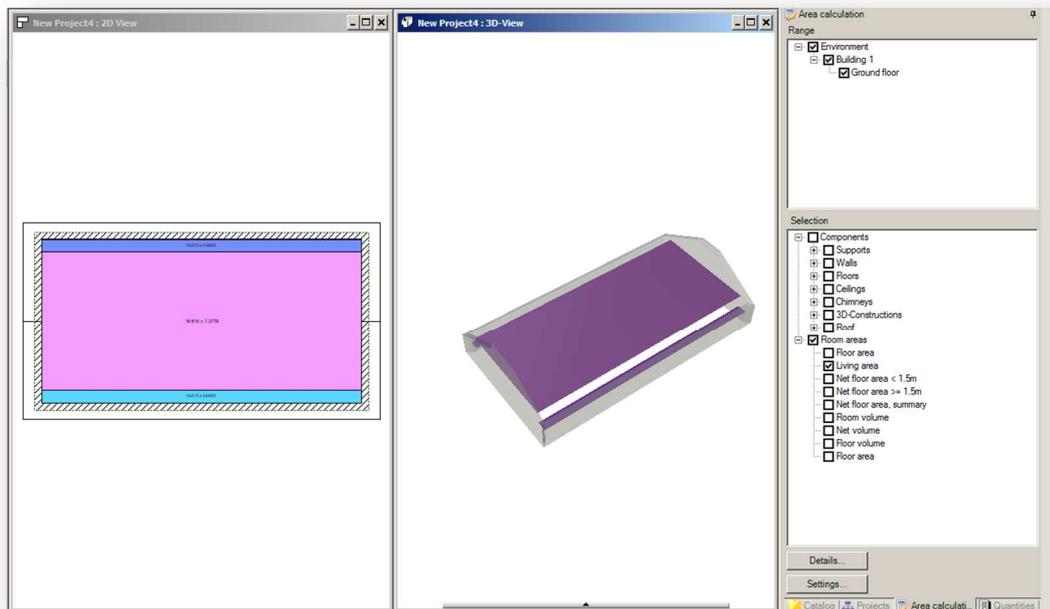
28.5.2 Room Data in the 3D View

Quantities for room data sheets are represented as follows (the roof is set as invisible in the example). Here are some example settings:

Room Area: none selected



Room Area: Floor area



Room Area: Living area

Similar room area calculations can be shown for Net floor area < 1.5 m height, Net floor area >= 1.5m, Net floor area summary, Room volume, Net volume and Floor area

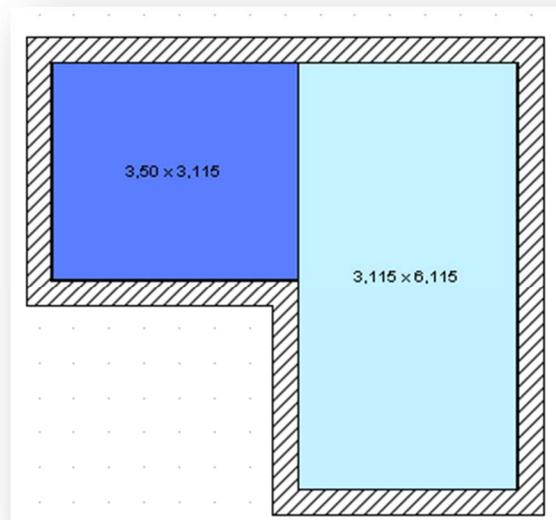
28.5.3 Sub-areas in the 3D View

Sub-areas are shown without a formula in the 3D view.



28.5.4 2D View

Only floor areas, optionally including a formula, are displayed in the 2D view.
Representation of room areas:



28.6 EXPORTING ROOM DATA SHEETS

Quantity calculation also offers the possibility to create room data sheets for the definition of living space according to the living space calculation, and the calculation of room areas according to DIN 277.

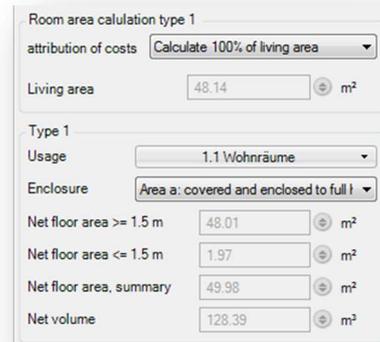
This function is started over the menu **Export > Reports > Bill of Quantities**.



28.7 CALCULATING AREAS ACCORDING TO DIN 277

For the calculation of areas according to DIN 277 it is possible to specify individual settings for each room.

This is done by activating the properties dialog for the room (via a double-click on the room) and subsequently selecting the section for **Calculation**.



The following settings can now be specified:

Usage: The usage of the room according to DIN277 can be selected here.

Enclosure: Here the enclosure of the room according to DIN277 can be specified.

- Area a: Covered and enclosed on all sides to the full height.
- Area b: Covered, but not enclosed on all sides to the full height.
- Area c: Not covered.

28.7.1 Export

After activating the function to export room data sheets using the 'Export' menu, the properties dialog appears:

The following settings can be specified here.

General properties for export can be specified in the **Export** section.

Template File: Here a file can be selected which is to be used as a template. The file *DIN277.Ist*, which is located in the *Templates* directory of the catalogue, is set by default for the calculation of room cubic capacity according to DIN 277.

If a different template file is used, it is important that this template file was created with data for DIN 277 room data sheets, as other templates are not compatible. To create a suitable template the 'Designer' must be started by clicking on **Edit template**. Further information can be obtained using the help-function of the 'Designer'.

If the option for **Display export file** is selected, the export file will be displayed after it has been created, provided a suitable Program (e.g. the Acrobat Reader for a PDF-file) is available in the system.

A click on **Edit template** starts the 'Designer', with which the selected template file can be edited or a new template created.

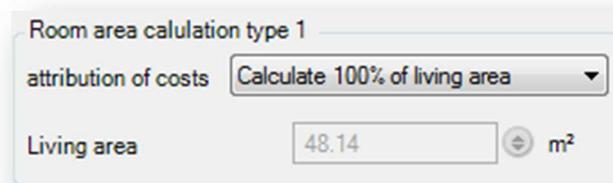
The tree view for **selection** shows a list of all buildings included in the project with their floors and rooms, which can be selected or excluded for export.

A click on **OK** confirms the export settings.

28.8 DETERMINING LIVING SPACE ACCORDING TO THE LIVING SPACE CALCULATION

For determining living space according to the living space calculation, it is possible to specify for each room to what extent it should be considered in the calculation.

This is done by activating the properties dialog for the room (via a double-click on the room) and subsequently selecting the section for **Room area calculation type 1**.



Under **Room area calculation type 1** the 'Attribution of costs' of the room can now be specified. In compliance with the Living Space calculation one of the following options can be selected:

- Living space, include to 100%

- Living space, include to 50%
- Living space, include to 25%
- Technical systems space, not included

28.8.1 Export

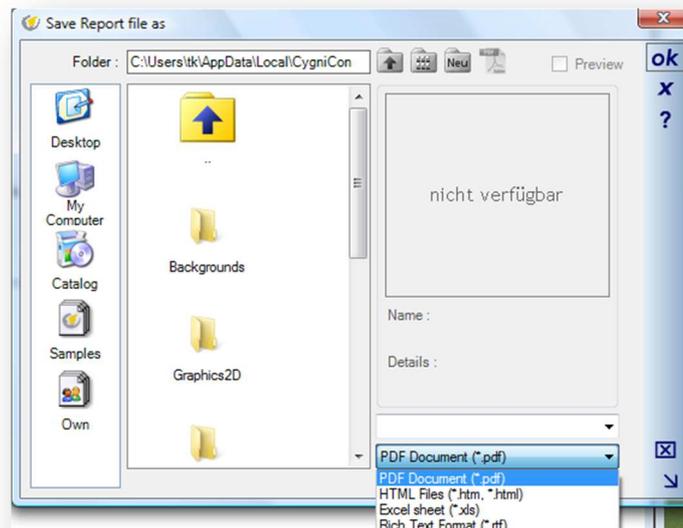
After activating the function to export room data sheets for the 'Living Space Ordinance' using the 'Export' menu, the export properties dialog appears:

The settings under **Export** correspond, except for the template file, to those for 'DIN 277' export. The file *WoFIV.lst*, which is located in the *Templates* directory of the catalog, is set by default for the calculation of living space.

The tree view for **Scope** shows a list of all buildings included in the project with their rooms sorted by apartment. Rooms that are not allocated to an apartment are listed at the end, and are exported separately.

28.9 SELECTING FILE NAME AND EXPORT FORMAT

A click on **OK** confirms the export settings and a save dialog appears, in which the file name and export format can be specified.



Following file formats are available:

- **PDF**(Portable Document Format) is the standard format for documents and can be displayed with freeware programs such as the Acrobat Reader.
- **HTML**
- **XLS** (Microsoft Excel)
- **RTF** (Rich Text Format)

Pressing the 'Enter' key or a click on **OK** confirms the settings and the file is created. If the appropriate option is set, the file is also opened and displayed.

29 QUANTITIES

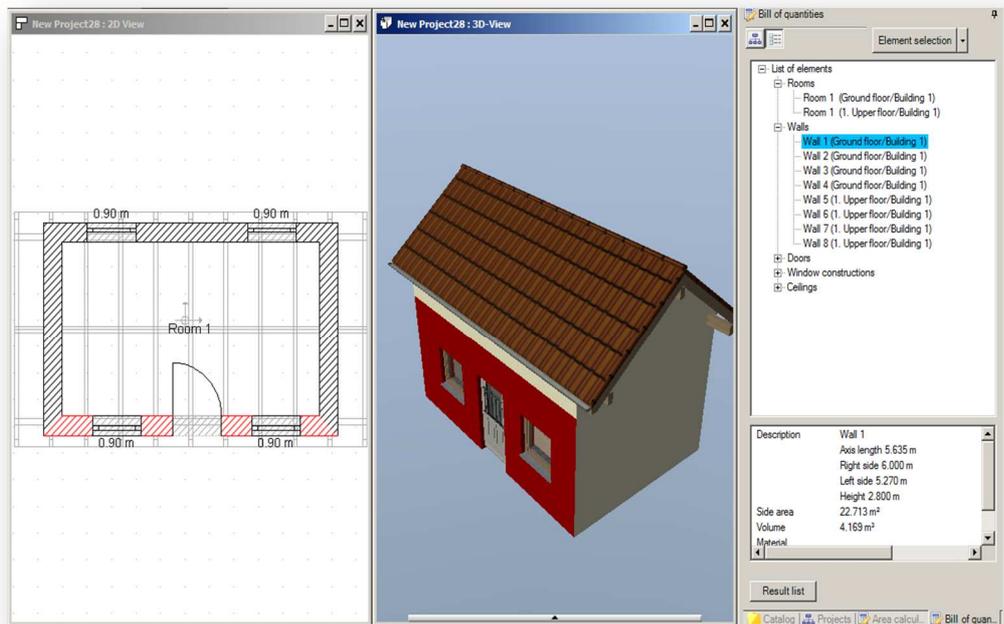
The **Quantities** feature is supplied as standard with:
Visual Building Professional
Visual Building Premium
Visual Building Basic

It was introduced with the Visual Building v4 release.

You can however easily upgrade to Visual Building Professional- contact Visual Building Ltd now.

29.1 GENERAL

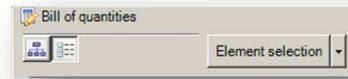
The Quantities tool determines is integrated within the catalog and the project panel.



The dialog lists the elements used in the project in two ways:

sorted by building e.g. buildings, floors, etc.,

sorted by type, e.g. walls, windows etc.



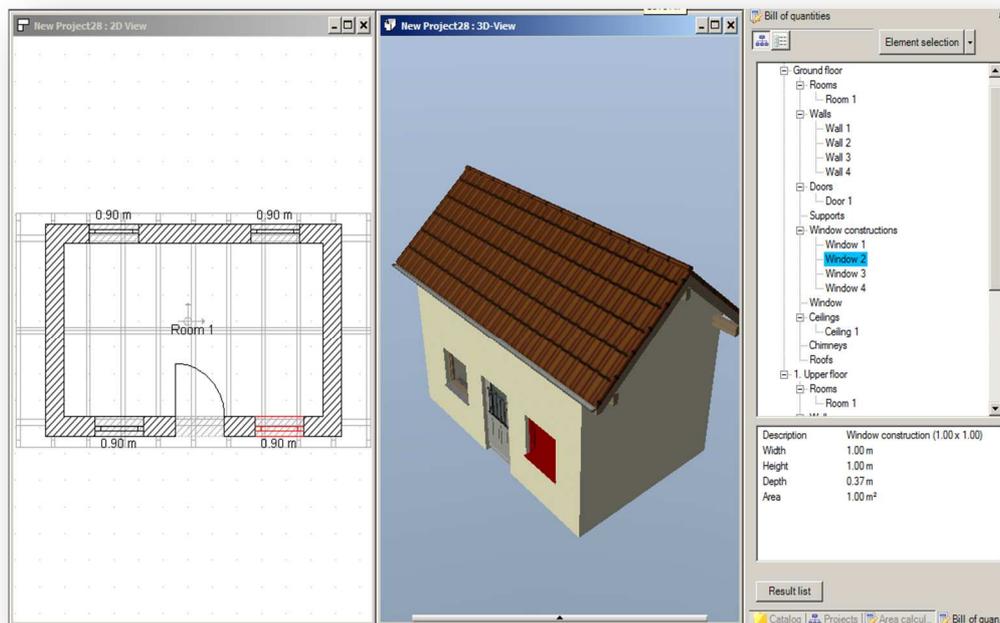
The sort method is determined by the buttons at the top of the panel.

On the right you have a list of elements that determines which elements are to be displayed. This applies both to the elements in the dialogue as well as the elements listed in the output.

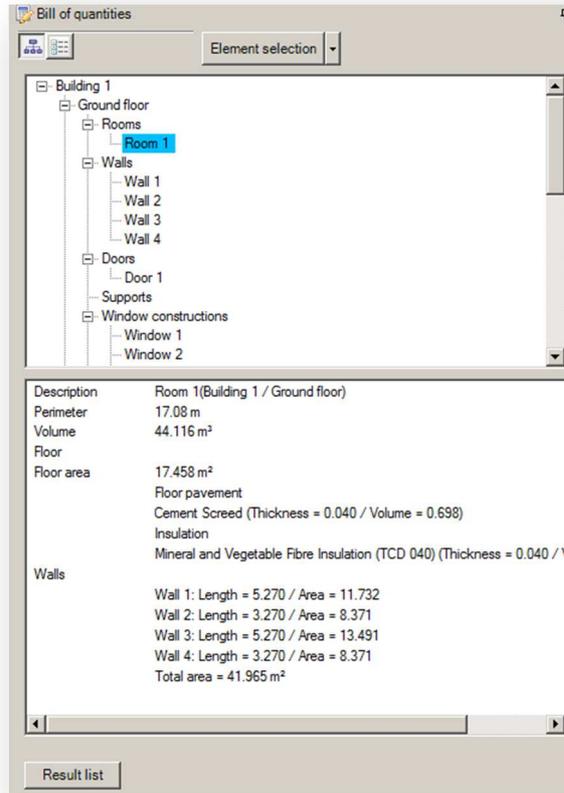
29.2 IDENTIFYING THE ELEMENTS

When you select an element from the tree on the right panel, it also becomes selected in the 2D and 3D views. This enables you to identify visually the element in your project.

The reverse also applies. Select an element in the 2D plan and the corresponding element is selected in the tree and its properties are displayed.



29.3 ELEMENT PROPERTIES



For each element in the project the properties are evaluated and calculated. The elements properties and values are displayed in the bottom half of the dialog.

29.4 OUTPUT OF RESULTS LIST

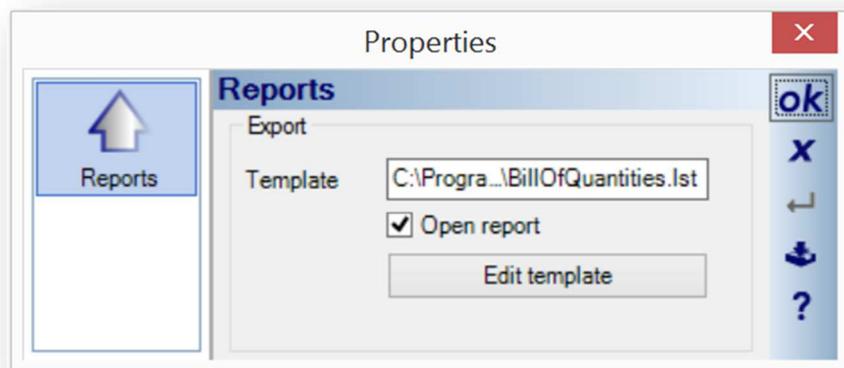
At the bottom of the panel you will find the **Result List** button to display in a more useful form.

The screenshot shows a dialog box titled "Bill of quantities" with a tabbed interface. The "Walls" tab is active, displaying a table with columns: Description, Wall type, Length, Height, Thickness, Area, and Volume. The first row is expanded to show a sub-table with columns: Description, Material, Thickness, and Volume. Below this, another table lists eight wall items (Wall 1 to Wall 8) with their respective dimensions and calculated area and volume.

Description	Wall type	Length	Height	Thickness	Area	Volume								
Wall 1	External Wall	5.635	2.800	0.365	22.713	4.169								
<table border="1"> <thead> <tr> <th>Description</th> <th>Material</th> <th>Thickness</th> <th>Volume</th> </tr> </thead> <tbody> <tr> <td>Brickwork</td> <td>Standard Mas</td> <td>0.365</td> <td>4.169</td> </tr> </tbody> </table>		Description	Material	Thickness	Volume	Brickwork	Standard Mas	0.365	4.169					
Description	Material	Thickness	Volume											
Brickwork	Standard Mas	0.365	4.169											
Description	Wall type	Length	Height	Thickness	Area	Volume								
Wall 2	External Wall	3.635	2.800	0.365	19.833	3.633								
Wall 3	External Wall	5.635	2.800	0.365	26.713	4.899								
Wall 4	External Wall	3.635	2.800	0.365	19.833	3.633								
Wall 5	External Wall	5.635	2.800	0.365	10.274	1.888								
Wall 6	External Wall	3.635	2.800	0.365	11.804	2.161								
Wall 7	External Wall	5.635	2.800	0.365	10.274	1.888								
Wall 8	External Wall	3.635	2.800	0.365	11.804	2.161								

A dialog containing the results will open, with the elements listed separately on a tab. Some elements, for example Walls, will contain additional information that can be expanded using the + sign.

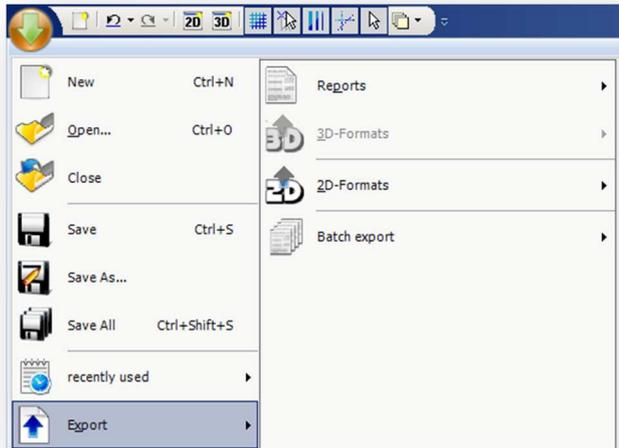
The **Print** button will activate the Reports dialog, where you can select the standard report template or a previously created template of your own.



Click on **OK** and you will be to select the report output file type as .pdf, .xls, .html, or .rtf

30 EXPORT MENU

If you are using the Ribbon bar, the Export menu is located in the Application toolbar:

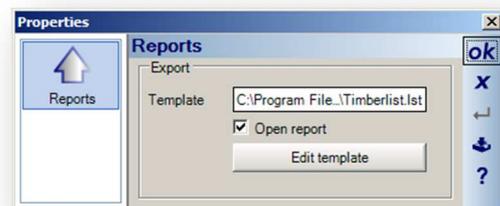


The 'Export menu shows all reports, data formats for export, and any further options for outputting data, that are provided not only by the basic version, but which may have been added by plug-in extensions.

30.1 OUTPUTTING REPORTS

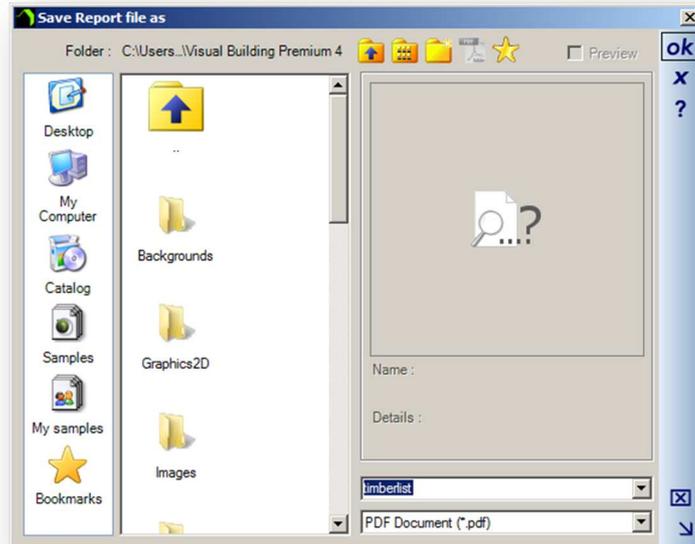
Basically, the basic version provides various formats in which lists can be output. The procedure is always the same and can be demonstrated as follows using a timber list.

First of all a dialog is opened in which the template file is selected. Template files are found in the directory '\Templates'. In this example click on the field 'Template file' and open the template 'Timberlist.lst.*' using the 'Open file' dialog. If you wish to always use the same template for output, you can save the directory and name of the file with the 'Save as default' button. In future, the dialog is then opened automatically with the default template.



If the 'Display output file' option is checked, after the file has been saved, the program which is associated with the file format is started directly and the list displayed. For instance, if the template file is saved in PDF format, as a rule the associated program would be started.

The 'Output list' dialog is terminated with **OK** and the 'Save report file' dialog is then opened. Here you can enter the desired file name and select the file format from a drop-down list. Normally PDF, RTF, Excel and HTML formats are available.



After the file name and format have been specified, the list is generated.

30.2 EDITING LISTS, CREATING USER TEMPLATES

The 'Start Designer' option is also provided when generating lists. If a template has been selected, then on terminating the dialog instead of the list being generated, the Designer is started to define the layout of the list. As well as the template (*.lst file), certain variables and fields are also passed to the Designer for use in the list.

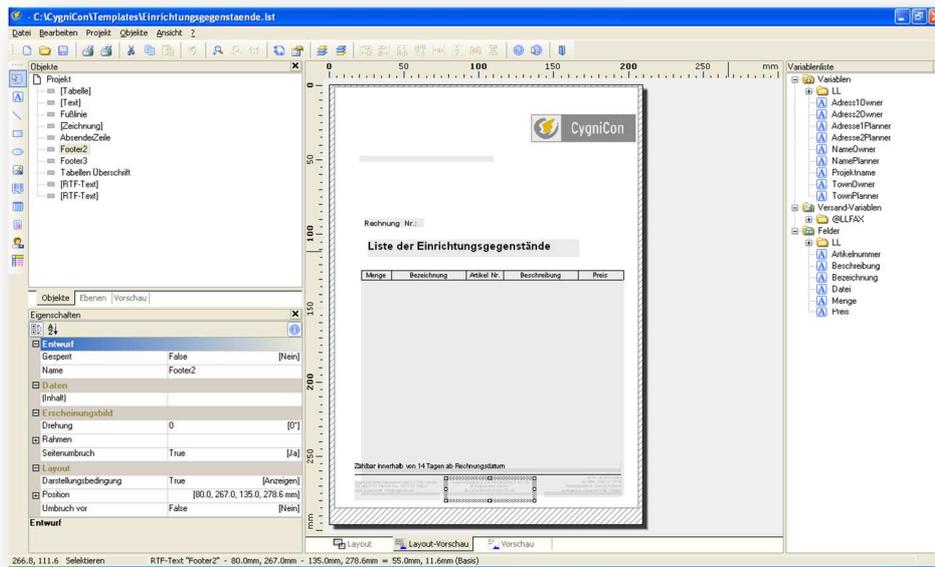
The program for processing lists provides all the essential elements required to design output lists. You can convert existing layouts yourself to suit your own business stationary, and also create several different templates for a particular category of output, e.g. estimates or invoices.

On the right-hand side the Designer presents a list of variables. These variables are filled by the software with the current values for the project when a list is generated. The upper part consists of fixed variables, which refer to the properties of the project, e.g. name and address of the planer. All variables can simply be moved with drag and drop from the list of variables to the document, and positioned and formatted as required.

Additionally, fields defined for the contents of a table are shown. You are not forced to accept all the predefined fields and can delete existing fields. However, inserting additional fields into

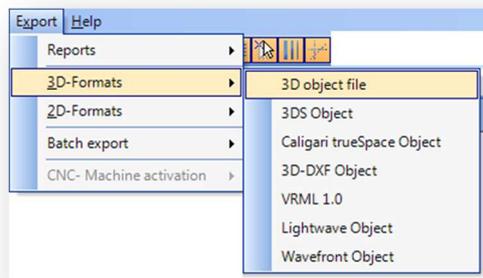
the table is not possible as such, since data for these fields would not be available in the software. If this is required please contact us.

Detailed information on the use of the Designer are contained in the manual and the help file for the program, which are included.



30.3 EXPORT 3D OBJECTS

This is a very powerful feature allowing you to export either an entire project, or just selection of the project, or just an individual element as a 3D Object. This 3D Object can be saved in several different 3D formats.



In the Ribbon bar the **3D Export** menu is located in the Application menu bar.

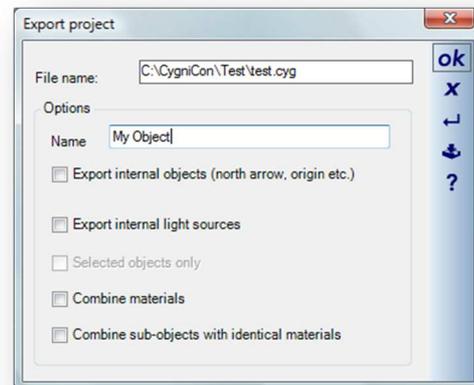
The Export 3D formats menu is always dependant on the contents of the current 3D view. If a 3D view is not the current active view then the menu will not be activated.

By means of the visibilities and/or the visible categories of the current 3D view, it is possible to control whether the complete view or only certain parts of it should be exported as a 3D object.

So it is possible to save individual results, e.g a roof or a staircase, for further use in other programs, and extend your own catalogues by exporting specific objects.

In addition to the 3D view visibility settings, you can also selected some additional options which affect how the exported object later behaves.

Using the feature for multiple selection, by clicking on several objects one after the other while holding down the shift key, one or more objects, including furnishings, can be chosen for export. Once the objects have been selected, they can be exported using the 'selected objects only' option.



Export internal objects

In most cases you will not want to export the north arrow and origin, but should for some reason you wish to, just select this option.

Export internal light sources

The use of this option depend upon the intended use of the exported object, but in most cases this should remain deselected. If you have created your own internal lighting, then you do have the option to export this information with the 3D Object.

Selected objects only

This gives you the option to export only the selected object. For example if within a 3D view which is displaying an entire project, you can select the stairs and then with this option selected only the stairs would be exported.

Combine materials

This makes the editing of exported objects in other programs easier.

Combine sub-objects with identical materials.

If for example, you have a room with four walls which you wish to save as an object, then each side of a wall will be exported as a single sub-object, i.e. in total at least 16 objects. In this case, it would then in fact be possible assign different materials or textures to each side of

each wall of the exported object, but this would have to be done at least four times, for example just to assign a new material to the exterior surfaces of the walls. If you know in advance that this feature is not required, you can merge the sub-objects for the sides of the walls on export. All wall surfaces will then have common properties which can be changed as a single object. The object is saved with a click on **OK**. According to the selected format, all necessary textures are also exported to the target directory. If for example you save a house as a '3DS' object, you will find in the target directory the file house.3ds and all textures and images that are referenced by it.

The 3D Object formats available are:

3D Object File (.cyg)

This is the internal 3D Object format used by Visual Building. If you want to add the object to the catalogue, then this is the object format to use.

3DS Object (.3ds)

The .3ds object format can also be imported by Visual Building, but its real intention is for the users of 3D software products such as 3D Studio Max and Blender, where the object can be further edited and textured.

Caligari Truespace Object

This 3D Object format is specifically for the users of **Caligari Truespace**

3D DXF

If you have a software tool that supports 3D DXF

VRML 1.0

For legacy users of VRML

Lightwave

For Lightwave users

Wavefront

For Wavefront users

31 SHORTCUT KEYS

These shortcut keys apply to all versions of Visual Building:

Important keyboard and mouse shortcuts

Legend

-  Scroll mousewheel
-  Keep mousewheel pressed
-  Keep right mouse button pressed, move mouse
-  Keep left mouse button pressed, move mouse

Keyboard and mouse shortcuts in 2D / 3D views

Ctrl + Shift + 	Zoom to Cursor	
Ctrl + 	Zoom in / Zoom out	
	Move up / down	
	Pan	2D only
Shift + 	Move left / right	
	Stepless zoom	3D views only
	Rotate	3D views only
Shift + 	Pan	3D views only
Home	Show all	

Important Keyboard Shortcuts

Keyboard shortcuts for input assistance and other options

Ctrl + w <small>W</small>	Change reference point	
Ctrl + Tab	Switch between views	
Space	Enter tool options dialog	
w <small>W</small>	Show / hide tool options dialog	
l <small>L</small>	Perpendicular (for constructional support)	
s <small>S</small>	Intersection point (for constructional support)	
a <small>A</small>	Point with distance from (for constructional support)	
m <small>M</small>	Center point (for constructional support)	
p <small>P</small>	Enter coordinates (for constructional support)	
Enter	Complete an input for polygonal tools	
Ctrl	Activate angle grid	Keep CTRL key pressed
Esc	Quit tool	Depending on the tool , sometimes 2x ESC
Alt + Navigation	Disable tool temporarily	Keep ALT key pressed. Zoom, scroll or pan while inserting an element to reach a better position
Ctrl + Click on a view	Sets a new active view	

Wall shortcut keys

- v When you have a wall selected, pressing the v key will activate the wall extend shorten wall tool.
- b When you have a wall selected, pressing the b key will activate the wall trim tool.
- c When you have a wall selected, pressing the c key will copy the wall and allow placement of the new wall using a reference point, via the activated Tools options dialog.

r When you have a wall selected, pressing the r key will allow placement of the wall using a reference point, via the activated Tools options dialog.

Additional keys:

Ctrl + + will zoom in

Ctrl + - will zoom in

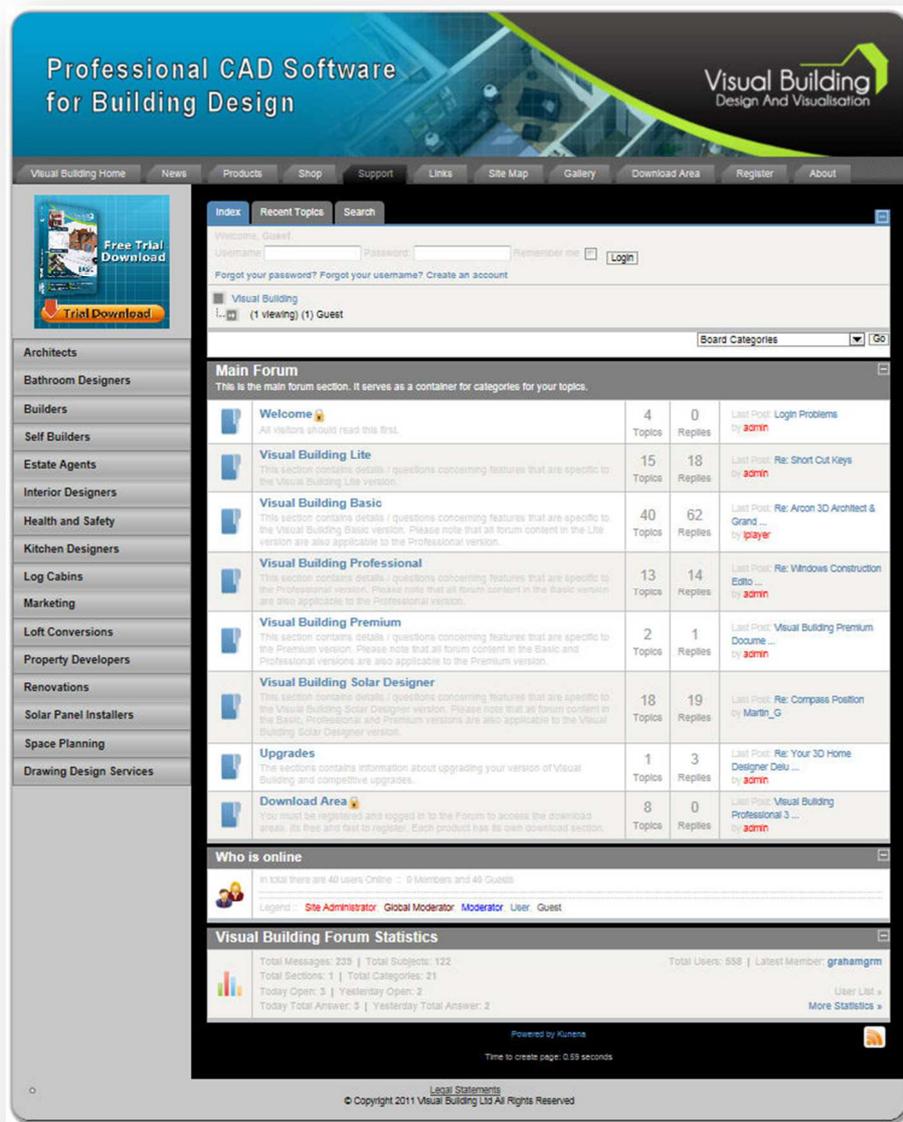
In a 2D view if you hold down the Ctrl key while placing a wall, the wall will snap to an increment angle of 15 degrees.

32 SUPPORT

32.1 ONLINE SUPPORT

For questions concerning this software please refer to our web site.

There is an active user forum for all Visual Building products. Please visit:
www.visualbuilding.co.uk/forum



32.2 TUTORIAL VIDEOS

There is a growing library of tutorial videos (currently 70+) located on our website www.visualbuilding.co.uk

These videos are currently hosted on YouTube.com and can also be found by searching for 'visualbuilding' within YouTube.

The videos are generic and apply to most versions of Visual Building.

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The video tutorial library is constantly being updated, so if the video you require is not yet available please come back later. Click on the following video links to take you to each videos home page. Each video has its own link at the top of its home page. You can then view the video in the our video window or alternatively in full screen mode by clicking on the fullscreen button in the bottom right of the video window.

	Lite	Basic	Professional	Premium	Solar Designer
Introduction Videos					
Introduction to the User Interface	✔	✔	✔	✔	✔
Introduction to basic construction	✔	✔	✔	✔	✔
Moving around a project	✔	✔	✔	✔	✔
Dimension Lines	✔	✔	✔	✔	✔
Guide Lines	✔	✔	✔	✔	✔
Project Tab	✔	✔	✔	✔	✔
Wall placement using numerical input	✔	✔	✔	✔	✔
Wall placement under stairs	✔	✔	✔	✔	✔
Terrain features	✔	✔	✔	✔	✔
Split levels	✔	✔	✔	✔	✔
Create a flat roof	✔	✔	✔	✔	✔
Create a 2D Symbol	✔	✔	✔	✔	✔
Change 2D wall style	✔	✔	✔	✔	✔
Edit roof wood construction	✔	✔	✔	✔	✔
Printing	✔	✔	✔	✔	✔
2D/3D Surface Area Edit	✔	✔	✔	✔	✔
Import 3D Models			✔	✔	✔
3D Model Construction Tools			✔	✔	✔
2D Contours	✔	✔	✔	✔	✔
Design a solar panel installation					✔
Create a new solar panel					✔
Explore shadows on solar panels					✔
Standard Window Catalogue	✔	✔	✔	✔	✔
Multiple Wall Layers	✔	✔	✔	✔	✔
Wall Editing Tools	✔	✔	✔	✔	✔
Intermediate Videos					
Import Scanned plan for tracing	✔	✔	✔	✔	✔
Advanced Videos					
How to create a Fire Escape Plan	✔	✔	✔	✔	✔

Legal Statements
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32.3 CATALOGUE EXTENSIONS

A wide range of 3D models, textures and materials are already provided to aid you in planning and designing your projects. Nevertheless, it can happen that just the object you are looking for happens to be missing. We have a range of additional object catalogues for sale on our web site.

www.visualbuilding.co.uk

32.4 DIAGNOSTICS

In all versions of Visual Building there is a diagnostics tool located in the Plugin toolbar.



Click on the diagnostic tool and the What toolbar now includes the following tools:

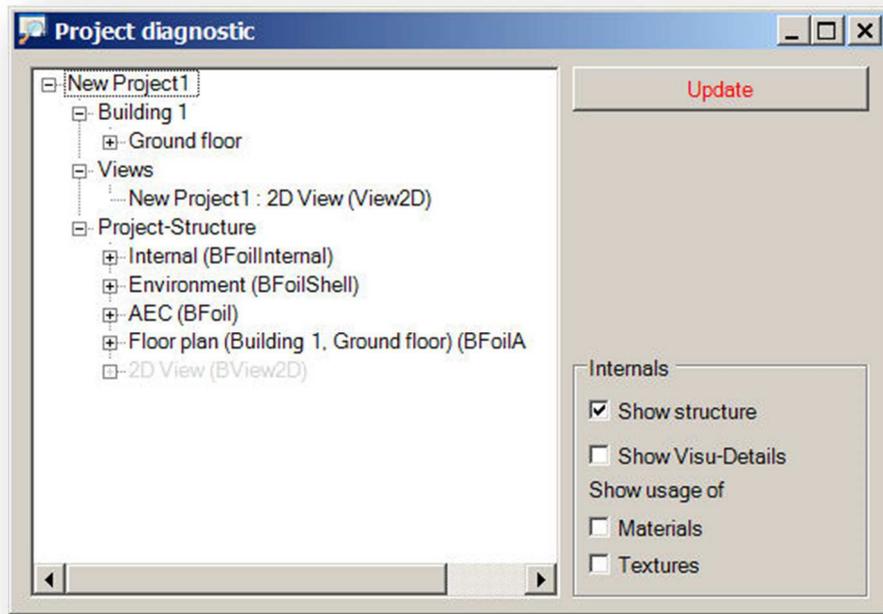
- Start project diagnostic
- Show log file
- Test graphic hardware



These tools are also located in the Ribbon bar's Help tab- Diagnosis group.

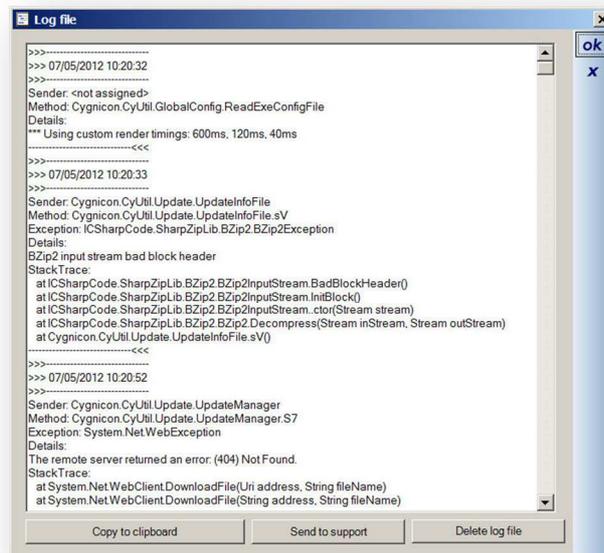
32.4.1 Start project diagnostic

The Start project diagnostic function will provide you with a tree view of the current project. This can be especially useful for identifying where you may be using a specific material or texture.



32.4.2 Show log file

Clicking on the Show log file button will display the log file. This gives you and us the ability to investigate and debug problems. If needed, you can email a copy of this file to us. Please be sure to use the correct email address: support@visualbuilding.co.uk



To increase the logging level:

Advanced: The following should only be done at the request of technical support. It determines the detail of the data being collected by the log file.

CACAD.exe.XML is the main configuration XML file for Visual Building and should never normally be edited, otherwise you risk damaging the installation which may require you to then reinstall. You will need administrator rights to edit this file using a normal text editor.

```
<appSettings>
    .....
    <add key="LoggingLevel" value="0"/>
    .....
</appSettings>
```

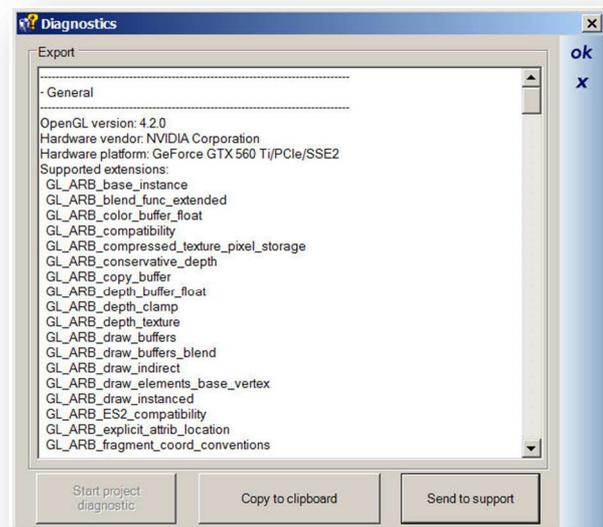
To increase the logging level, set

```
<add key="LoggingLevel" value="100"/>
```

After the diagnosis is complete, remember to reset to 0, otherwise you will needlessly log unneeded data.

32.4.3 Test graphic hardware

Clicking on the Test graphic hardware button will display the graphic card log file. This gives you and us the ability to investigate and debug graphic card problems. If needed, you can email a copy of this file to us. Please be sure to use the correct email address: customercare@visualbuilding.co.uk



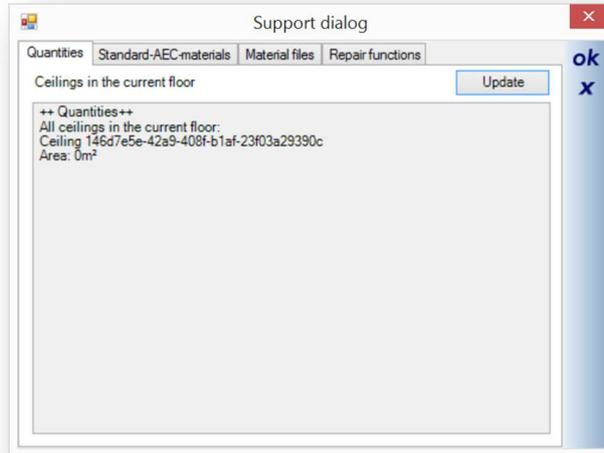
32.4.4 Support Tool

As of Visual Building v4 the Support tool was added to the Diagnostics. This support tool contains tools that can analyse and fix the most common problems relating to Visual Building projects.

On activating the Show Support Dialog tool the dialog appears from which you can select from the following tabs

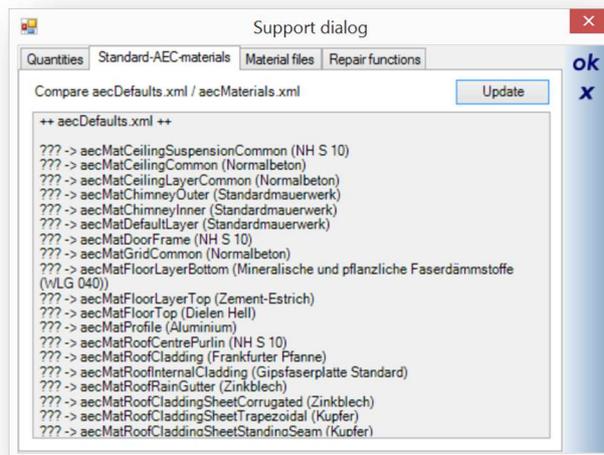
Quantities

This diagnostic currently only displays details concerning ceilings.



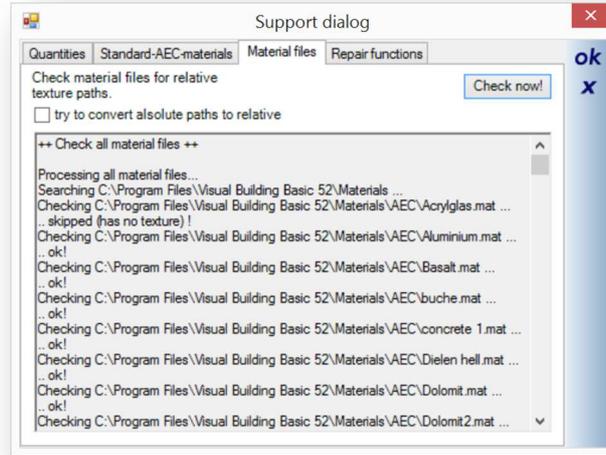
Standard AEC Materials

This test examines the aecMaterials.xml looking for erroneous entries that may have been added since installation. Bad or missing materials in this list can cause project problems.



Material Files

When importing external textures, you may have used a texture no longer available in its original location. This text will look for such textures and change all absolute paths to relative paths.

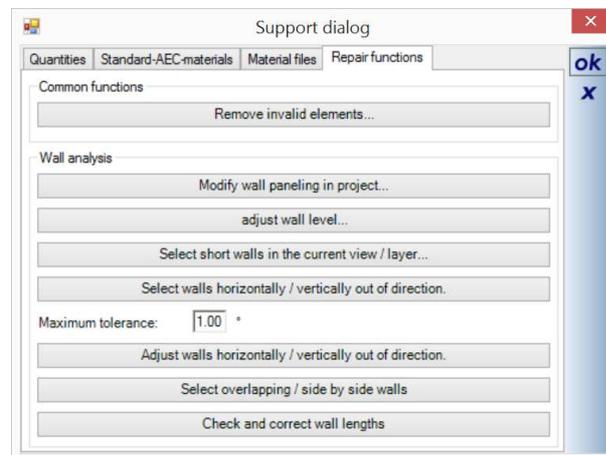


Repair Functions

This tab consists of tests and repairs for known problems.

You may be requested by our technical support team to run these specific diagnostic / repairs in an attempt to resolve certain issues.

To understand the tools you need to understand the internal structure of Visual Building and so we will not document the function of these tools other than their existence.



In most cases the use of these tools will result in no action, unless a specific problem is found.

Remove invalid elements

Occasionally an element may become orphaned and cannot be removed from a project. This diagnostic test will look for such elements and delete them.

Modify wall panelling in project

Adjust wall level

Select short walls in current view / layer

This will select any wall shorter than 1m

Select walls horizontally / vertically out of direction

Adjust walls horizontally / vertically out of direction

Select overlapping side by side walls

Check and adjust wall lengths

33 CONFIGURATION FILES

Visual Building contains several configuration files that technical support may ask you to edit. Normally these configuration files are pre-set and should not be modified.

Note: It's a good idea to make a copy of these files before editing, in case you mess up the editing which will then require you to reinstall.

33.1 CACAD.EXE.CONFIG

The **cacad.exe.config** file is located in C:\Program Files\Visual Building\Program folder, which is protected by Windows UAC, so you must copy this file to your desktop to edit it, and then copy it back again.

33.1.1 Render Timing

When a graphic card cannot keep up with the demand on it to display the images, a red cross instead of the 2D or 3D image.

It is possible to make adjustment in the settings so that the Visual Building software gives the slower graphic cards more time to respond. This of course will slow down overall performance, depending upon the performance of the graphic card.

These settings are found in the **cacad.exe.config** file and contains such an entry:

```
<add key="RenderTimings" value="600,120,40"/>
```

To give a graphic card more time to respond increase the first and the last value until it works, e.g.:

```
<add key="RenderTimings" value="1200,120,80"/>
```

or

```
<add key="RenderTimings" value="1800,120,120"/>
```

You will need to experiment with these values until you find the optimum value for your specific graphics card.

33.1.2 Error Log Report Level

```
<add key="LoggingLevel" value="0"/>
```

This is the default minimum error log level. Technical support may request you to increase this level to a higher number so to record more information when you may have a problem. Always return this value to 0 in order to avoid unnecessary overheads that higher level logging imposes.

34 INDEX

- 2D Contours, 444
- 2D Cross section, 173
- 2D Graphic
 - fill style, 370
 - image scaling, 376
 - images, 370
 - layer priority, 371
 - line copy, 372
 - line trim, 373
 - outlines, 369
 - visibility, 371
- 2D symbols, 204, 207, 257
 - alternative, 213, 483
 - layer priority, 261
- 2D-DXF/DWG Import, 418, 424
- 32 bit - 64 bit versions, 15
- 3D constructions, 434
 - 2D representation, 440
 - compared to 3D Objects, 441
 - Dimensions, 479
 - material, 440
 - rotation, 481
 - transformation, 480
- 3D DXF, 524
- 3D Object, 204, 441
 - Conversion, 491
 - Export, 522
 - Insert Position, 487
 - Level, 487
 - Light sources, 493
 - Manufacturer link, 487
 - PDF file, 212, 486
 - Properties, 485
 - Scaling, 487
 - Snap points, 186
- 3D Solid primitives, 449
- 3DS, 524
- Administrator privileges, 165
- Advertising, 225
- AEC, 162
- Ambient light source, 187, 495
- Ambient occlusion, 190
- Angle dimension, 253
- Angle grid, 64
- Angle measurement, 249
- Antialiasing, 190
- Apartments, 234
- Application Toolbar, 38
- Area Calculation**, 505
- Autotext, 254
- Background, 184
- Backgrounds, 162
- bay window, 298
- Beams, 304
- Bookmarks
 - folder, 164
- Boolean operation, 471
- Brick Textures, 215
- Building
 - copy, 232
 - extending, 231
 - mirror, 231
 - rotate, 231
- Calculations, 56
- Catalogue, 51, 162, 204
 - creating, 207
- Ceiling, 274
 - automatic, 275
 - deactivate, 276
 - openings, 299
- Chimneys, 303
- Chunk editor, 208, 282, 487
- Chunks, 204
- Colour
 - dialog selection, 58
- Configuration files, 536

Construction Elements, 204

Construction support, 59

Contour height, 389

Coordinates, 62

Copy building, 233

Corrugated Sheet Cladding, 313

Cross-section, 174

CYG, 524

Database, 163

Date and time, 187

Delete Wizard, 67

Depth correction, 210

Diagnostics, 530

Dialogs, 49

 numeric calculations, 56

Dimensions, 249

 3D, 251

 edge, 252

 height, 253

 multiple, 253

DIN 277, 240, 512

Directional light source, 497

Directory navigation, 162

Doors, 102, 140, 277

 2D symbol, 281

 catalogue selection, 279

 creating new, 209

 hinges, 280

 opening direction, 278

Dormers, 324

DXF/DWG

 Export, 424

 Import, 418

Elevation View, 178

Environment, 386

 selecting, 228

Environment block

 shape, 390

 size, 260

Environment map, 191

Error log

 level, 537

 show, 531

Export 3D Object, 522

Extrusion, 451

File save options, 164

Fill patterns

 creating, 385

Floor

 change height, 236

Copying, 108, 147

 create new, 229

 extending, 231

 lengthen, 232

 material, layers, 240

Forum, 24

Full screen mode, 182

Garden design, 384

Graphic card

 Render time, 536

Graphics2D, 163

Grid, 198

Groups, 260

Guidelines, 243

 angled, 244

 edge, 246

 length, 243

 planes, 246

Height points, 388

Images

 saving, 179

Import

 2D DXF/DWG, 418, 424

Input aid, 58

Item text, 255

Last action, 41

Layer construction, 57

Layers, 70, 235

 visibility, 170

License, 18

Light source

 create new, 494

Light sources, 186

Living space calculation, 240

Manuals

 folder, 163

Manufacturer

 catalogue, 220

 data, 211

Marketing, 225

- Materials, 51, 204
 - Editor, 205
- Measuring functions, 248
- memory, 16
- Mercantile Directory, 227
- Mirror building, 233
- Moon, 188
- Multiple copy, 69
- My Samples
 - folder, 163
- Normal map, 183, 206
- Normal Maps
 - folder, 163
- Normals, 501
- North arrow, 228, 261
- Numeric input, 56
- Objects
 - selecting, 262
- Origin, 261
- Partition wall**, 96, 136, 264
- PDF
 - object information, 205
- Plan layout, 426
- Plug-in, 23, 264
 - 2D Graphic, 368
 - 2D-DXF/DWG Import, 418, 424
 - 3D Construction, 434
 - 3D Converter, 483
 - Plan Layout, 418, 424, 426
 - Roof, 305
 - Stair, 357
 - Surface Editor, 391
 - Terrain, 386
 - Window construction, 401
- Point light source, 497
- Polygon
 - insert point, 64
 - measure perimeter and area, 249
- Polygons
 - Tool, 43
- Presentation view, 183
- Print 3D view, 182
- Printing
 - 2D view, 259
 - 3D view, 260
- Profiles, 444
- Program
 - folder, 163
- Project folder, 162
- Project properties, 229
- Project Selection, 71
- Project viewer, 228
- Project Wizard, 71
- Purlins, 318
- Quantities**, 516
- Quick Access Toolbar, 40
- Raytracing, 188
 - detail, 189
- Recalculate normals, 501
- Redo, 30, 40
- Reference points, 58
- Render timing, 536
- Ribbon bar, 37
- Roof**, 111, 151, 305
 - 2D representation, 331, 332
 - 3D preview, 306
 - circular, 342
 - cladding, 313
 - cut-out, 340
 - eaves, 316
 - extension, 337
 - gable, 317
 - hexagonal, 342
 - inserting, 305
 - materials, 308
 - merge, 334
 - rafters, 315
 - timber construction, 314
 - types, 319
 - visible detail, 333
- Roof lathing, 351, 352
- Room boundary, 235, 264
- Rooms, 238
- Rotation solids, 452
- Samples
 - folder, 163
- Save image, 182
- Save Project, 161
- Scale, 170
- Scrolling, 173

- Select Wizard**, 67
- Selection
 - definition, 198
- Shortcut keys, 525
- Show all, 172
- Show log file, 531
- Sketch view, 183
- Skylights, 300
- Smooth shadows, 192
- Snap, 173
 - definition, 199
- Snap points, 186
- Solar, 301
 - Feed In Tariff**, 303
- Split levels, 235
- Spot light source, 498
- Stairs, 104, 143, 357
 - 2D symbol, 365
 - geometry, 358
 - handrails, 362
 - stair well, 363
- Start project diagnostic, 530
- Start Wizard, 71
- Subtraction solids, 465
- Sun, 189
- Sun position, 186
- Supports, 274
- Surface Editor, 391
- Sweep solids, 455
- Templates
 - folder, 163
- Terrain, 386
 - types, 388
- Test graphic hardware, 532
- Text, 56, 254
 - autotext, 255
 - item, 255
 - properties, 56
- Texture coordinates, 503
- Textures, 51, 204, 205
- Title blocks, 258
- Tooltips, 28
- Training course, 24
- Training Videos, 71
- Transfer properties, 261
- Tutorial videos, 24, 529
- UAC, 438
- Undo, 30, 40
- Union operation, 473
- Units
 - definition, 197
- Updates, 20, 21
- User interface, 26
 - Classic toolbar, 26
 - Ribbon bar, 37
- Video recording, 195
- View point, 181
 - setting, 171
- Viewpoint
 - save, 172
- Views
 - switching, 166
 - Tabs, 166
- Visibility, 167
- VRML, 524
- Walkthrough, 194
- Wall
 - direction, 270
 - Exterior, 85
 - insertion**, 265
 - layers, 268
 - openings, 299
 - slots, 299
 - split, 270
 - tools, 269
 - trim, 270
 - types, 264
- Window Construction, 401
- Windows, 277
 - 2D symbol, 281
 - bar arrangement, 295
 - Bay, 298
 - catalogue selection, 279
 - creating new, 209
 - editing, 285
 - mitre, 280
 - opening direction, 278
 - profile editing, 292
 - sills, 284
- Zoom, 172

rectangle, 172

to cursor, 172