ARCHLine.XP® 2024

Windows

ADVANCED COURSE

Architectural and Interior Design

Tutorial

This tutorial was produced using Microsoft Word and ARCHLine.XP®.

Contents

Advanced Course Training Tutorial

We highly recommend the Advanced Course Training Tutorial to our potential and current ARCHLine.XP® users who successfully completed the ARCHLine.XP Preliminary and Intermediate Courses.

The course contains 7 workshops:
Layer Management, Doors and Windows, Lighting Plans, Suspended Ceiling, Curtain walls, Farmed walls, Teamwork.

After accomplishing these workshops, you will be able to execute more challenging and advanced design tasks.

Enjoy the successful design!
CadLine

Start your design and work with ARCHLine.XP®

This training material is a guidance to help you to become familiar with the typical interior design examples, and enables you to create more complex designs. To get the most out of the tutorial, run the ARCHLine.XP® program and the appropriate YouTube video to try those features and tools which can be found in this training material.

For most workshops you will need an initial project!
To complete tasks please download **WORKSHOP PROJECT – ADVANCED** from our website and install to your computer. This contains all projects for Advanced workshops.

Workshop 1: Layer Management

1. Workshop: Layer Management

It is an often-occurring task to display a floorplan in many various ways, according to the multiple plans such as Architectural floorplan, Furnishing plan, MEP plan, Electrical accessories plan, Tiling plan, …

CAD software offers the Layer Management as a solution. Layers are the primary method for organizing objects in a drawing, so objects of the current project can be grouped or separated according to various aspects.

In this workshop, we will demonstrate how to create layers to print different plot layouts based on the same floorplan.

- Open your browser and watch the following video tutorial:
  https://www.archlinexp.com/enrollments/courses/advanced-course/layer-management/1

- Open …*Documents\ARCHlineXP Draw\2024\Workshop_Advanced\1_Layer_management\1_Family_Business_Office_START.pro* file. Save it under a different name.

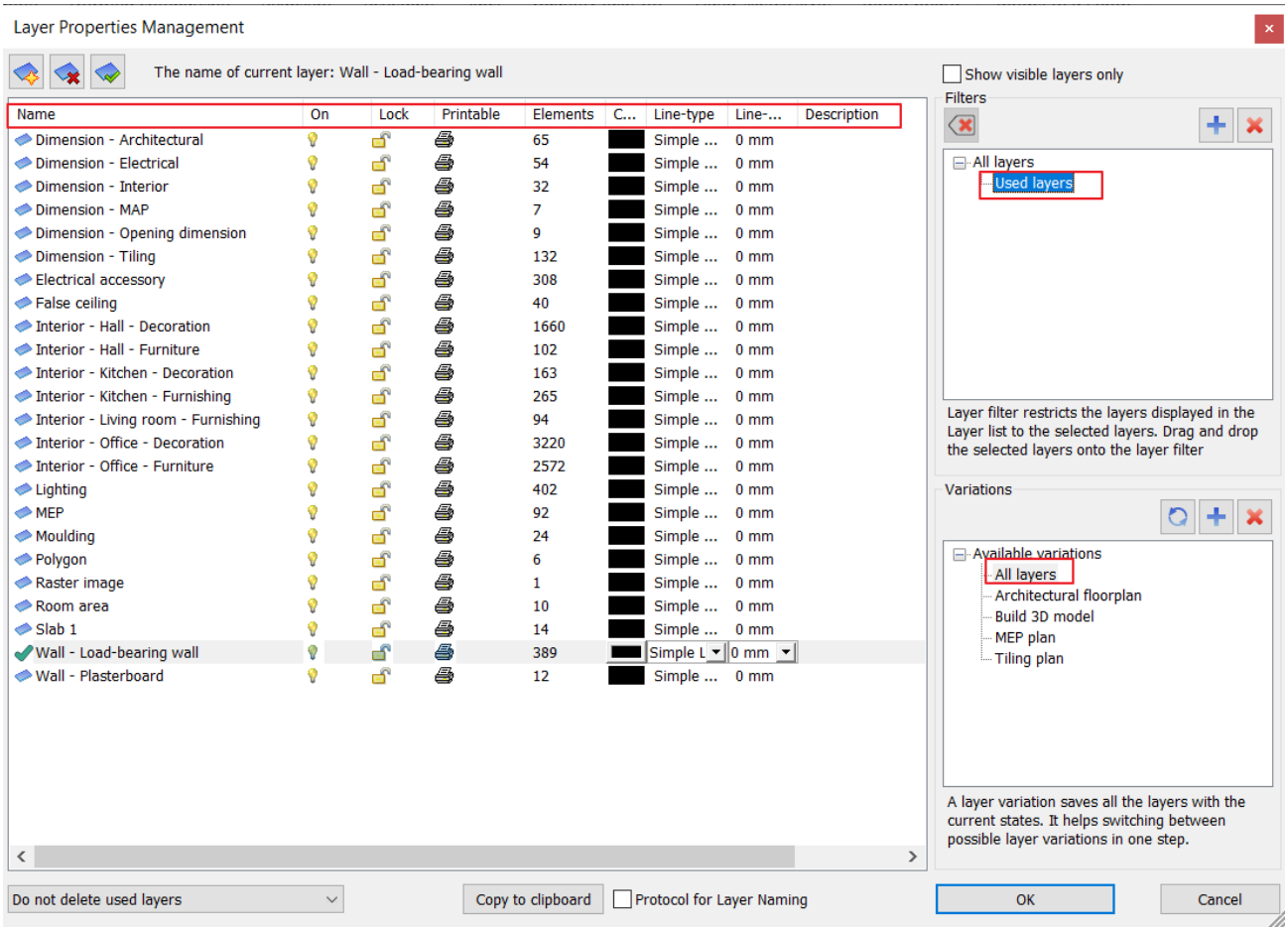
Before you start drawing, let's look through how layer tools are functioning.
First, we check the layer properties.

1.1. Layer properties

Important, the layer structure of the floorplan and the 3D view is not the same. Therefore, operations with layers are ALWAYS started from the floor plan.

- Activate the floorplan window.
- Click on  the **Layer** button on the Status bar. This way, you open the ***Layer Properties Management***.
- Click on *Used layers* group under *All layers*.

Layers have the following main properties:



Visibility: Turning on and off layers

By turning layers on and off, you can select layers to display in the drawing window. The objects of turned-on layers (yellow bulb) are visible, and you can refer to them. You can turn the layers on which previously had turned off (grey bulb) any time, and then these become visible again.

Background: Locking and unlocking layers

By locking and unlocking layers, you can define which layers you can edit and select. Locked layers become background layers. Objects of these layers are visible, can be referred to them, but you cannot select or edit them.

Printable: On or Off

By turning the layers on or off, you can select the layers whose elements you want to print. Non-printable layers appear with a printer with a cross icon on the list.
They will not be printed. When printing, the message will also warn you:

"Some layer has non-printable status. These layers will not be printed."

It is worth checking the printability of the item's layer in the layer manager.

Color, Line type, Line width:

These features are active in **Layer control mode.**

The layer properties such as **visibility, background, printable** can be turned on/off one by one; or in groups.

Let's look through these properties in more details:


When the layer is turned on and unlocked:
- its objects are **visible**
- you can **refer** to its objects
- its objects are **editable and selectable**


When the layer is turned on and locked:
- its objects are **visible**
- you can **refer** to its objects, but
- its objects are **not editable or selectable**


When the layer is turned off:
- its objects are **not visible,** therefore
- consequently, you **cannot refer** to its objects, and
- its objects are **not editable or selectable**

! The active layer is always visible and unlocked.

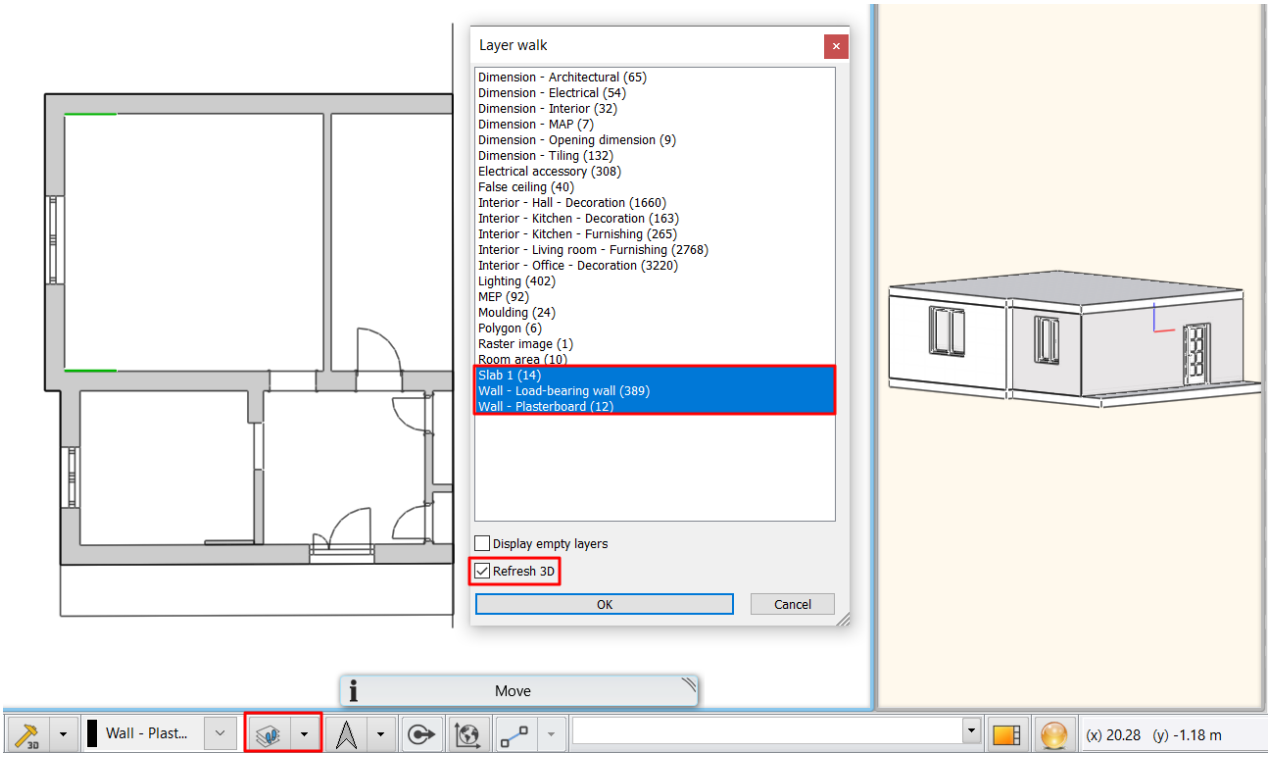
Turning on/off more layers all at once

There are situations when it is necessary to turn on/off more layers. Select more layers by holding down the SHIFT or CTRL key, and now it is enough to change the visibility of one layer. Now all the rest of the selected layers inherit the property of the currently selected layer. All layers can be selected by pressing CTRL+A.

An example of how to turn on and off layers

Activate the floorplan.

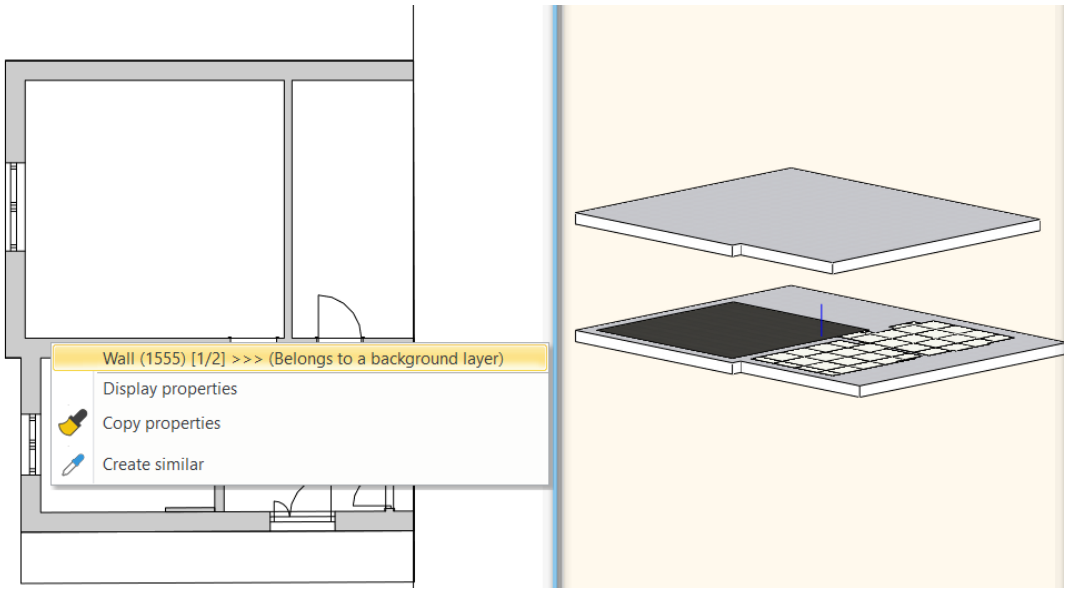
- Select the **Layer walk** tool and click on *"Wall - Load-bearing wall" and „Slab 1"* layers by holding down the CTRL-key.
- Turn on the Refresh 3D option.
  The result is the following:



In the Layer Properties management window, we can check that both layers are turned on and unlocked. This way, these layers are visible, editable, selectable so, the 3D model is created.

- Lock the "**Wall-Load-bearing wall"** layer, now rebuild the 3D model.

The Wall-Load-bearing wall layer turned to the **background layer**. Walls are not visible, not editable, and cannot be selected on the floorplan. Only the slabs are displayed.



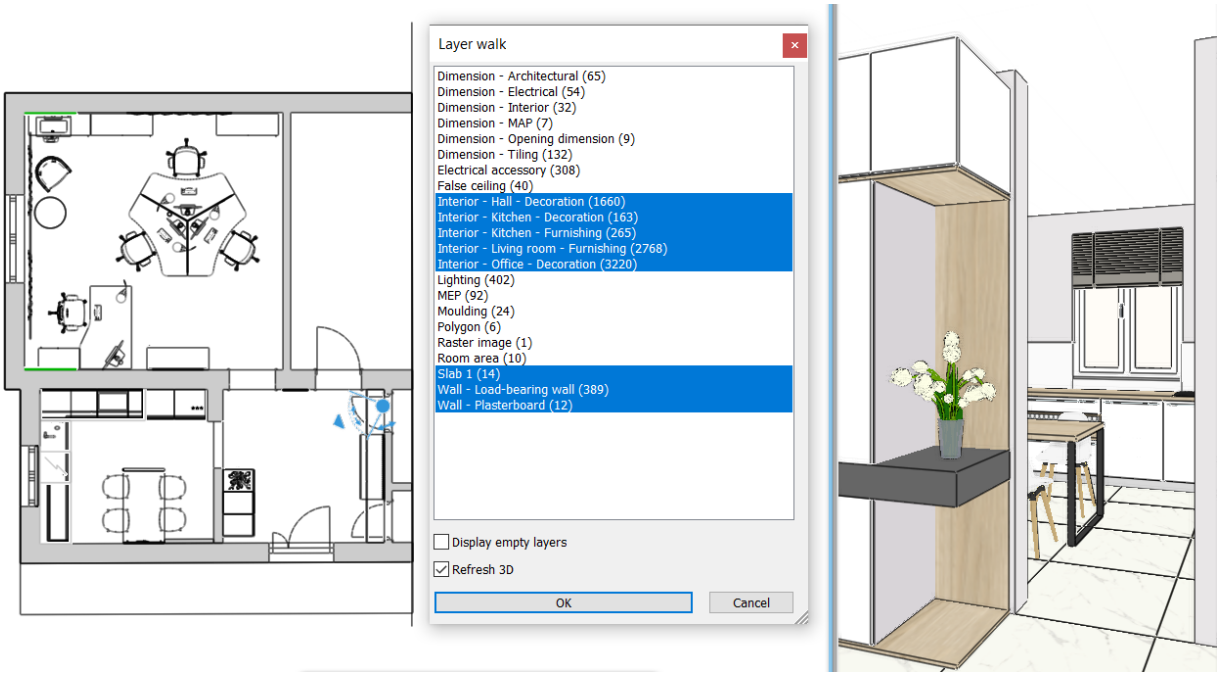
1.2. Layer Walk tool

Layer Walk tool helps to navigate through the existing layers. The Layer Walk makes it easy to turn on and off layers; or create a new combination of the visible layers. Next to the layer name is indicated the number of the elements on that given layer in brackets.

When the *Layer Walk* window is open, the visible layers are highlighted, and accordingly, the objects on these layers are displayed on the active floorplan.

More layers can be selected by holding down the CTRL button and clicking on the layer name.
Layers between the first and last selected layers can be selected by holding down the SHIFT button on your keyboard.
This also can be done by using the mouse.

In addition to Wall, Wall – Load-bearing wall layer select every *Interior layer* and rebuild the 3D model. The result is the following.



Now activate the 3D view. Let's use the Layer Walk tool.
The Layer List is not the same as it is on the floorplan; the locked layers are not displayed.

1.3. Layer: The general property of objects

How can happen that objects are automatically placed on different layers?

In ARCHLine.XP, each project is built up from different layers, even if you don't do anything to organize the content on layers. If you open a blank project, the program already contains default layers. When we create new architectural, interior, or drawing objects, these are automatically placed on that layer, which is defined by the given object type.

When we define the general properties of the object types, you have to specify the layer where the new elements of the given object type will be placed. The program has a pre-defined layer list. Each object type is assigned to a layer; the new element will be automatically assigned to it. The assignment can be modified.

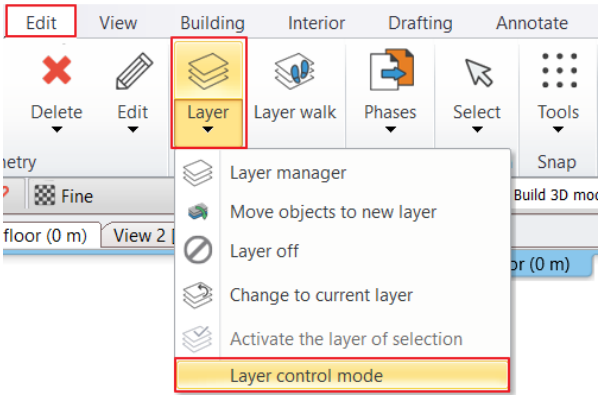
For example, *1 layered 38 wide wall* will be assigned to the *Wall-Load bearing wall* layer, while *1 layered 06 wide wall* will be assigned to *Wall- Partition wall* layer, dimensions to *Dimension-Length,* furniture are assigned to *Interior- Living room-Furnishing* layer.

Property	Value
General	
Layer	Wall - Load-bearing wall
Colour	
Line type	Simple Line
Line weights	0.3 mm
Draw Order	8- Bottom-most

Property	Value
General	
Layer	Interior - Living room - Furnishing
Colour	
Line type	Simple Line
Line weights	0 mm
Draw Order	8- Bottom-most

1.4. Layer Control Mode

On Ribbon bar under **Edit menu / Layer / Layer control mode** option is turned off by default.



If you activate this mode, you can override the objects' general properties when you create a new object. In this case, that color, line type, line weight will be applied which corresponds to that layer which is assigned to the new object.

The Layer Control Mode secures the AutoCAD compatible drawing method. When this option is active, you can still create objects with different color, line type, line width, but these are only editable afterwards.

In architectural and interior design plans, experience shows that a **more comprehensible drawing can be achieved if colors, line types, and line weights are assigned to element types rather than layers**.
So, this way, on the same layer, you can place objects with different properties (different color, line type, line width, and even different types), and those can be managed together for various aspects.

1.5. Create a New Layer

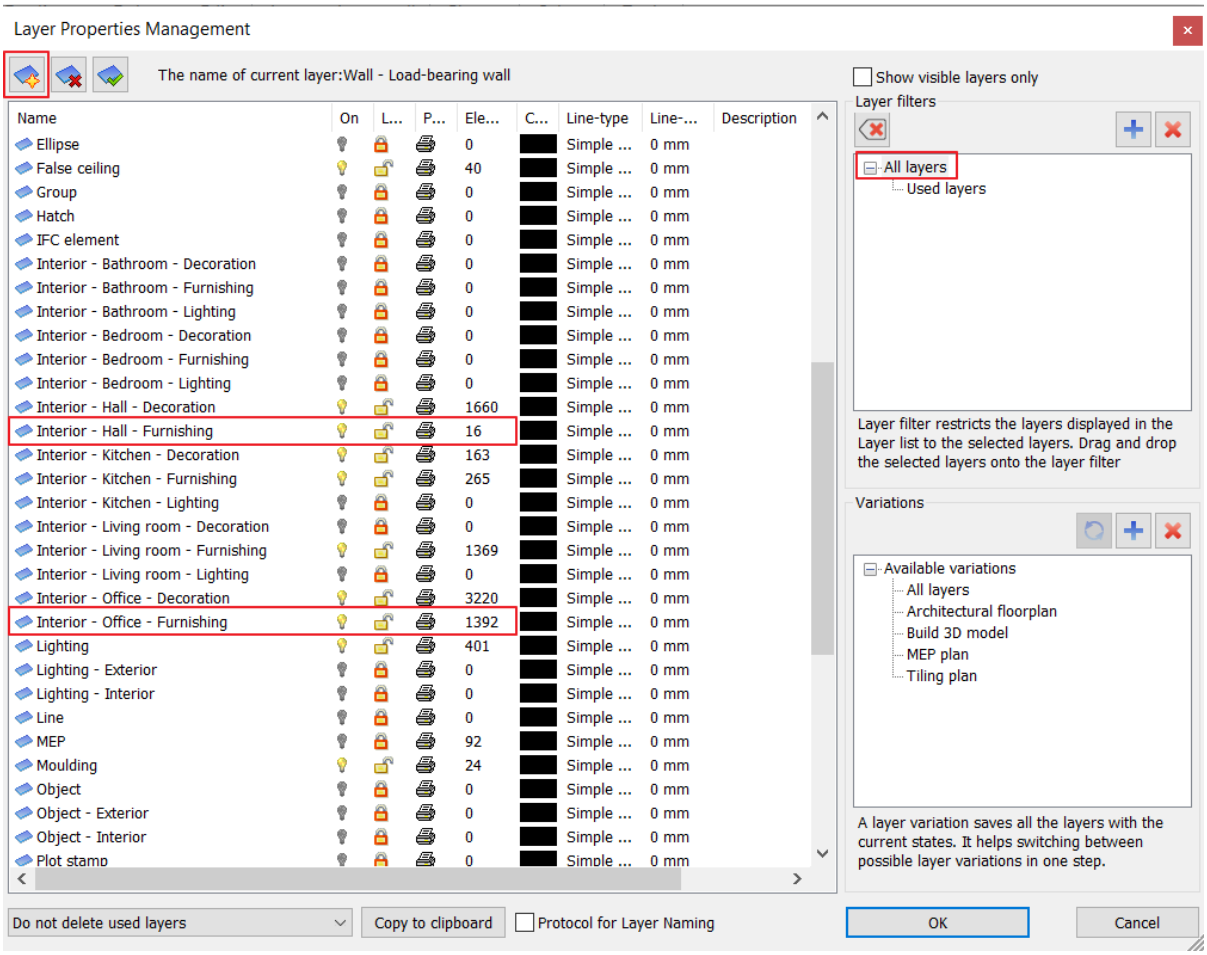
In the upper left corner of the Layer Properties Manager, you can use the buttons to add, delete, or activate a layer.
A new layer can be created if All layers filter is active on the right side of the panel. By pressing the Add new layer button, the Layer:1 is made, by double-clicking on it, you can name it. (You can name any existing layer in the same way). The active layer indicated by a green tick.

- Click on *All Layers* filter.

Now all layers appear. We have already prepared layers for architectural elements and furnishing. These are automatically assigned to objects' types. In case there is another room on the floorplan which is not on this list, then it worth to create a new layer for it.

On this floorplan, there are three rooms, such as **Kitchen, Office, and Hall**.
First, we create layers for the Office and the Hall, then for the Furnishing. Automatically furniture already has been placed on the Interior – Living room – Furnishing layer. Next, we will move objects to the new layers.

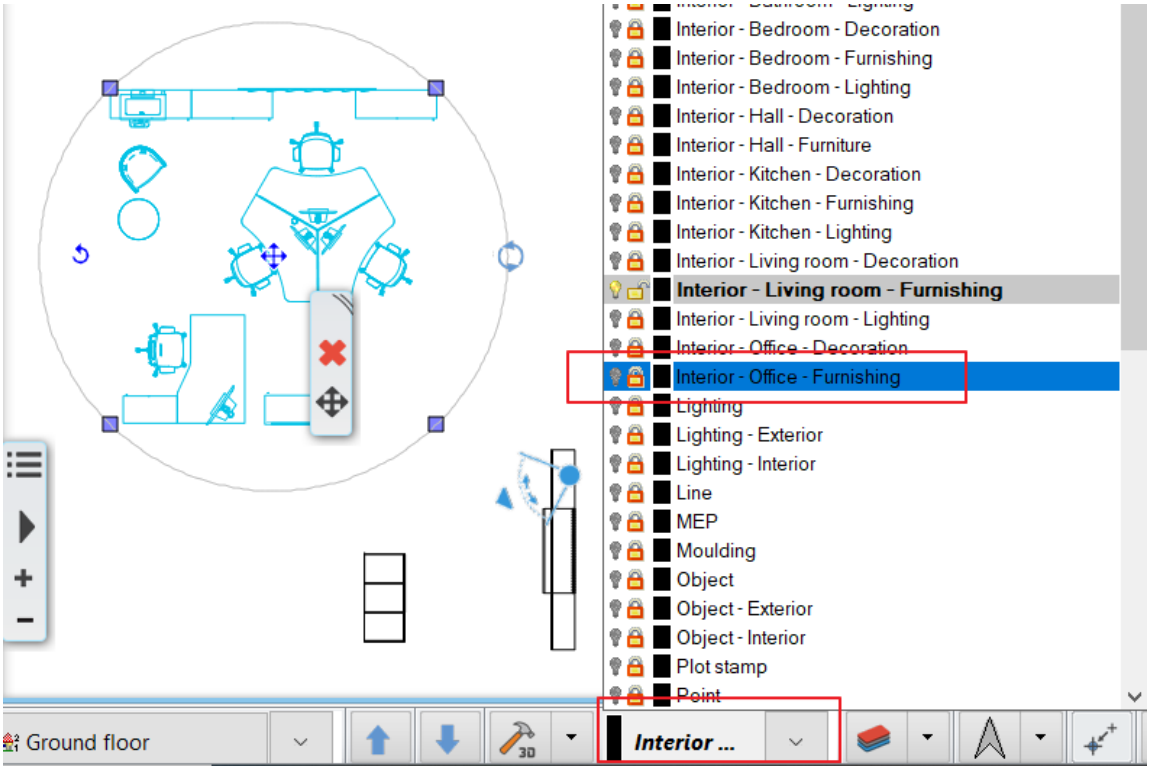
- Click on the *Add* new layer icon. Now the Layer: 1 is created and name it to *Interior – Hall – Furnishing* and *Interior – Office – Furnishing.*



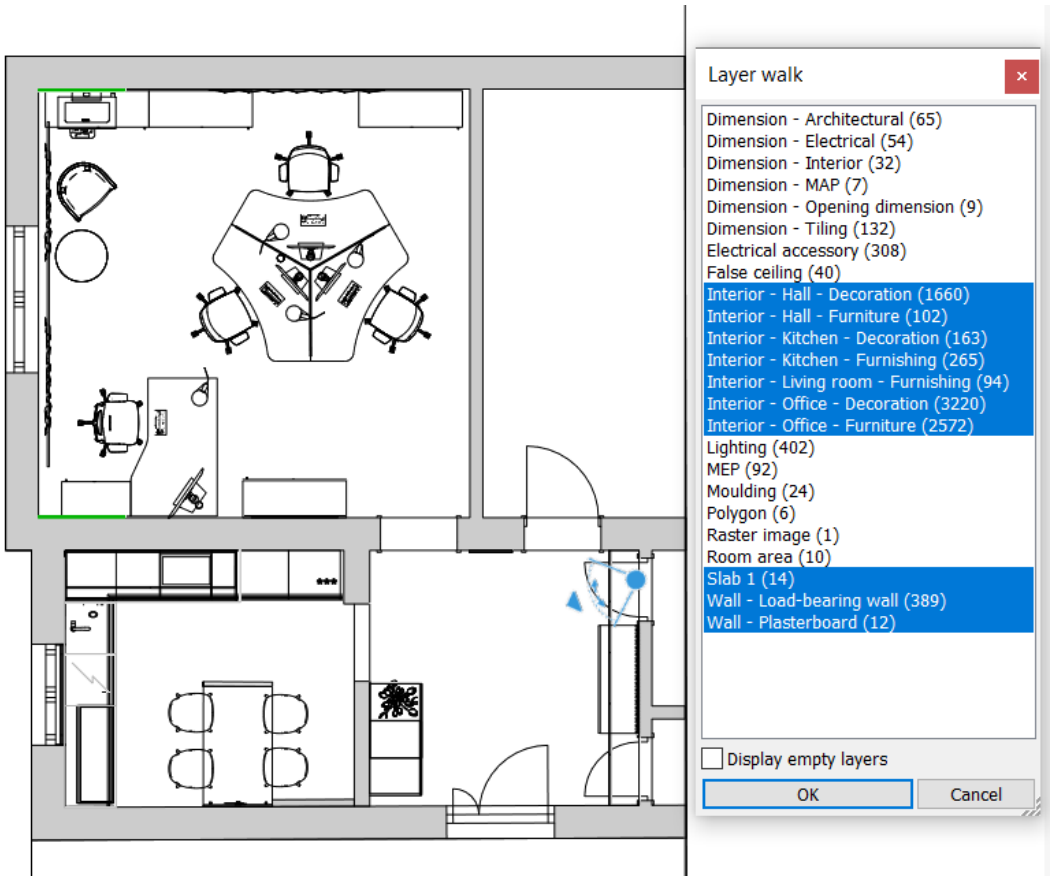
1.6. Move objects to New Layer

Now we move the office and hall furniture from *Interior - Living room - Furnishing* layer to the newly created *Interior – Hall – Furnishing and Interior – Office – Furnishing layers.*

Display the content of the *Interior – Living room - Furnishing* layer by using the Layer Walk tool.
Select objects in the office and move these items to *Interior – Office – Furnishing* layer by selecting it from the Layer list panel on the Status bar.

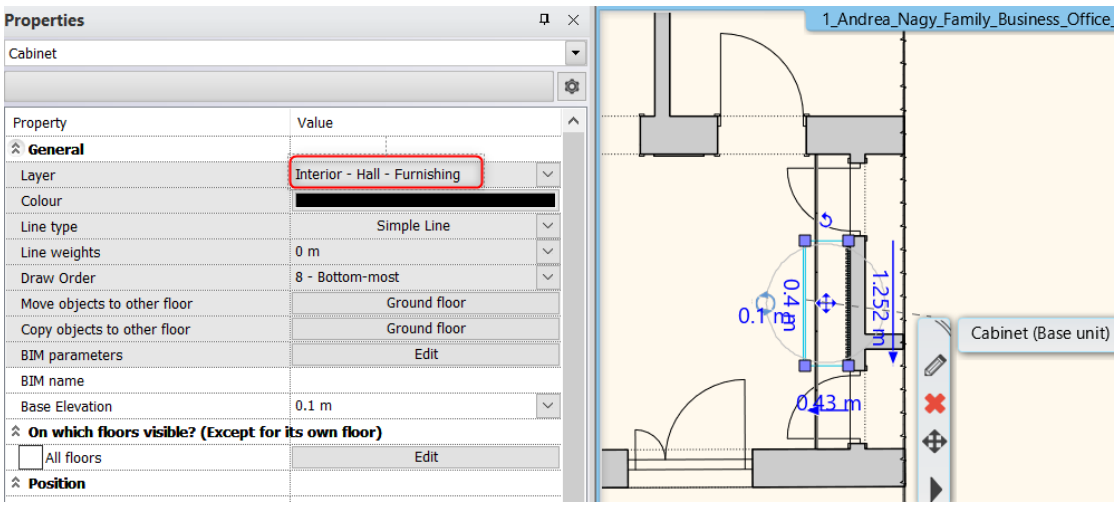


Now display the new layer content by using Layer Walk tool again:



How to check the layer properties of objects

After replacement we have to double-check that objects in the hall are assigned to the *Interior – Hall - Furnishing* layer:



1.7. How to delete layers

Note that we cannot delete the active layer (before that we have to activate another layer), also by default, it is not possible to delete layers with elements.

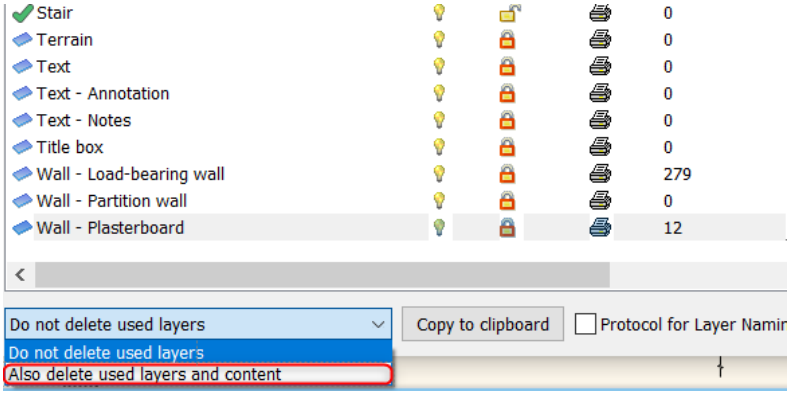
Delete empty layer

In Layer Properties Management window, click on “Elements” header, this way, we can sort the layers in descending or ascending order depending on their content. Empty layers (0) show zero elements, and these can be selected and deleted by using the Delete icon on the top left corner.

Delete layers with elements

In the left bottom corner of Layer Properties Management dialogue window, we can toggle on the “Also delete used layers and content” option; this way, it is now allowed to remove layers with content.

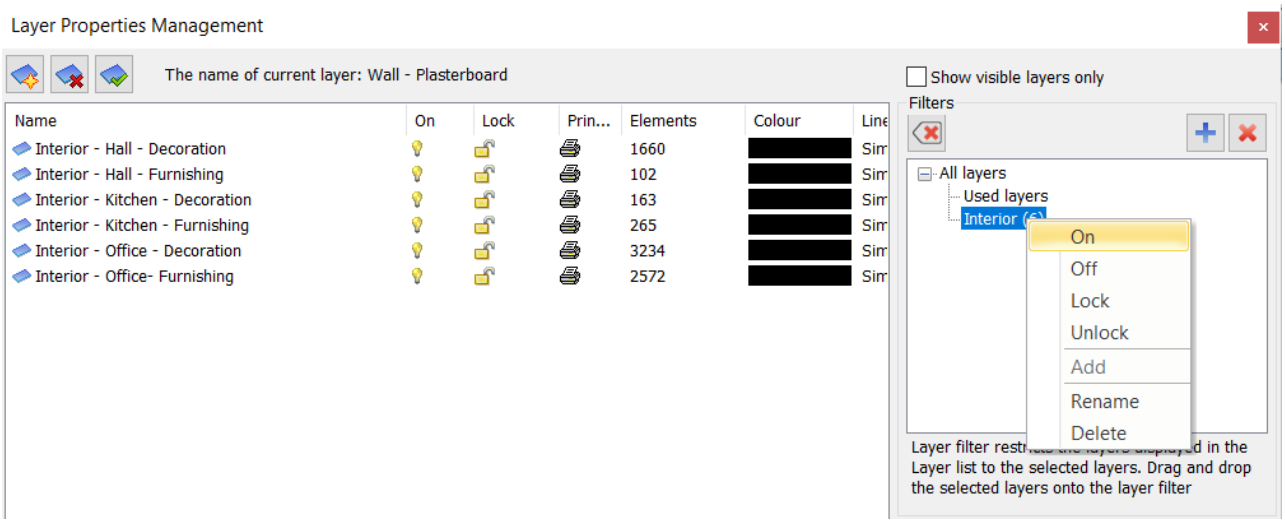
NOTE! When this happens, you will get a warning, and the layer removal cannot be withdrawn. Check if you don’t need the layer before permanently delete it containing elements.



1.8. Layer filters

In the case of more complex projects, there are tools for organizing it more effectively. The Layer Filter is an excellent tool for that; we can create different groups of layers. Starting the program “Used Layers” filter is created by default, and layers with elements can be filtered.

Clicking on the Blue cross icon, we can create a new filter group, and you can rename the group by double-clicking on it. Now select layers on the left side of the panel, drag and drop them on the new filter group. Now, for example, we can create a filter that contains all Interior layers. By using the new filter, we can easily and quickly find any layers in a shorter list.

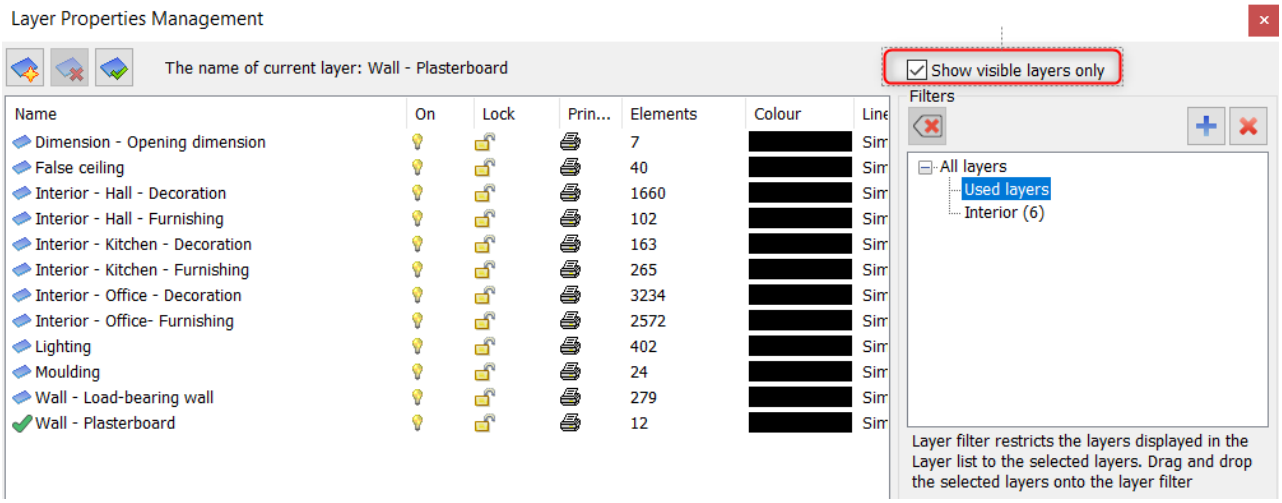


When importing a DWG file, the layers automatically placed on a separate filter for better categorization.

One layer can be used in different filter groups and can be removed at any time. For this, use the red cross icon on the top left corner of the filter panel. Now the selected layer will be removed from the filter group, but will not be deleted. The removed layer still can be found under All layers, Used layers, or any other filter groups.
There is an option to remove a filer group. Layers of the filter group will not be deleted; only the filter group ceases to exist.

1.9. Show visible layers only

In the case of a large number of layers to increase the visibility, it can be useful to display only the visible layers.
By activating the *Show visible layers only,* we can filter layers turned on.



1.10. Layer variations

Now let's go back to our project:
Let's create the following plot layouts:

1. **Architectural floorplan**
2. **Furnishing plan**
3. **MEP plan**
4. **Suspended ceiling and lighting plan**
5. **Electrical accessories plan**
6. **Tiling plan**

We use Layer Variations to solve these tasks. The aim is to change all at once the status of layers, which are grouped in a certain aspect.

Turn off and lock layers and then all layer settings can be saved as a new variation, by clicking on the Blue cross icon. The new variation group can be renamed by double-clicking on it.

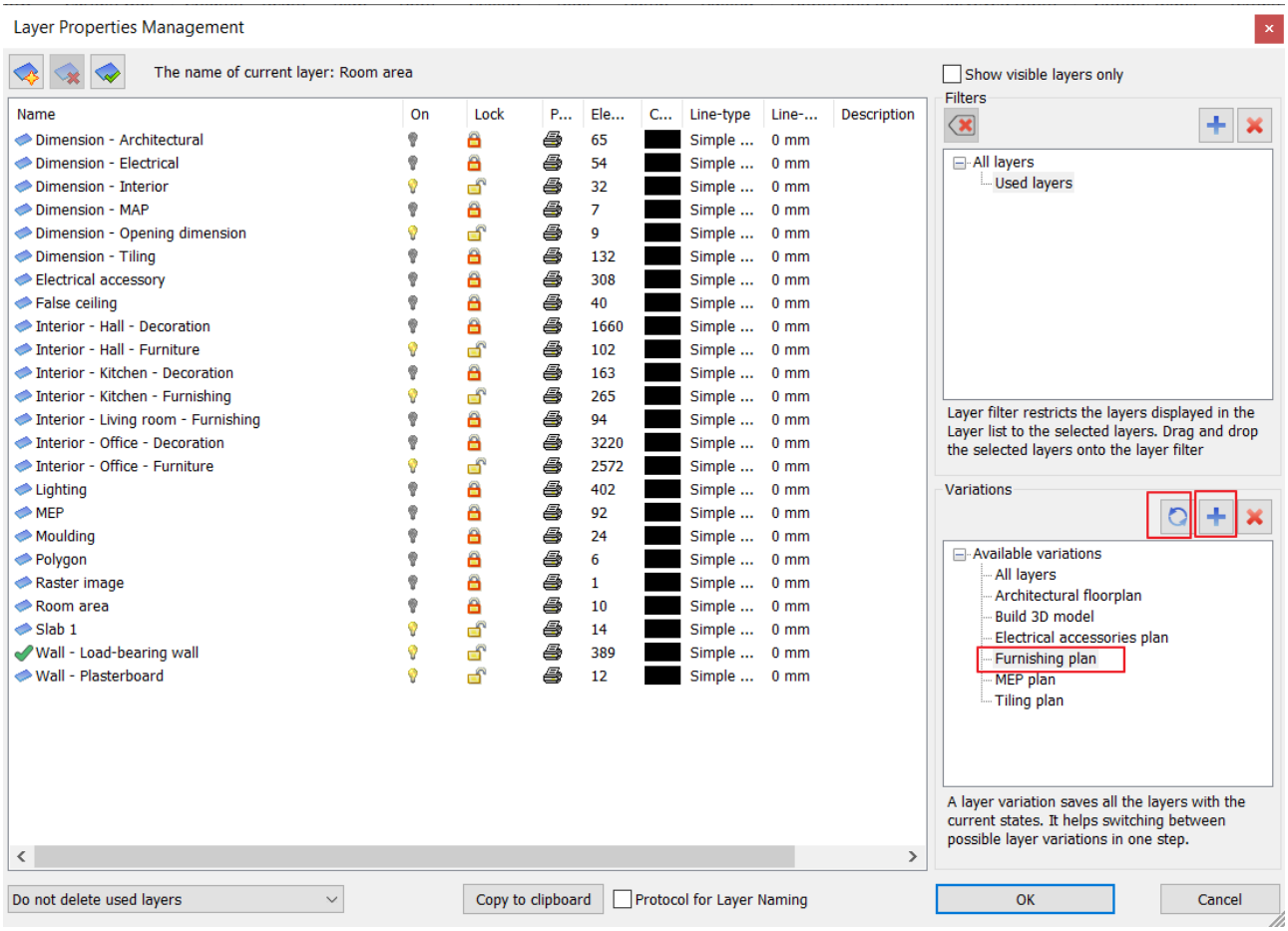
If you need another variation, click on the Blue cross icon again. Now the current variation is copied; name the new variation. Then modify layers which are different from the current settings, finally press the Refresh button, to accept changes.
If you want to modify an existing variation, the method is the same as above. Change layers settings and override changes by using the Refresh button.

Layer variations can be selected on View Control Bar, one single click to choose and activate any of them.

Now let's create *Furnishing* and *Electrical accessories plan*:

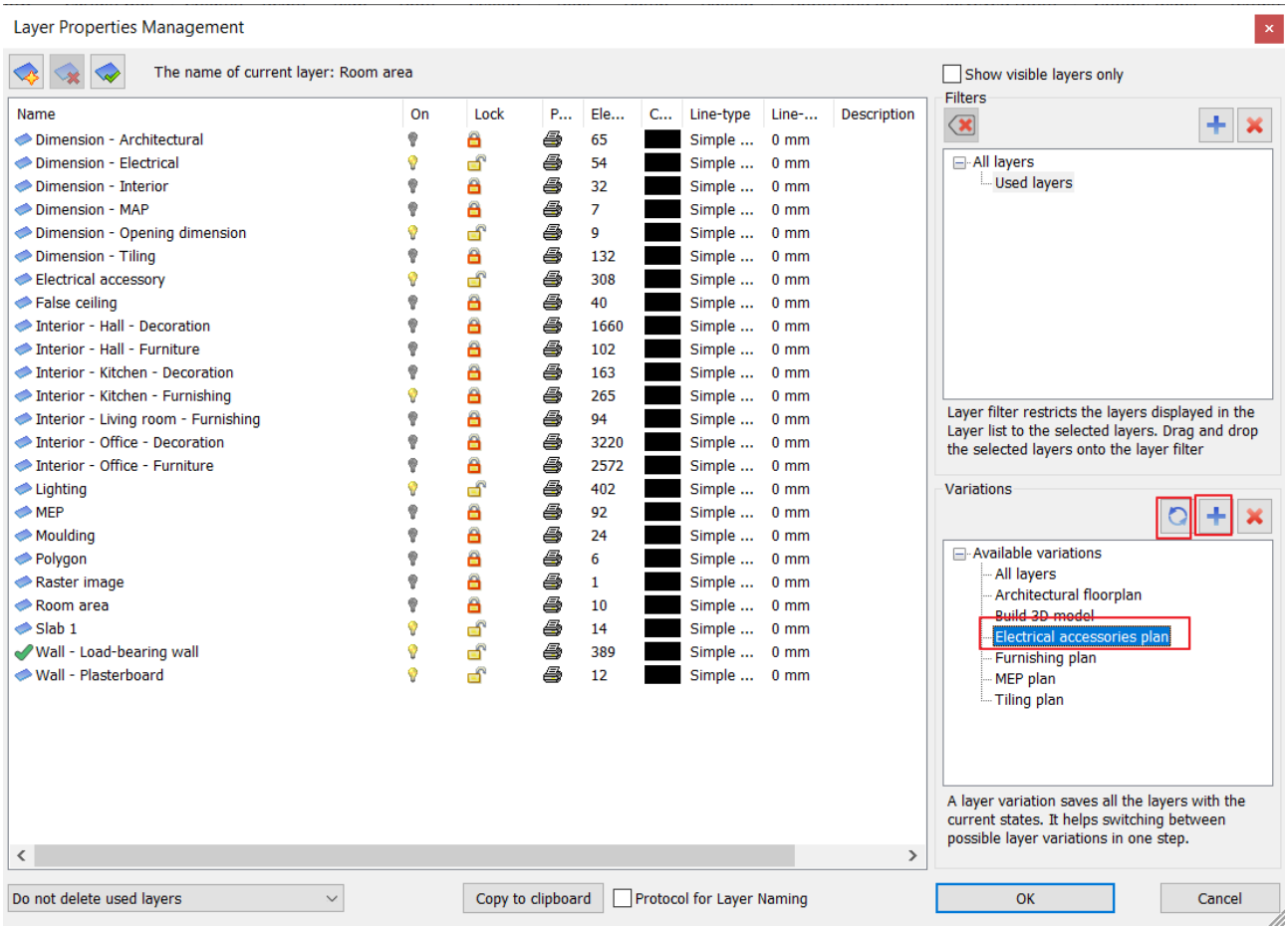
Furnishing plan - Layer variation

- Now create the new variation, as it is shown in the picture below.
- Change the visibility of the layers.
- Now refresh the *Furnishing layer* variation.



Electrical accessories plan - Layer variation

- Now create the new variation, as it is shown in the picture below.
- Change the visibility of the layers.
- Now refresh the *Electrical accessories plan* layer variation.



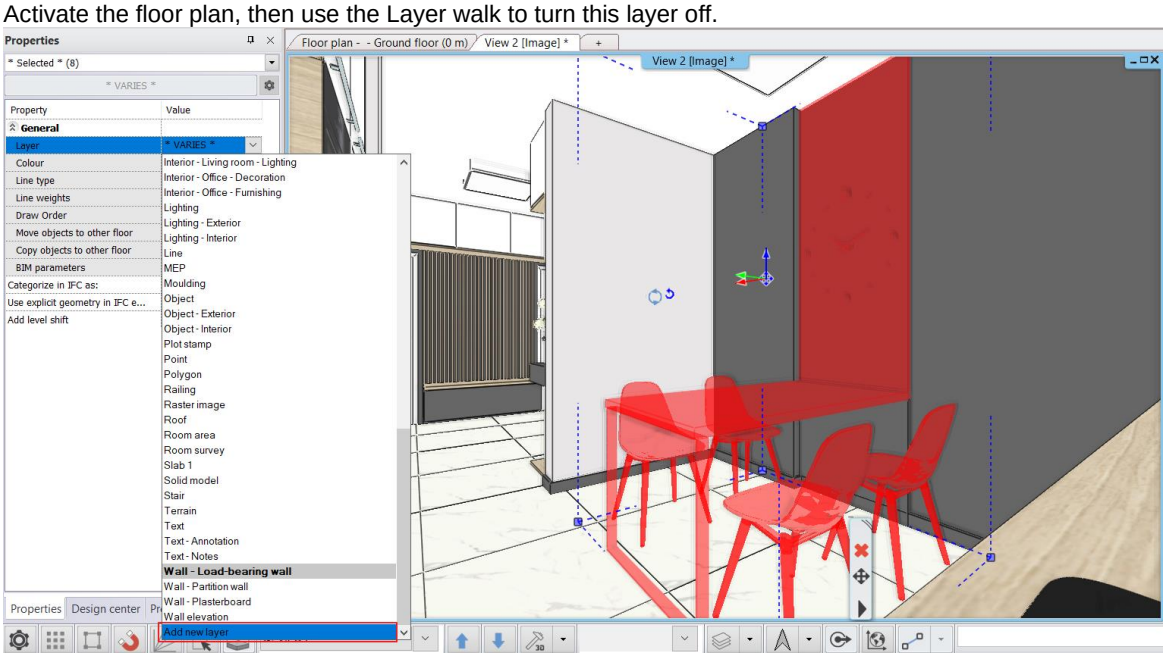
Now modify the 3D build layer variation because of 2 new layers:
Interior – Hall – Furnishing and *Interior – Office – Furnishing*

1.11. Management of design variants in 3D views

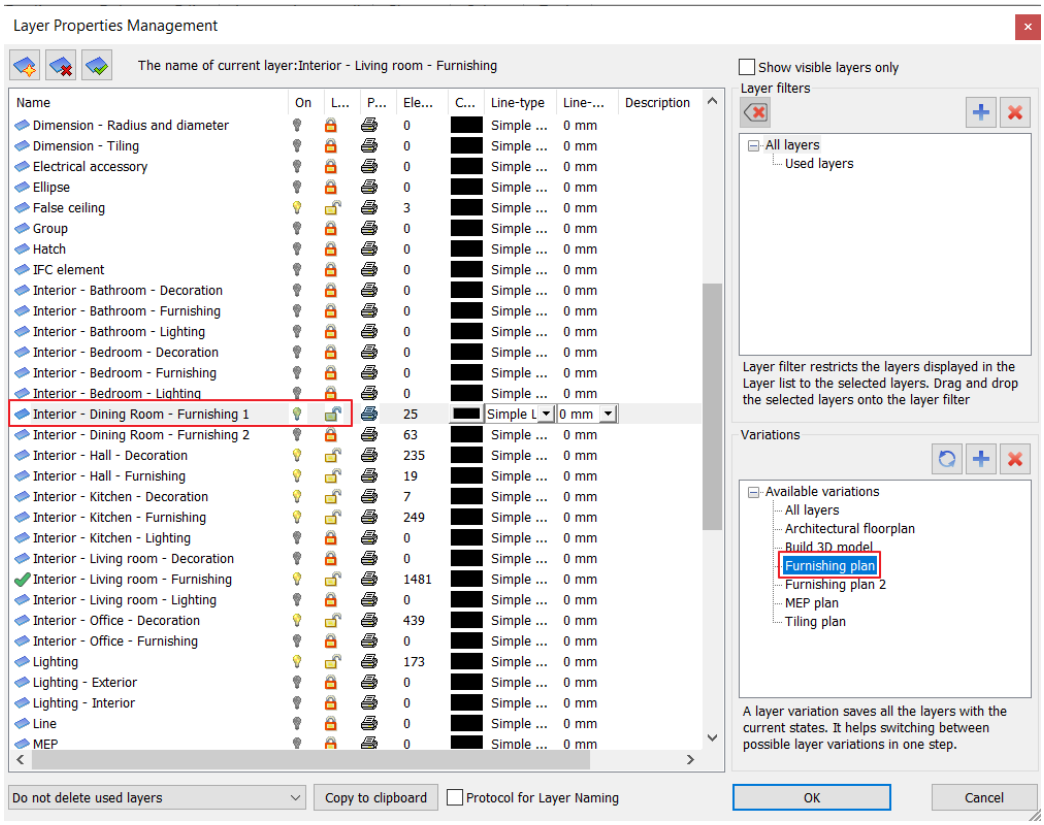
It is possible to display different layer variations in several 3D windows, making it easy to compare different versions of the design.

Make two versions for the dining area.

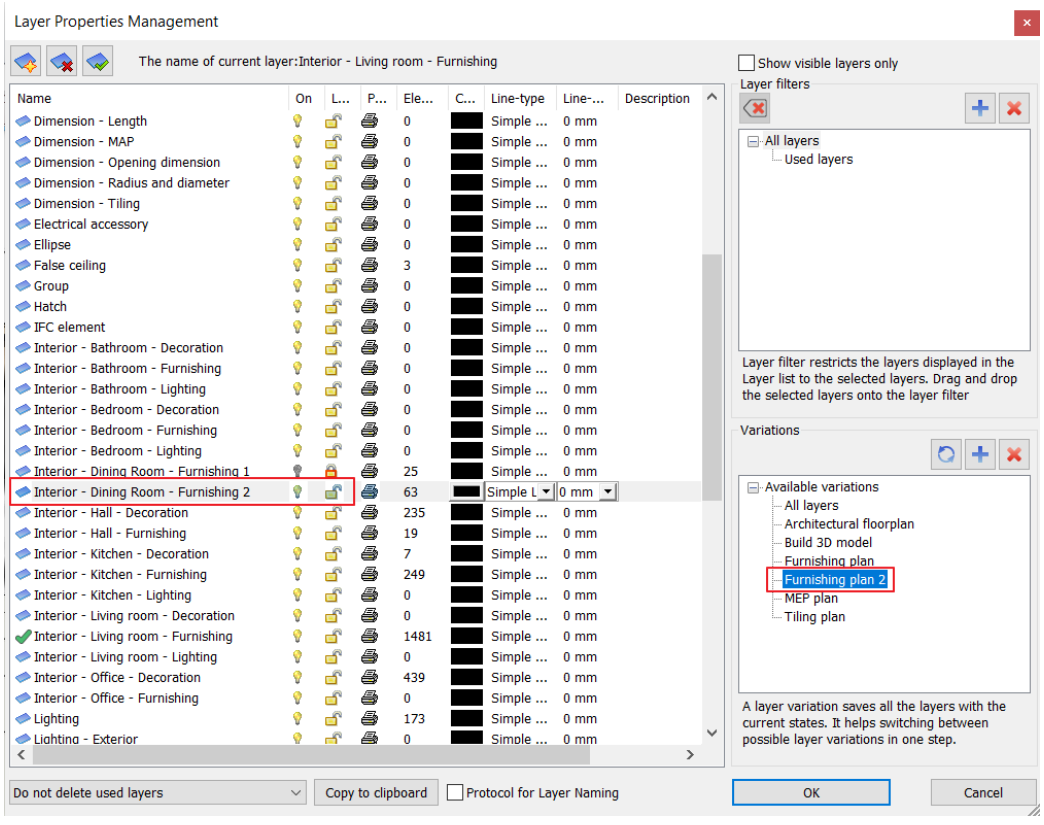
- Select the elements of the dining room, add a new layer called *Interior - Dining Room - Furnishing 1* and place the elements on it.
- Activate the floor plan, then use the Layer walk to turn this layer off.



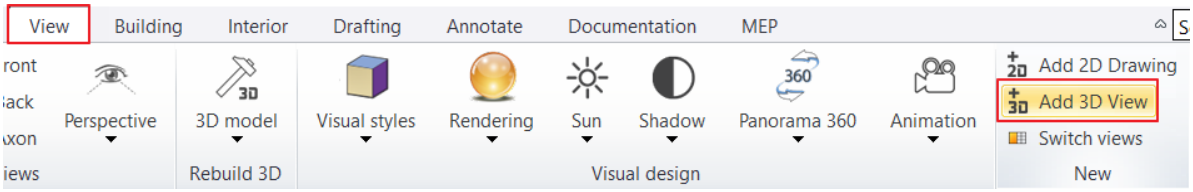
- Place any new objects in the space. In the sample project we downloaded elements from 3D Warehouse (Dining Set - Ninotzchka A. and 54781 Framed Picture Fontana - KARE).
- Add a new layer called *Interior - Dining Room - Furnishing 2* and place the new elements on the layer.
- In the layer manager, select the Furnishing Plan layer variation, switch on the *Interior - Dining Room - Furnishing 1* layer and update the layer variation.



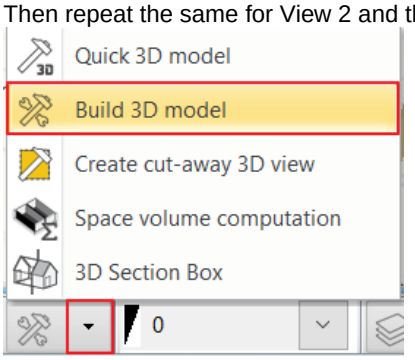
- By selecting the Furnishing plan variation, use the + sign to create the *Furnishing plan 2* layer variation. Turn off the *Interior - Dining - Furnishing 1* layer and turn on the *Interior - Dining - Furnishing 2* layer.

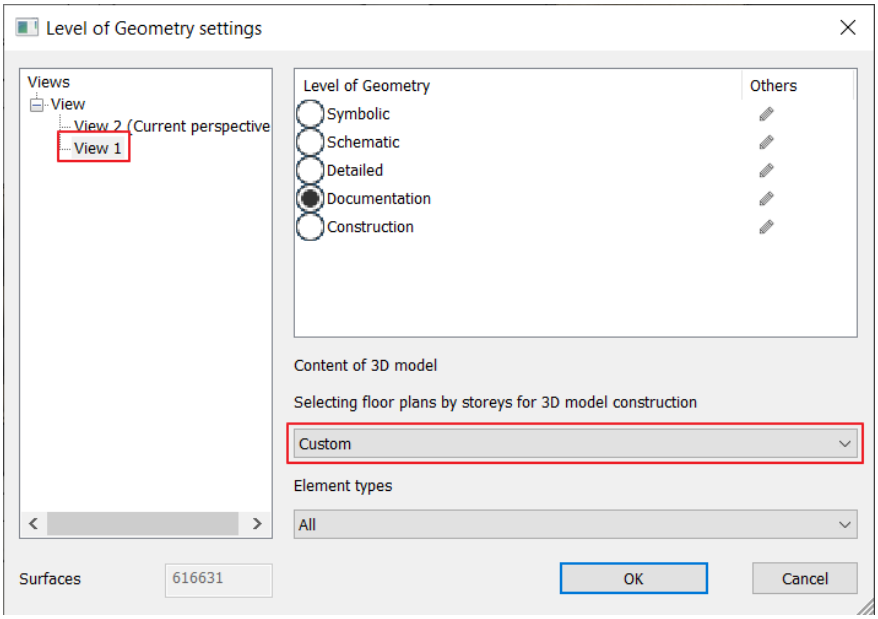


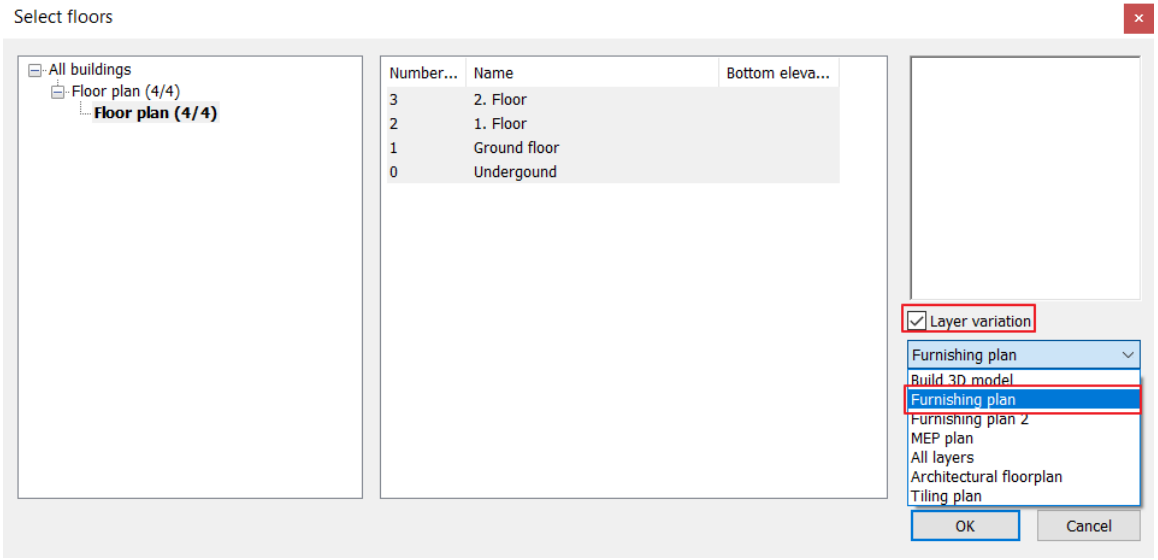
- Create a new 3D view in the View menu:



- Select the Build 3D model command, then in the pop-up window, first select View 1, then select the Furnishing plan layer variation under Custom option.
- Then repeat the same for View 2 and the Furnishing plan 2 layer variation.







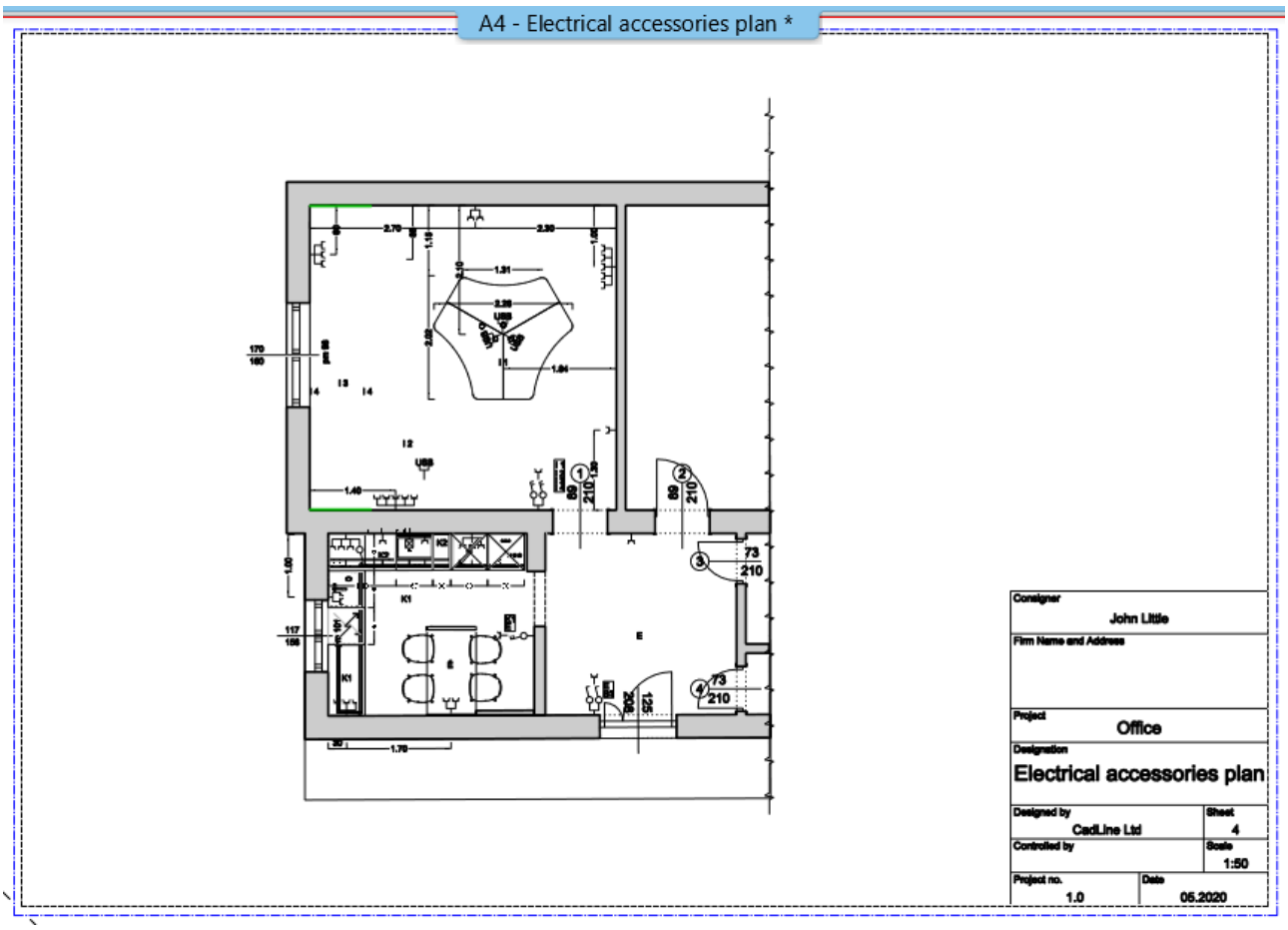
This allows you to display different layer variations side by side in 3D, so you can easily compare different versions of the design.

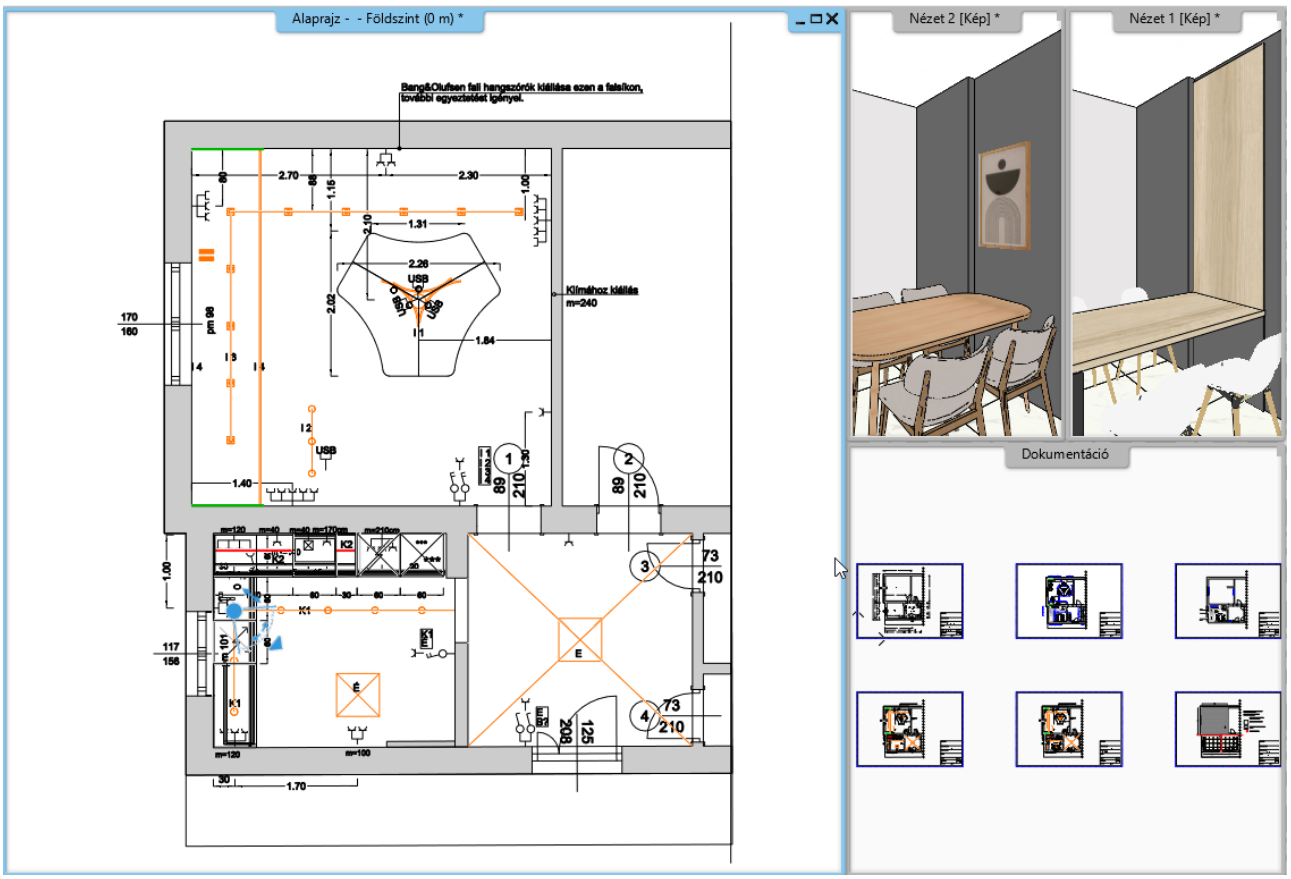
1.12. How to use layers on plot layout

Based on the layer variations, let's create one by one the following plot layouts:

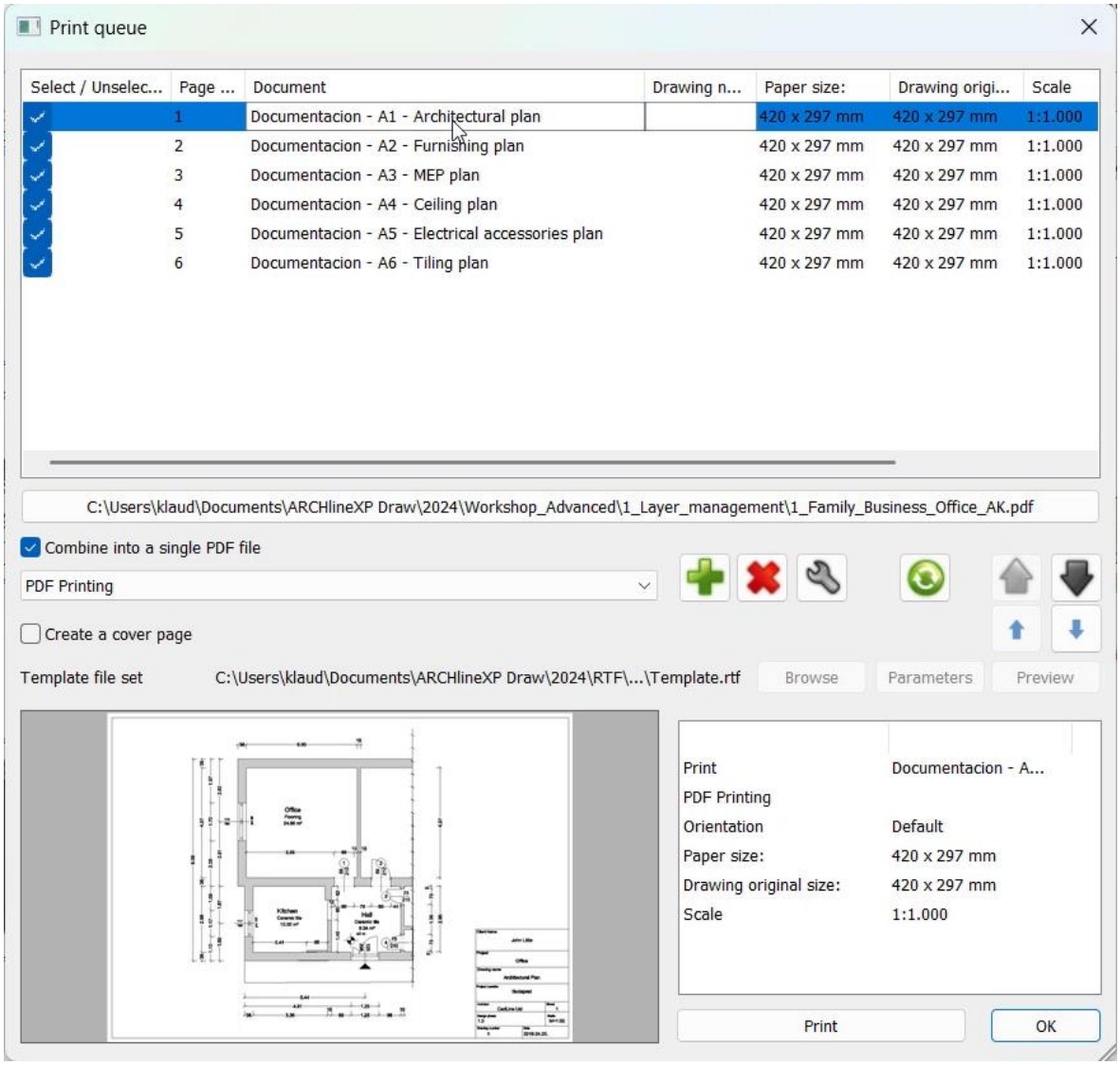
1. **Architectural floorplan**
2. **Furnishing plan**
3. **MEP plan**
4. **Suspended ceiling and lighting plan**
5. **Electrical accessories plan**
6. **Tiling plan**

For details on how to create a plot layout, see Preliminary Course – Tutorial - 5.7 Create plot layout.





Now using the Print Queue tool save these plot layouts under one PDF file.

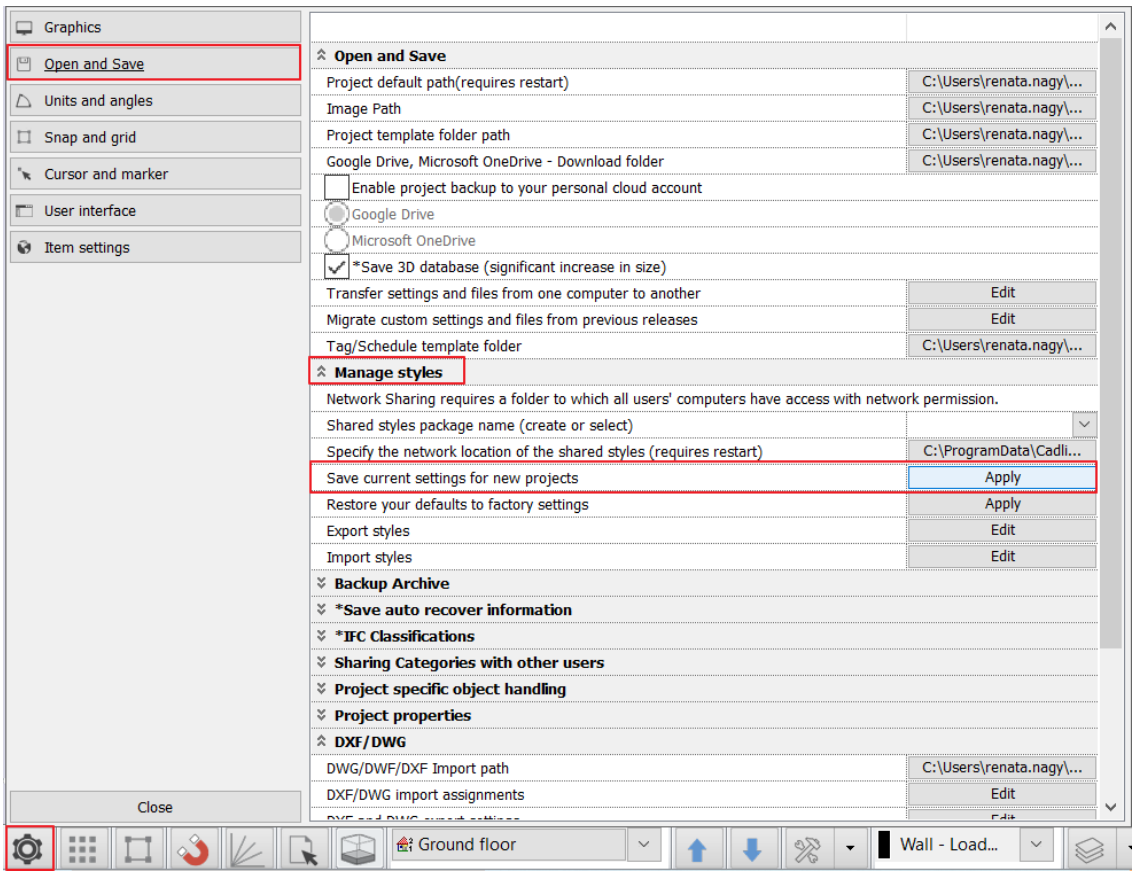


You may see elements on the floor plan, but some of these elements may not appear when printed.
The reason for this is that the printability of the layer is turned off.
When printing, the message warns you of this: "*Some layer has non-printable status. These layers will not be printed.*"
In this case, the printability of the layer of the element must be switched on in the layer manager on the floor plan, *if necessary*.

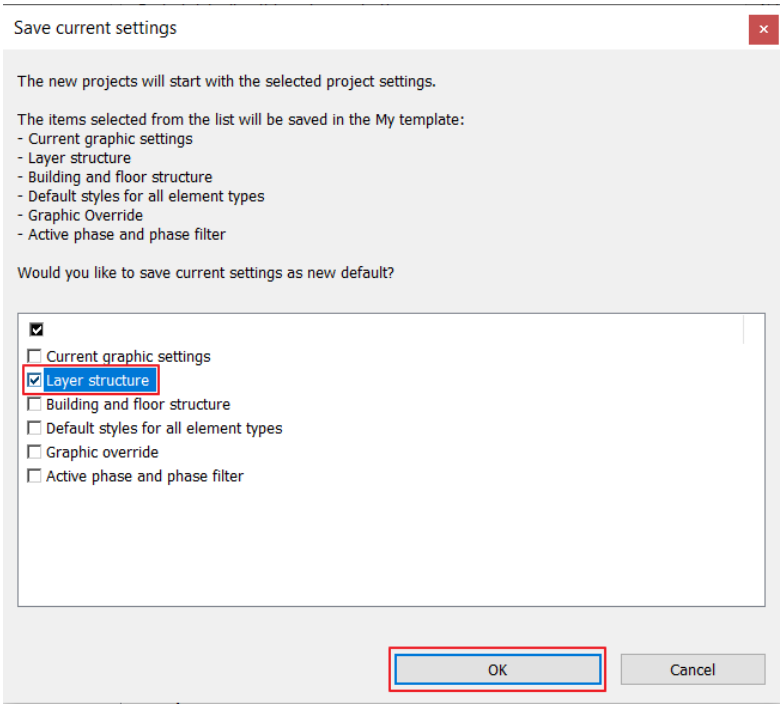
1.13. Changing default layer structure

A layer structure that has already been created in a project can be saved, made the default and used later in another, new project.

- Go to the floor plan view and open the Layer Manager. See what layers we have created; we want to create our own set of layers from this.
- Default the layers as follows: in the *Settings - Open and Save - Manage styles* menu, select *Save current settings for new projects* option.



- In the pop-up window, select only the *Layer structure*, then close the Settings after pressing OK. The program will then warn you that the settings will only take effect after you restart the program. Restart the program by pressing the Yes button.

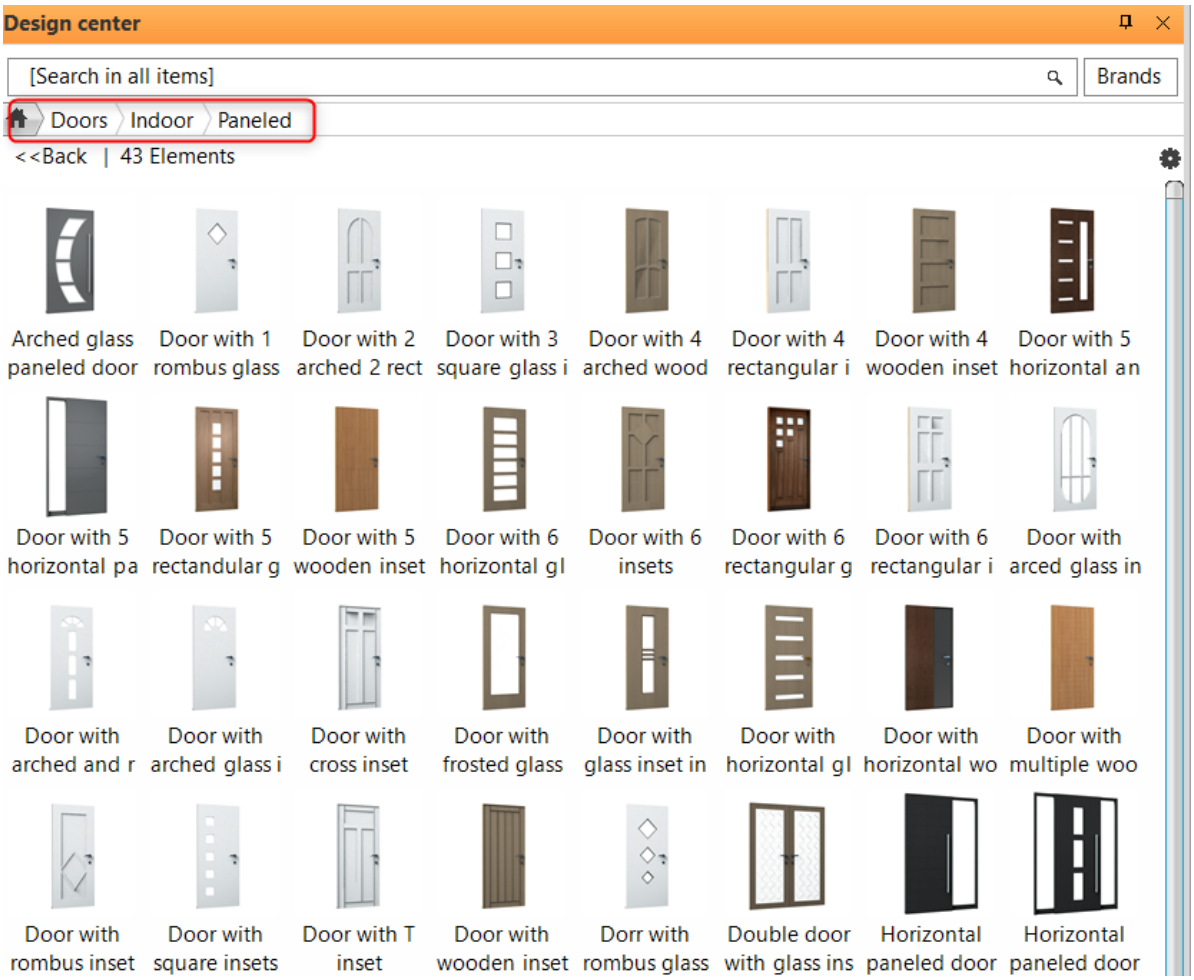


- After opening the new project, opening the Layer Manager, you can see that the layers you saved before are there. So, from now on, every time you open a new project, these layers will be in the layer manager, so you can work with your own layers without having to recreate them. However, it is important to note that only one of these settings can be saved in the program.

Workshop 2: Creating doors and windows

2. Workshop: Creating doors and windows

A wide variety of openings can be found in the Design Center under the Door and Window category, and these can be used in projects.



It might happen that the library does not contain a door/window type you need for the project. In this case, you have to design a new one.

There are several ways to create a new door or window:

1. Use an image to set the material of the door panel.
2. Convert a downloaded object to an opening
3. Using Door/Window Wizard

The disadvantage of using the 2nd method is that doors and windows cannot be opened in 3D.

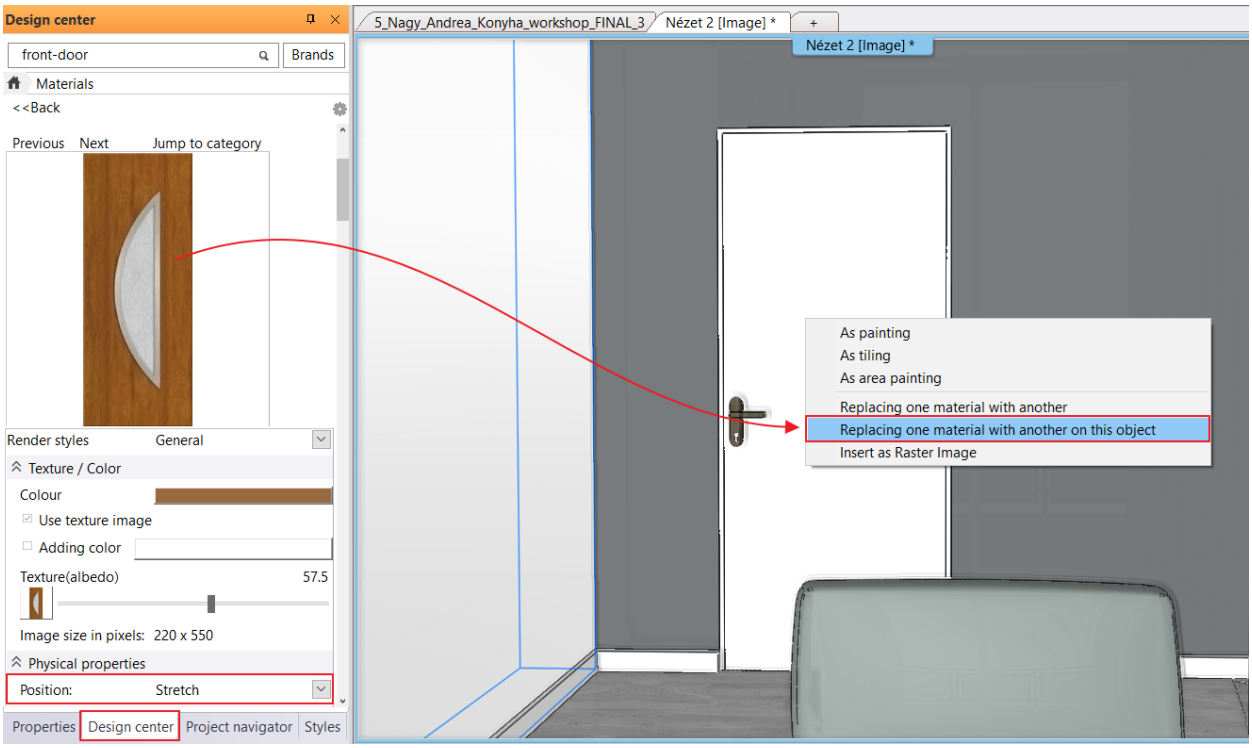
- Open your browser and watch the following video tutorial: https://www.archlinexp.com/enrollments/courses/advanced-course/creating-doors-and-windows-/1
- Open *…\Documents\ARCHlineXP Draw\2024\Workshop_Advanced\2_Create_Openings\1_Reception_room_doors_start.pro* file.

2.1. Use an image to set the material of the door panel

In the following example, we will use an image of a door panel.

Import the image of "*Front_door_panel_2.png*" from *…\Documents\ARCHlineXP Draw\2024\Workshop_Advanced\2_Create_Openings\Image* folder.

- Now save it as a material by using the *Local menu – Save - Save as material* command. Under properties, set the position to *Stretch*.
- Now drag and drop the new material on the door panel.



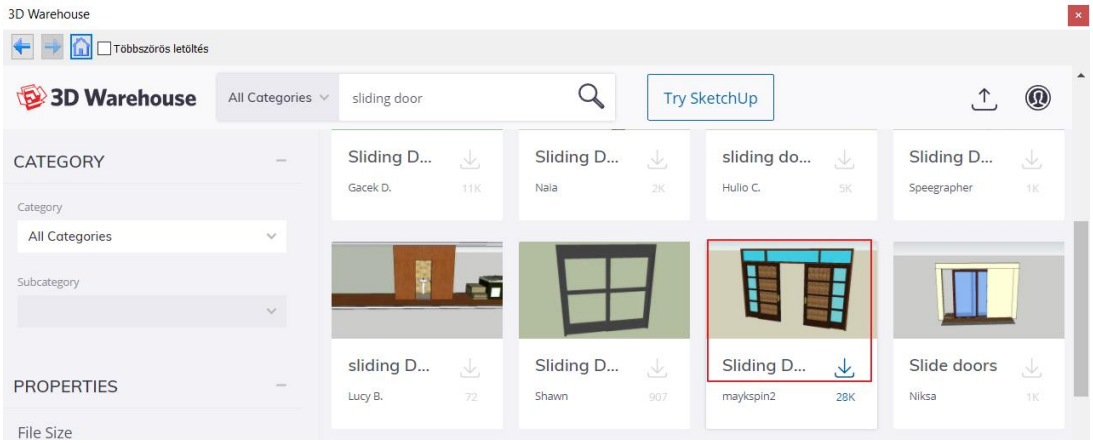
To ensure that the material is correctly represented on both sides of the door (internal/external frame), it is recommended to make a mirror image of the texture and the material.
The internal and external leaf frame material can be accessed by clicking on the door in the Properties local menu, or the body (i.e., case) material can be set here, e.g., to Beech-tree.

Material	Value
External frame material	Default material
Internal frame material	Default material
External leaf frame material	front-door-panel_1
Internal leaf frame material	front-door-panel_2

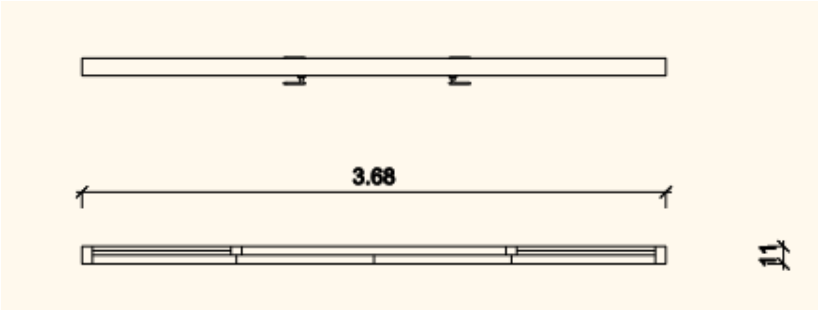
The final result:

2.2. Convert a downloaded object to door/window

Now we are going to download a Sliding door from the Warehouse and convert it to a door.

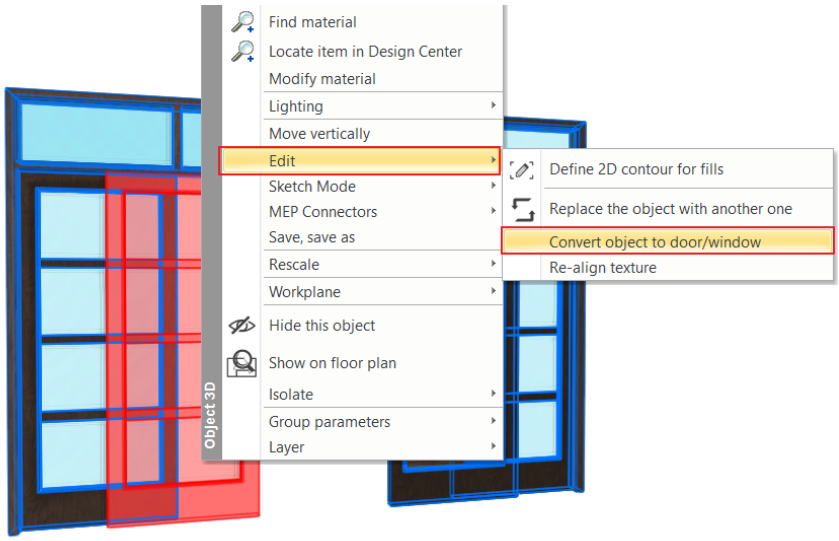


- You can also import the Double_Sliding_Door.skp file from *Documents\ARCHlineXP Draw\2024\Workshop_Advanced \2_Create_Openeings\SKP* folder.
- Place it on the floorplan as an object.
- First, you have to create the related 2D symbol and then save it as a group. Since the top view of the door is now the floor plan symbol, you should create a corresponding 2D symbol and save it as a group using *Drafting menu - 2D Group - Create group in library*.

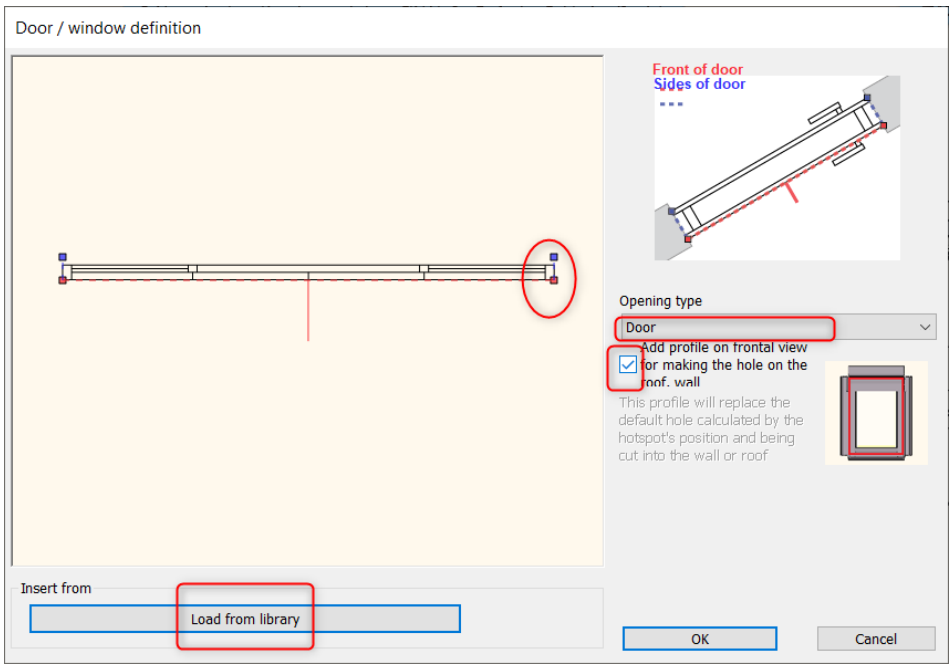


Now convert the object to door:

- Click on the *Local menu / Edit object / Convert object to door/window* command.

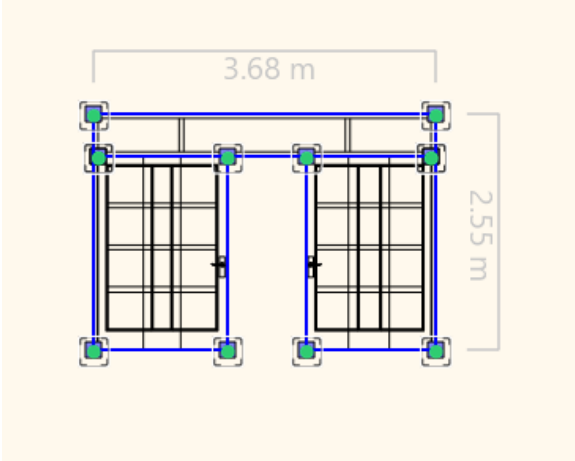


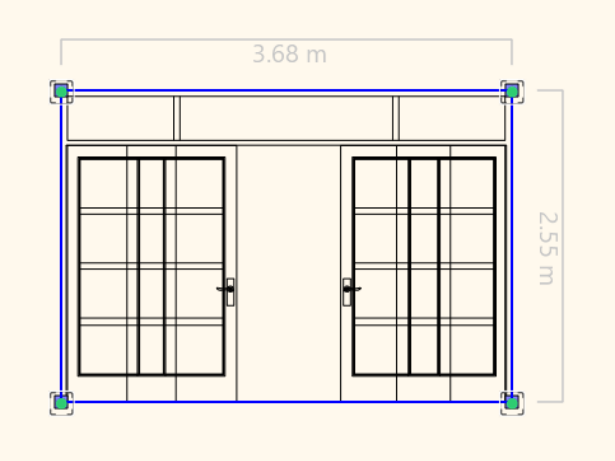
- Set the Opening type to Door.
- Now select from the library the previously created and saved 2D symbol.



Make sure that the blue and red reference points are placed precisely on 2D symbol's the endpoints.
Activate "*Add profile on frontal view for making the hole on the roof or wall"* option.

Click on OK, and now place the frontal profile of the door on the floorplan.
Delete the unnecessary nodes to get a rectangle profile.

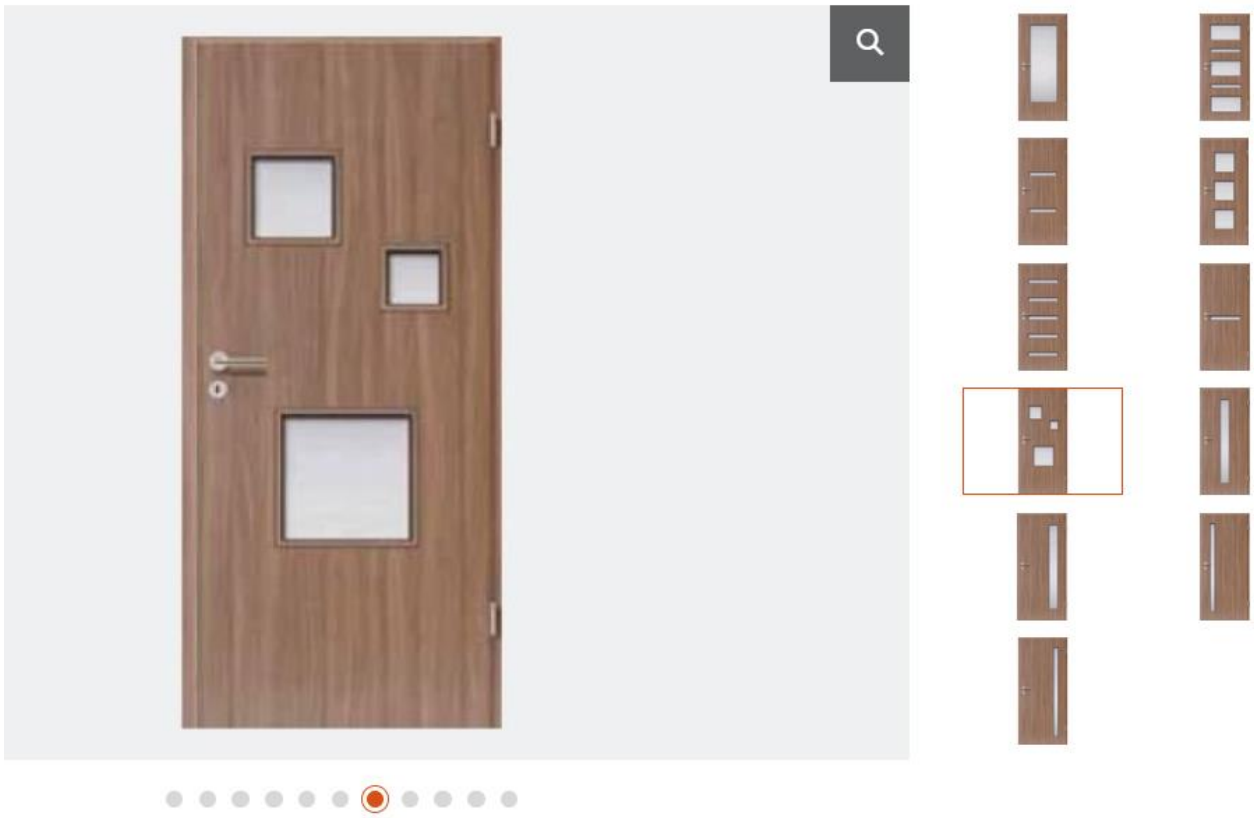




- Now place the new sliding on the wall and change its material:

2.3. Door/Window wizard

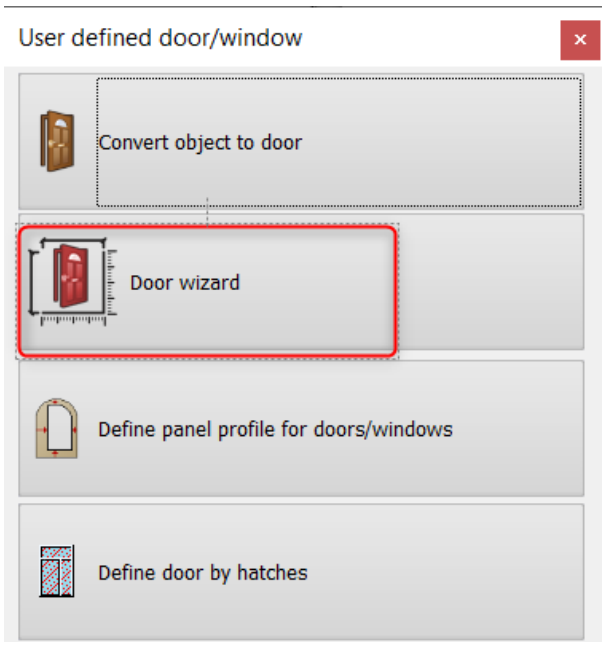
The following door samples were chosen from the doors on https://www.jafholz.hu/kinalat/ajtok:



2.3.1. Door with insert on the right side

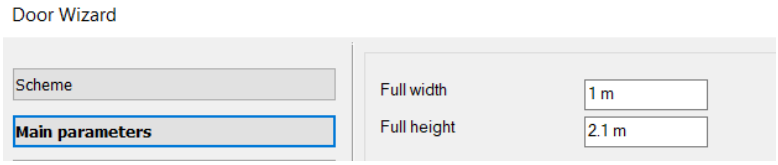
We will create the door is shown below with the Door wizard; this will be the basic type we modify further.

- On the Ribbon menu, select *Building - Door - New Door - Door Wizard* command.
  Now Door Wizard dialog window appears, here modify the following parameters:

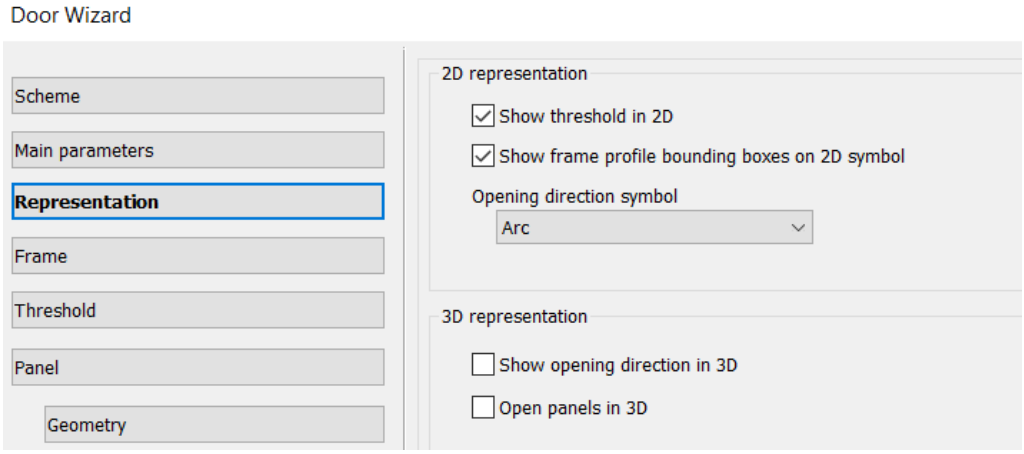


In the Door Wizard, move from panel to panel to enter the values shown in the image.

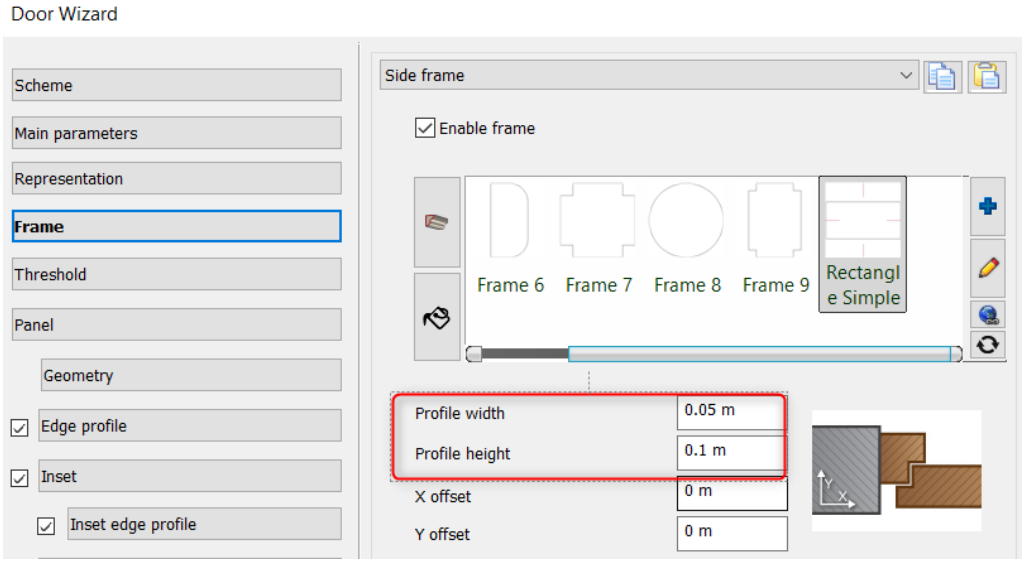
Main Parameters



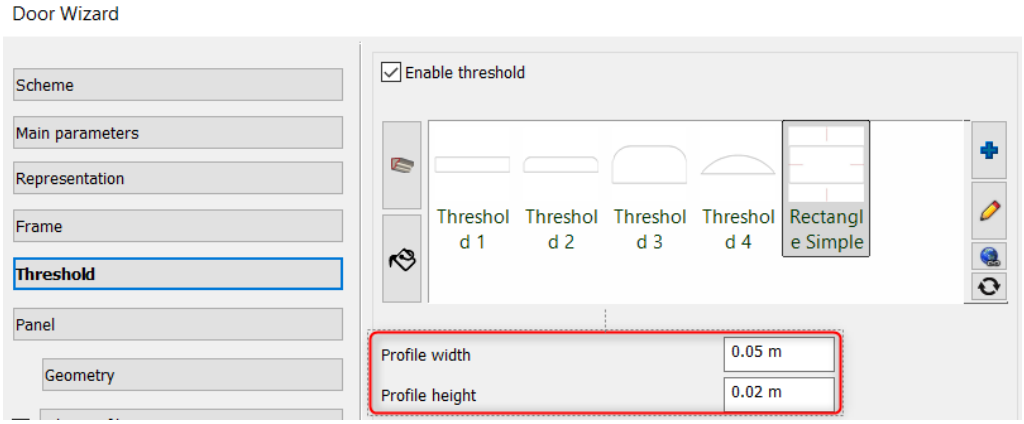
Representation



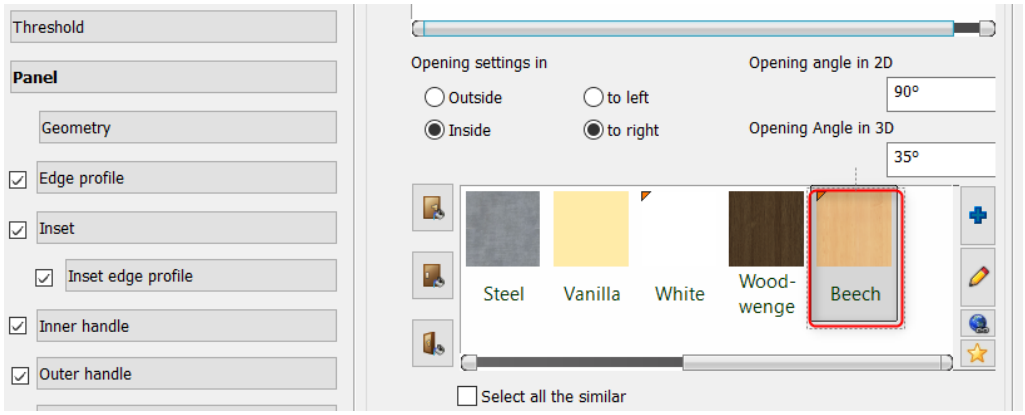
Frame



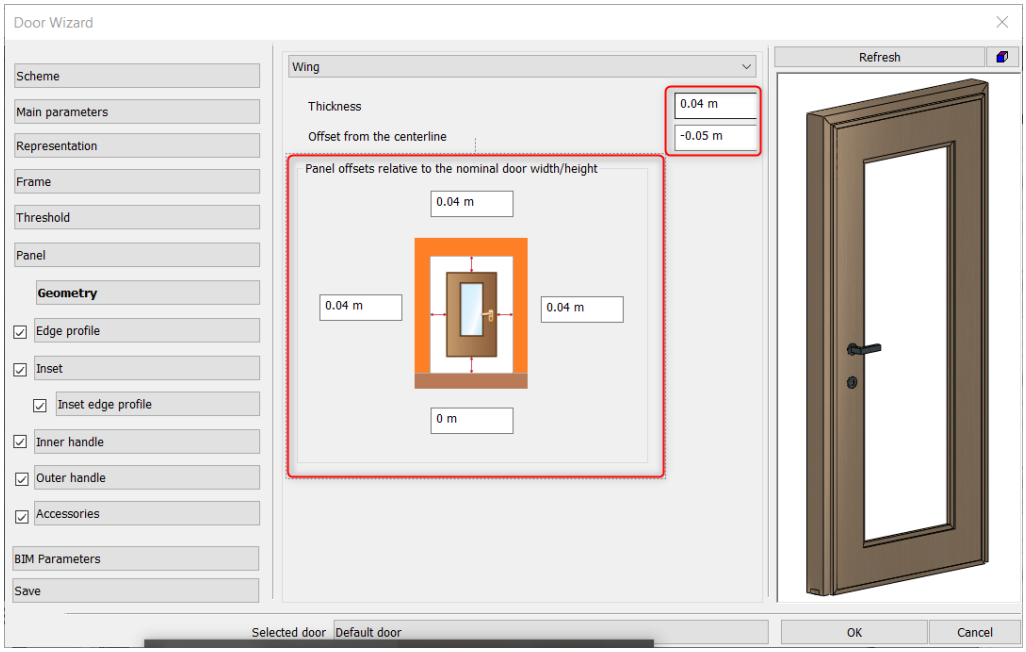
Threshold



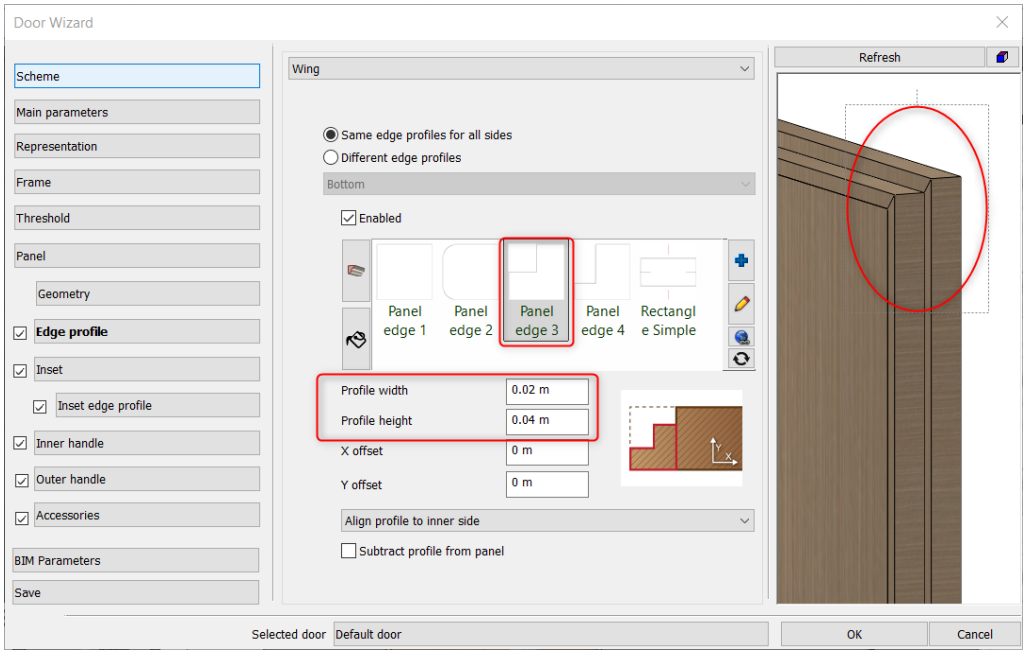
Panel



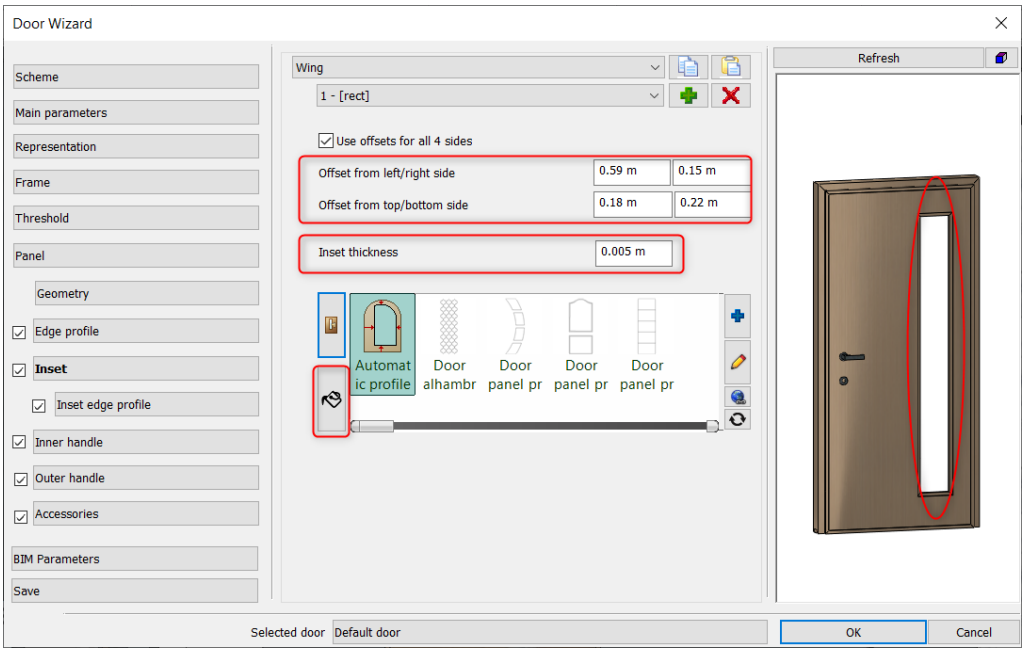
Panel - Geometry

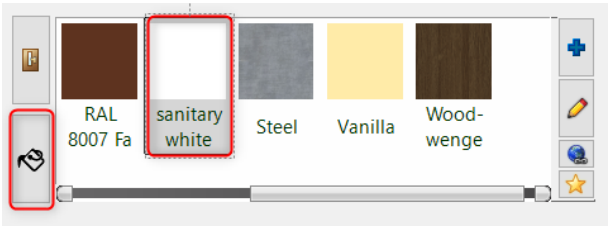


Panel - Edge profile

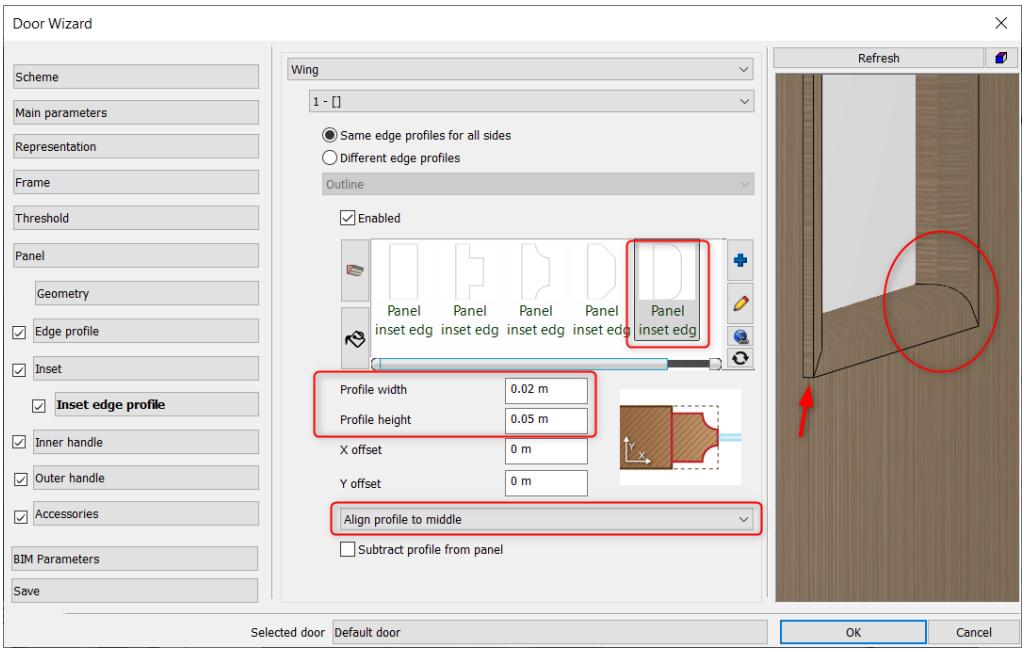


Inset

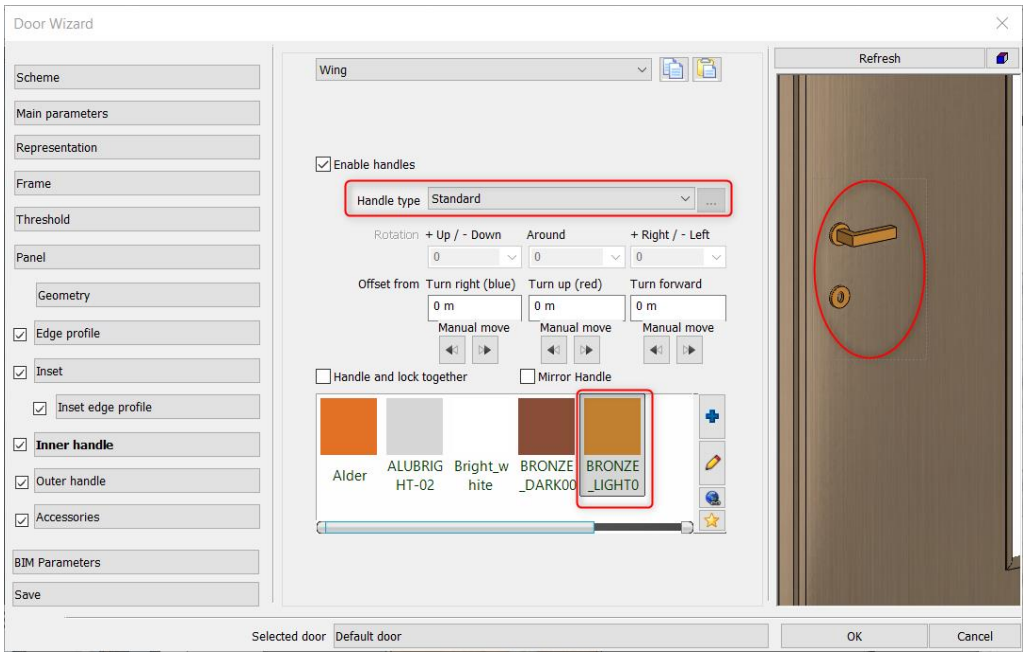




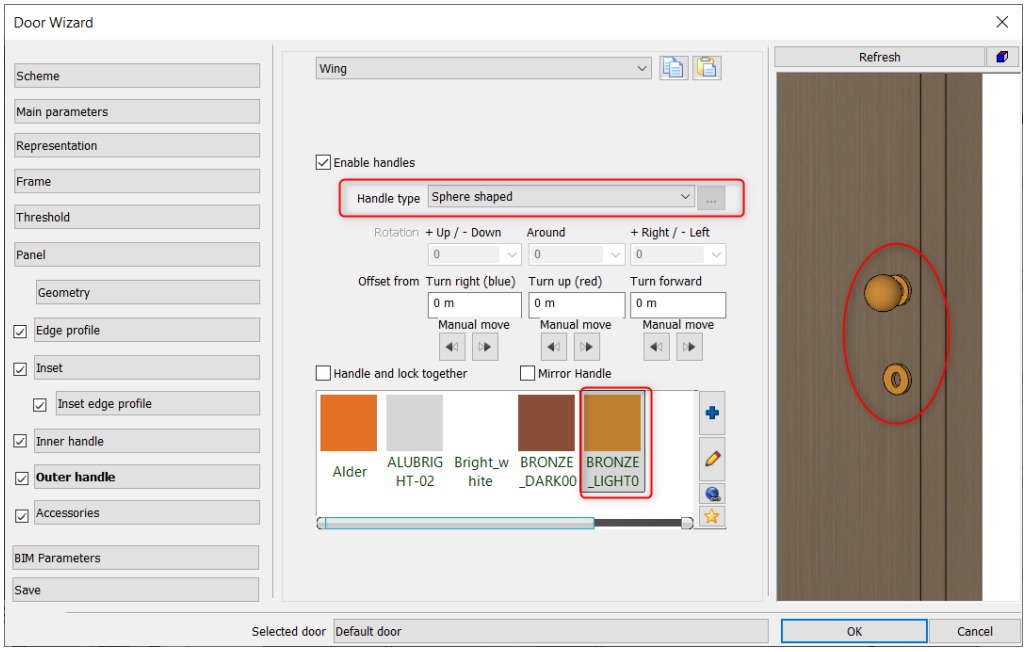
Panel - Inset edge profile



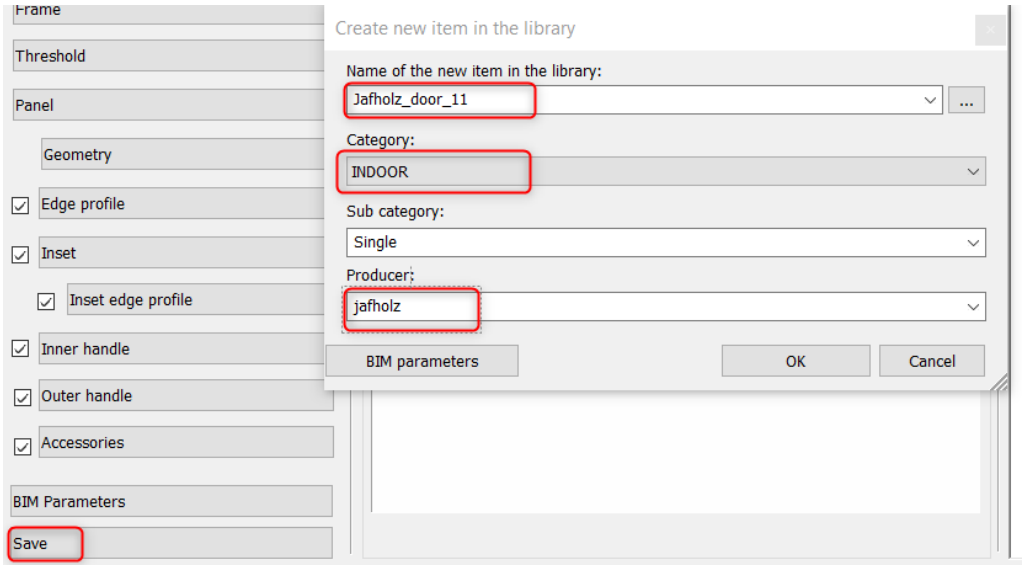
Inner handle



Outer handle



Save



- Save the door as Jafholz_door_11.
- Finally, place it on the wall.

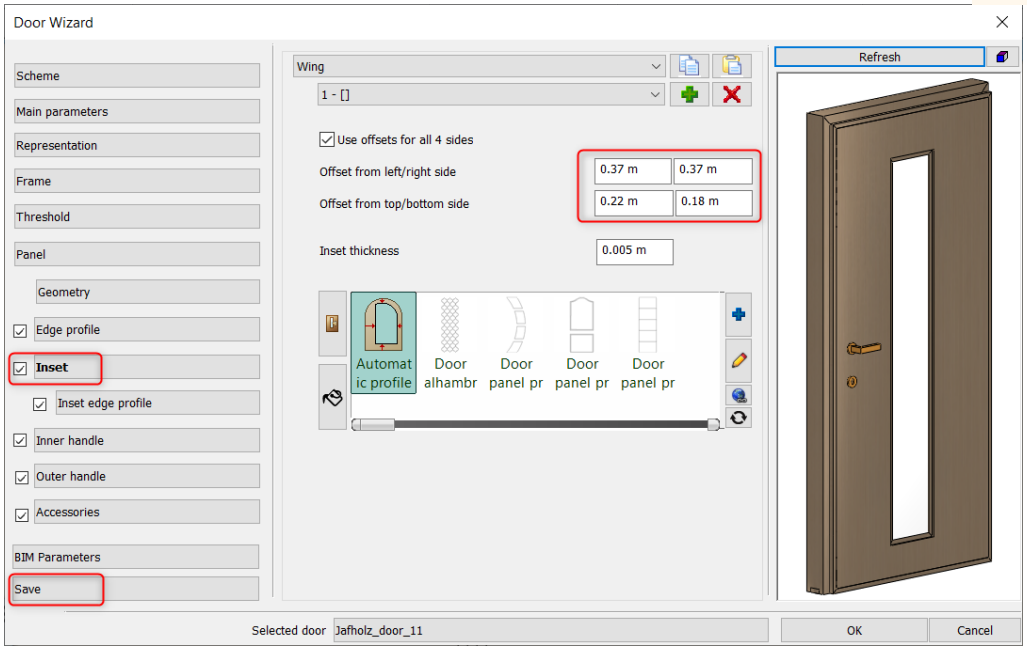
2.3.2. Door with an inset on the middle

Now we are going to modify the previously created door.

Open Door Wizard.
Select *Jafholz_door_11* from the library.

Inset

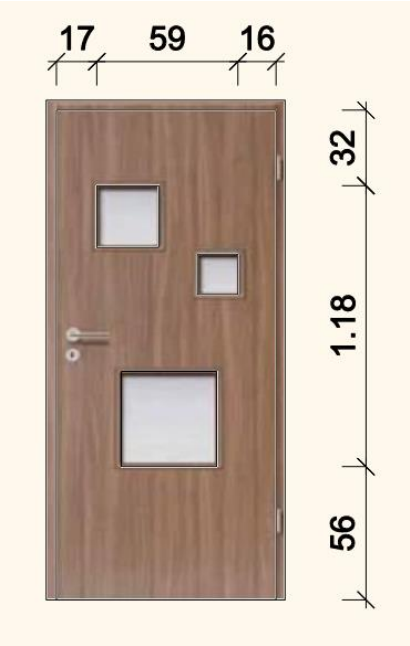
Modify the position of the inset.

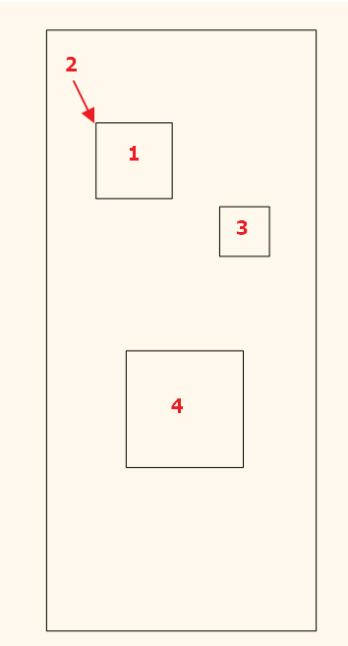


- Finally, save the door under a new name: Jafholz_door_12.

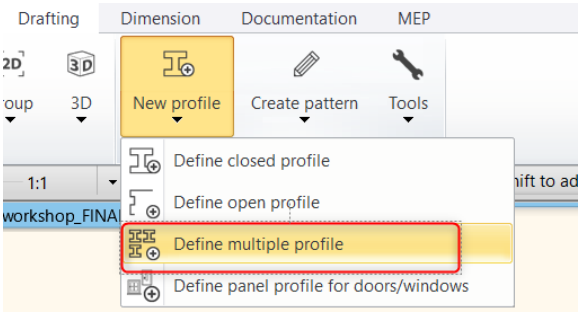
2.3.3. Door with three different insets

There are insets on the next door in different sizes. These are defined by multiple profiles that we first we create and save.





- On the Ribbon menu, select *Drafting - New profile - Define multiple profile* command.
- Define the first square by using the “Clicking on inner point of area” command. (1)
- Then, set its reference point. (2)
- Define the profiles of the remaining squares. Finally, press Enter.
- Now save the profile under a new name.

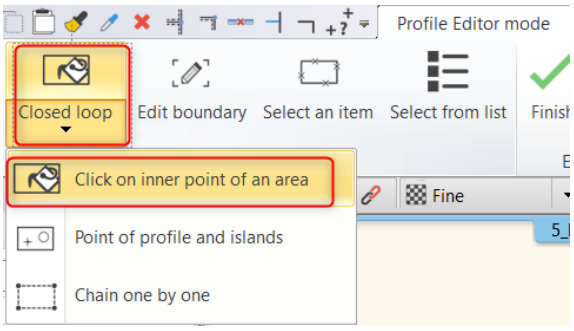


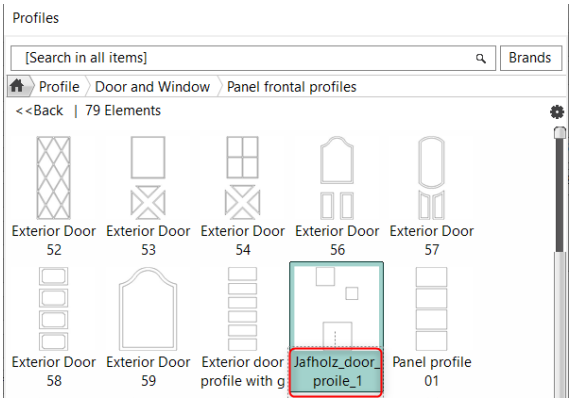
Open the first door we created and modify the inset.

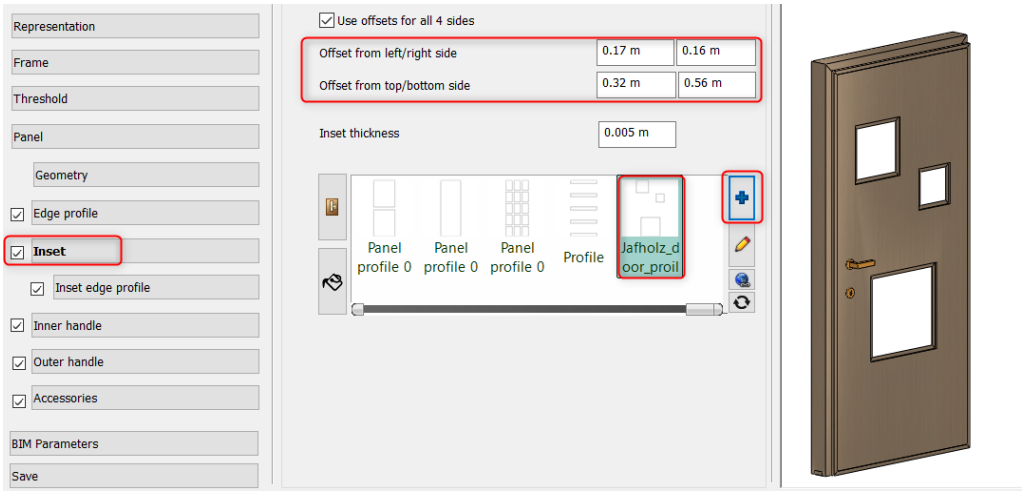
- Open Door Wizard.
- Select *Jafholz_door_11*.

Inset

- Select the new inset profile from the library.
- The modify the position of the profile:
  Offset from left: 0,17 m,
  offset from right: 0,16 m,
  offset from top 0,32 m,
  and offset from bottom side: 0,56 m.



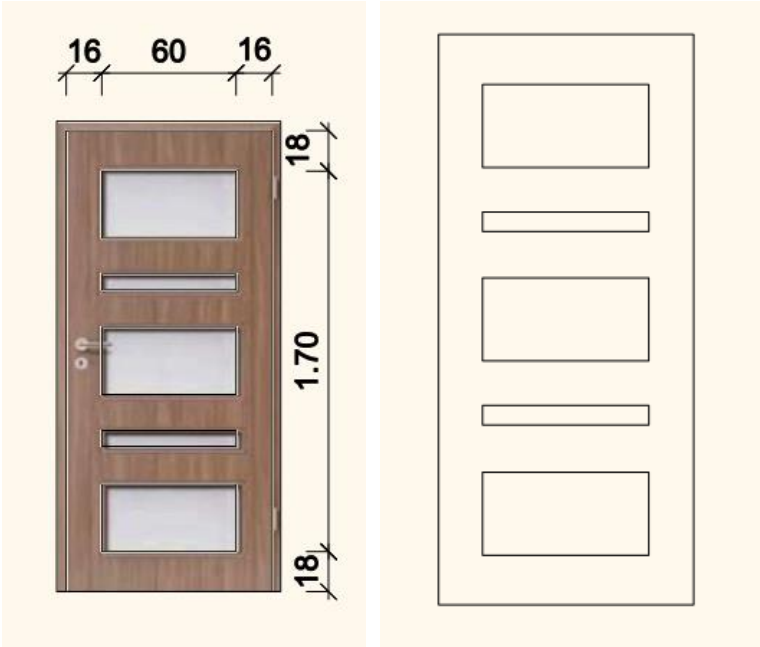




- *Finally, save the door under a new name: Jafholz_door_13.*

2.3.4. Door with five different insets

This door has five rectangle insets. We create the door inset profile by defining the multiple profile. Let's create a new profile and save it.

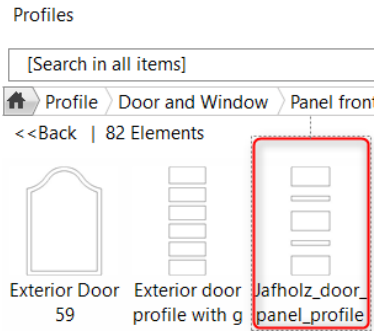


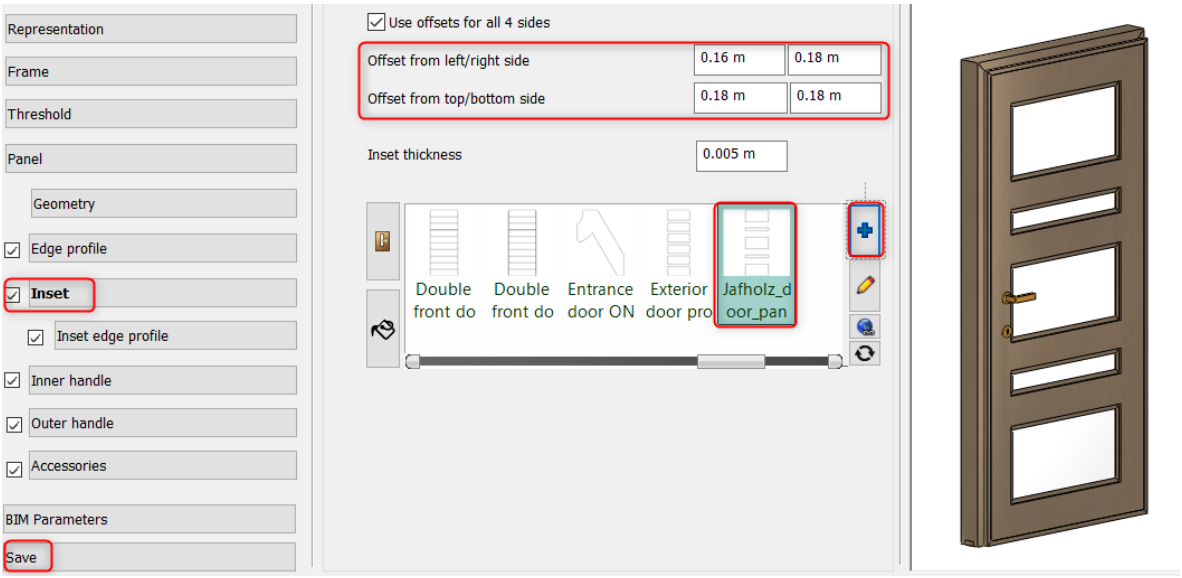
Open the previously created door and modify the inset.

- Open Door Wizard.

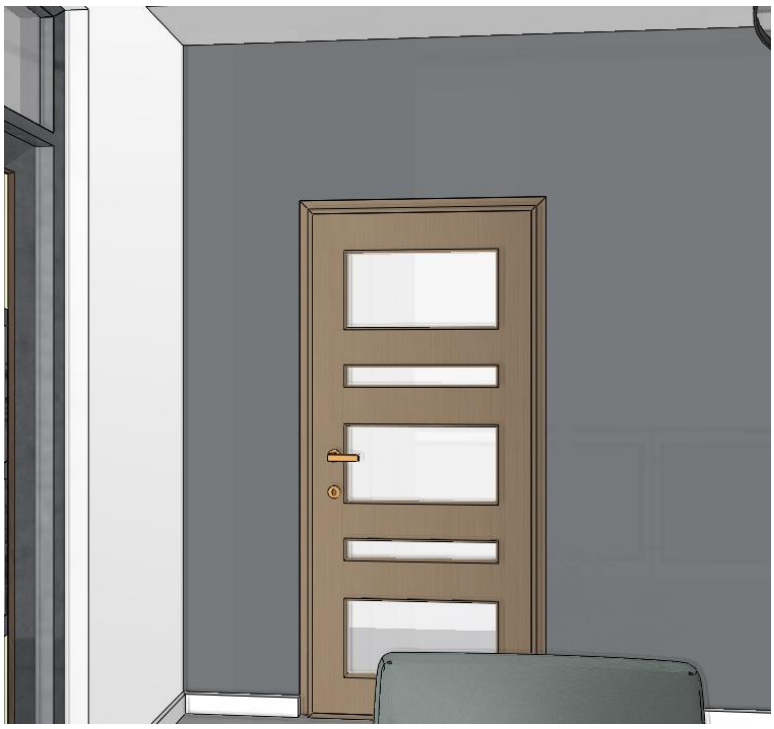
Inset

- Select the new profile from the library.
- Change the position.
  The offset from left side: 0,16m, offset from right: 0,16m, offset from top: 0,18m and offset from bottom: 0,18m.





- *Finally save the door under new name: Jafholz_door_14*



2.3.5. Door with decorative strips

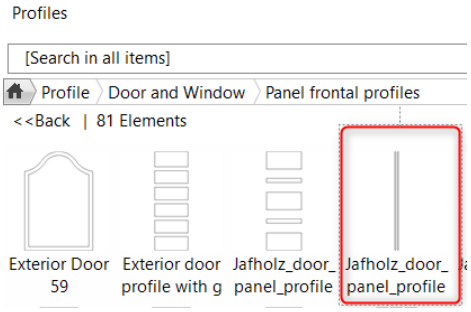
This door has two decorative strips. We use the previous method here as well. We create the door inset profile by defining the multiple profile. Let's create a profile and save it.

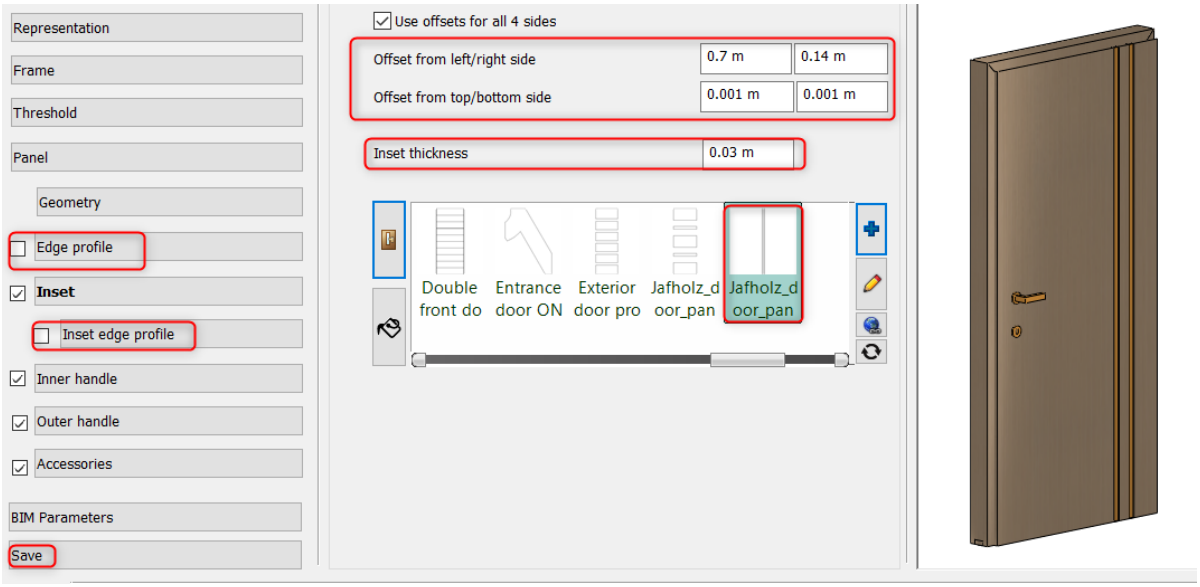
Use the previously created door and modify the inset properties.

- Open Door Wizard.

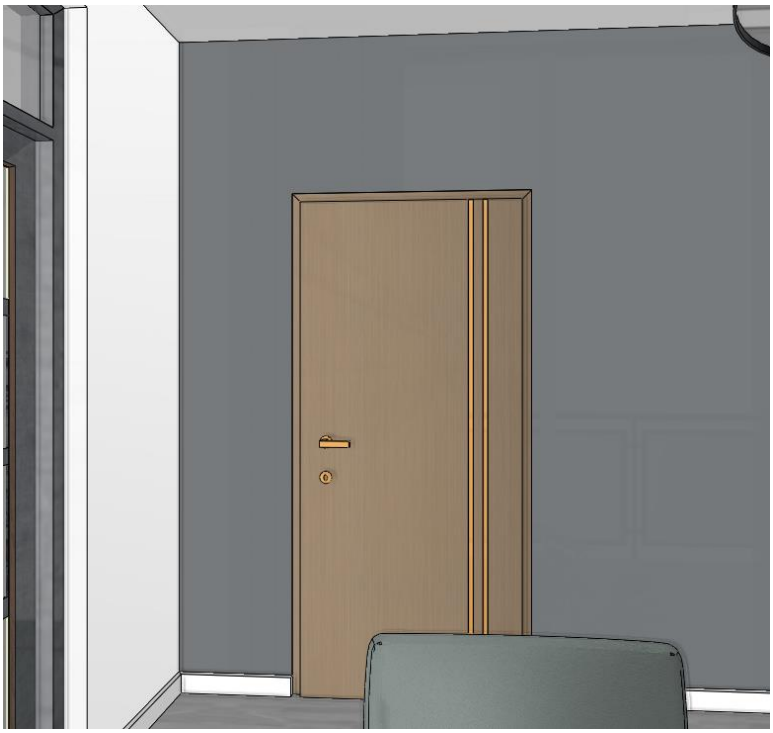
Inset

- Select the new profile from the library.
- Set the new position: Offset from left: 0,7 m; Offset from right: 0,14 m; Offset from top 0,001 m and Offset from bottom side: 0,001 m.
- The inset thickness is 0,03 m.
- Set the material to Bronze.
- Switch off the Edge profile and Inset edge profile.





- *Finally, save the door under a new name: Jafholz_door_15*



2.3.6. Define panel profile for doors/windows

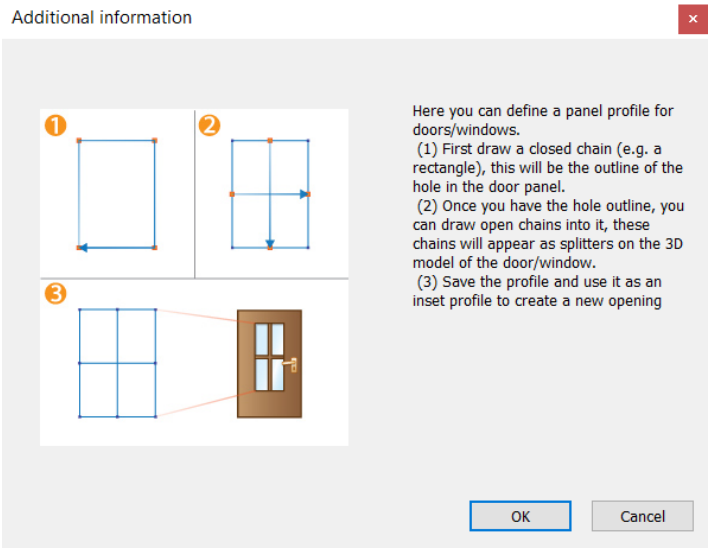
Draw the inset you want to create. In the example, we will create a glass insert with thin separating strips between them.

The door or window inset profile command is reached in two places:

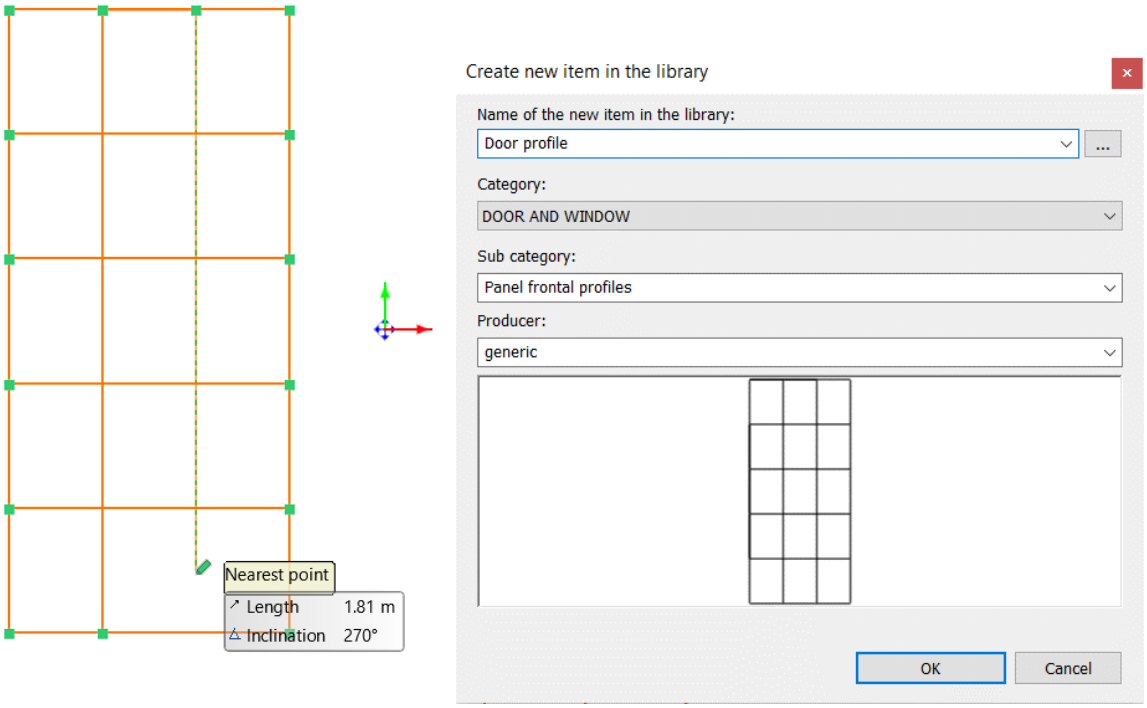
❖ *Drafting menu – New profile – Define panel profile for doors/windows*

❖ *Building menu – Door – New door – Define panel profile for doors/windows*

After selecting the command, the program will pop up a window with the sequence of steps. In the previous examples we have created both closed and open profiles, but not yet one that contains one closed and several open profiles.



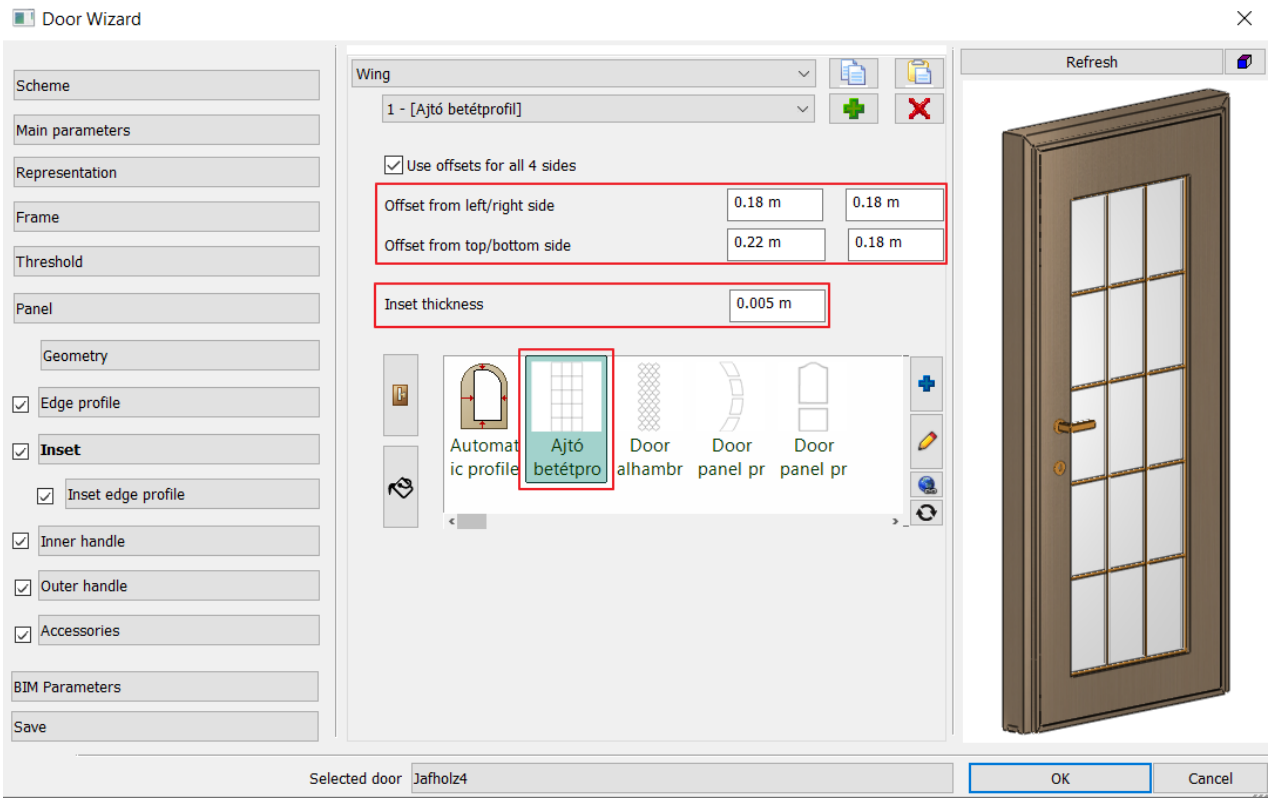
- Use the rectangle command to draw around the contour. This will be the closed profile and into it we will create open profiles using the lines. As soon as you have finished drawing a line, press Enter and continue drawing.
- When finished, press Enter again and save it as a library item.

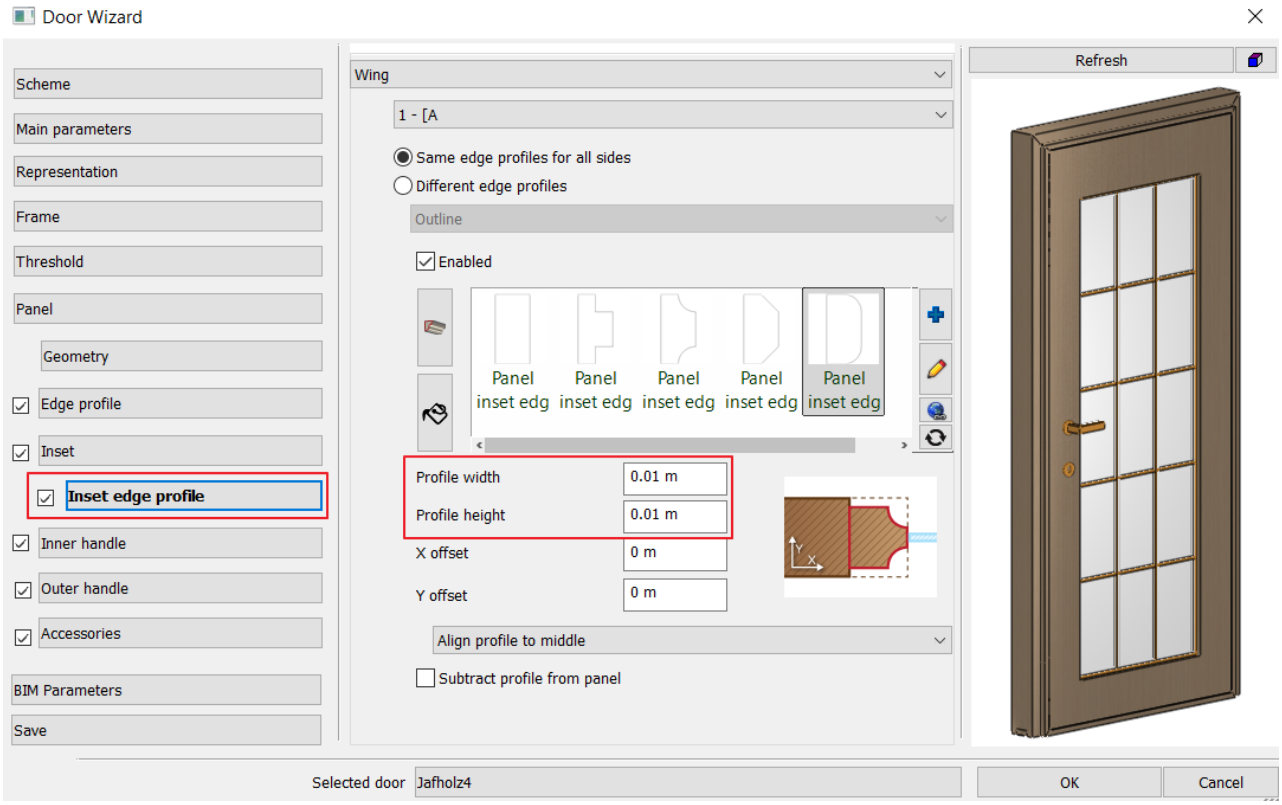


As with the previous ones, we start from the existing door and modify the insert.
Open the Door Wizard and set the following:

Inset

- Select the panel profile from the profile directory.
- Enter the values for the profile location: 0.18, 0.18, and 0.22, 0.18 m
- Inset thickness: 0.005 m
- Switch the panel edge profile off and the inset edge profile on



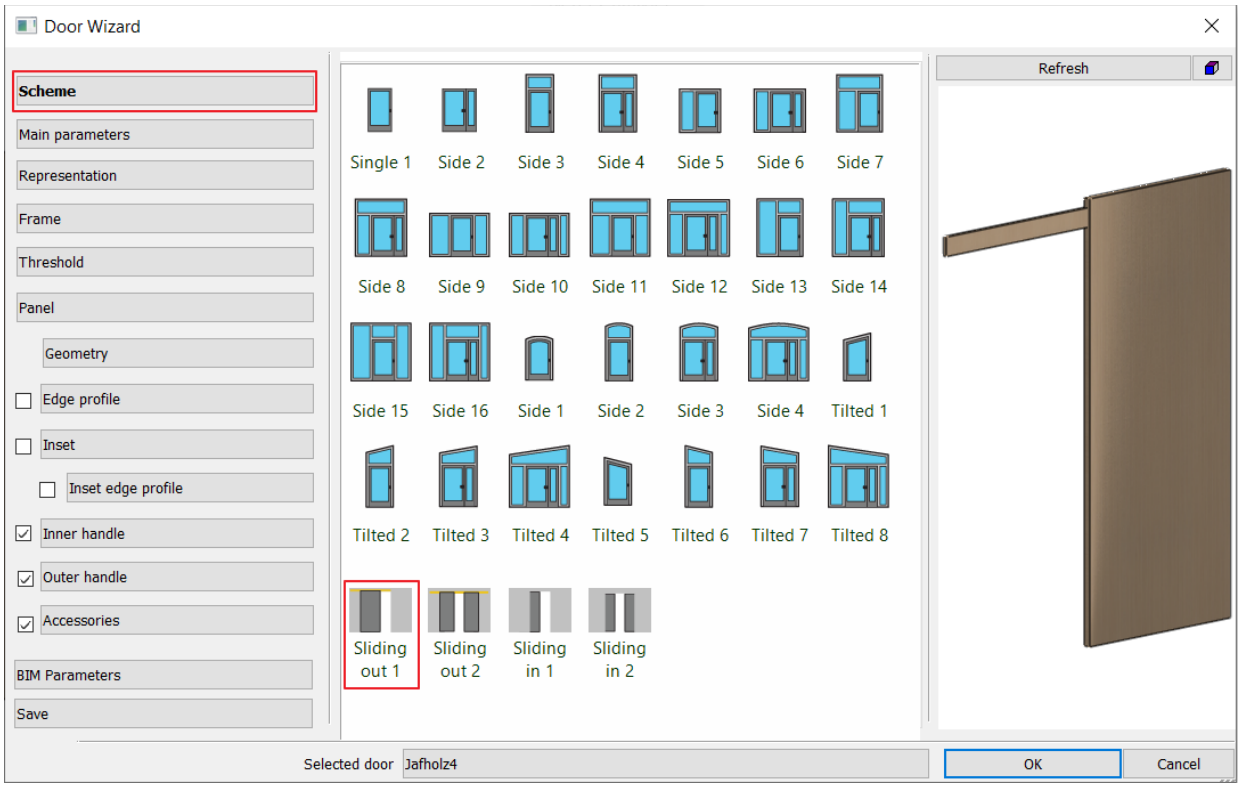


- Finally, save the new door: *Jafholz door 16*

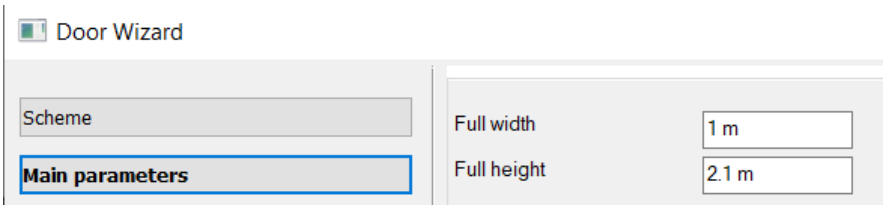
2.3.1. Making a sliding door

Here again, we start from the previous door. Open the Door Wizard in the usual way, then choose the *Sliding out 1* door from the Schemes.

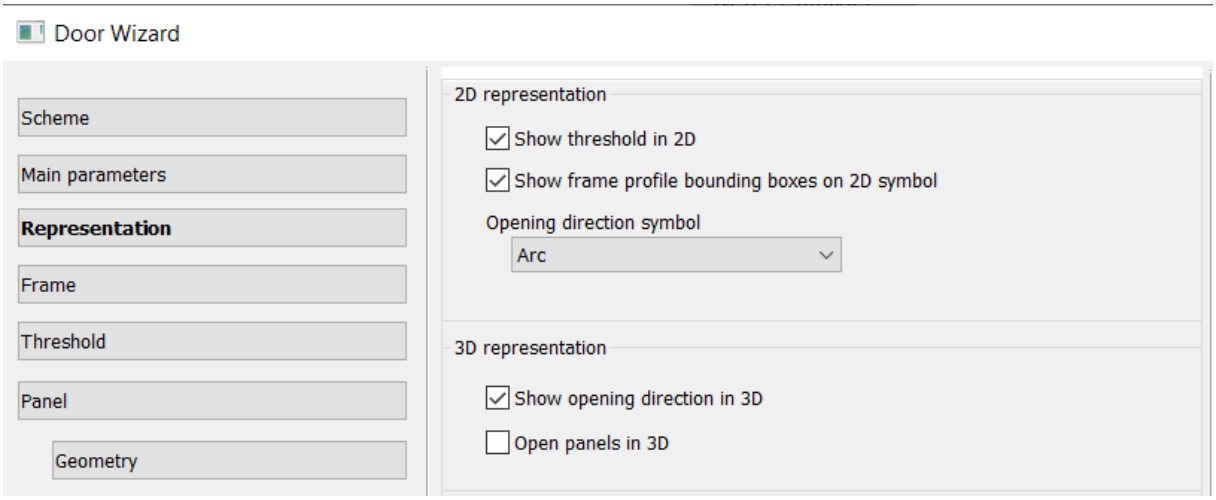
Scheme



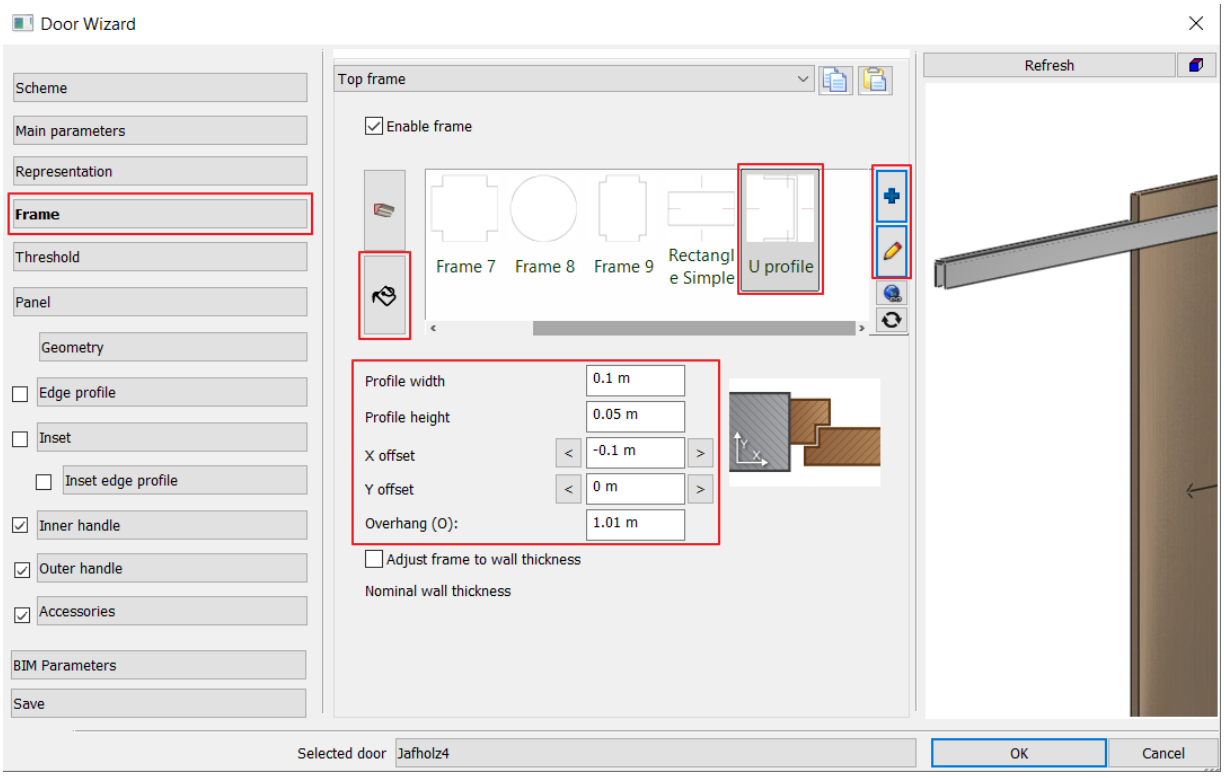
Main parameters



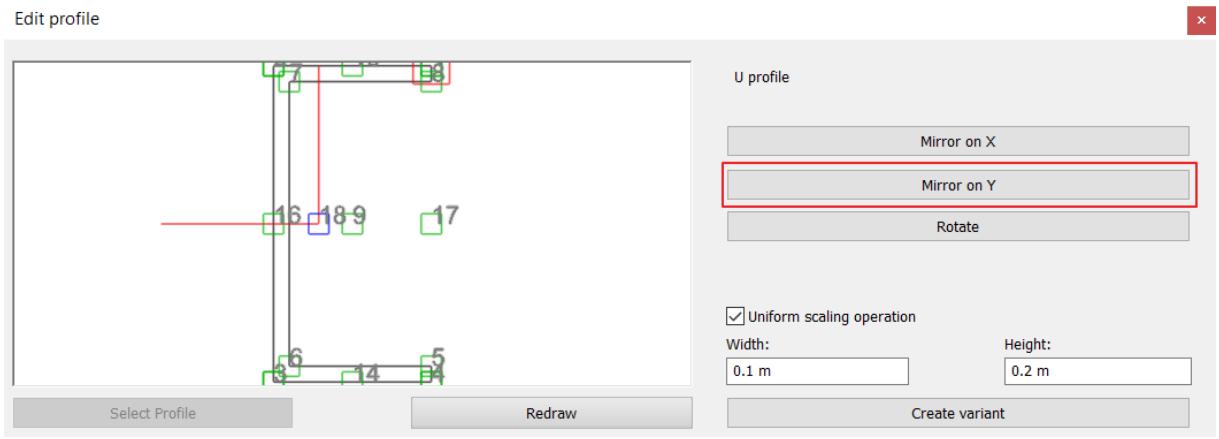
Representation



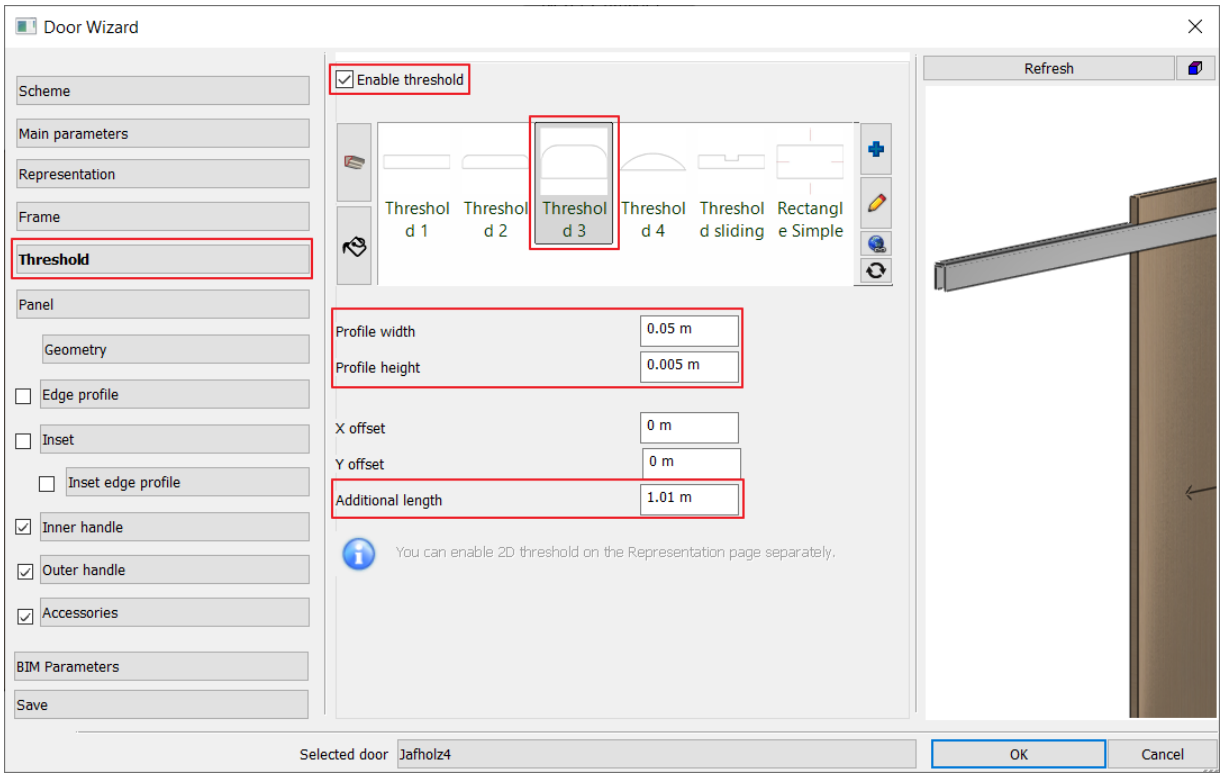
Frame



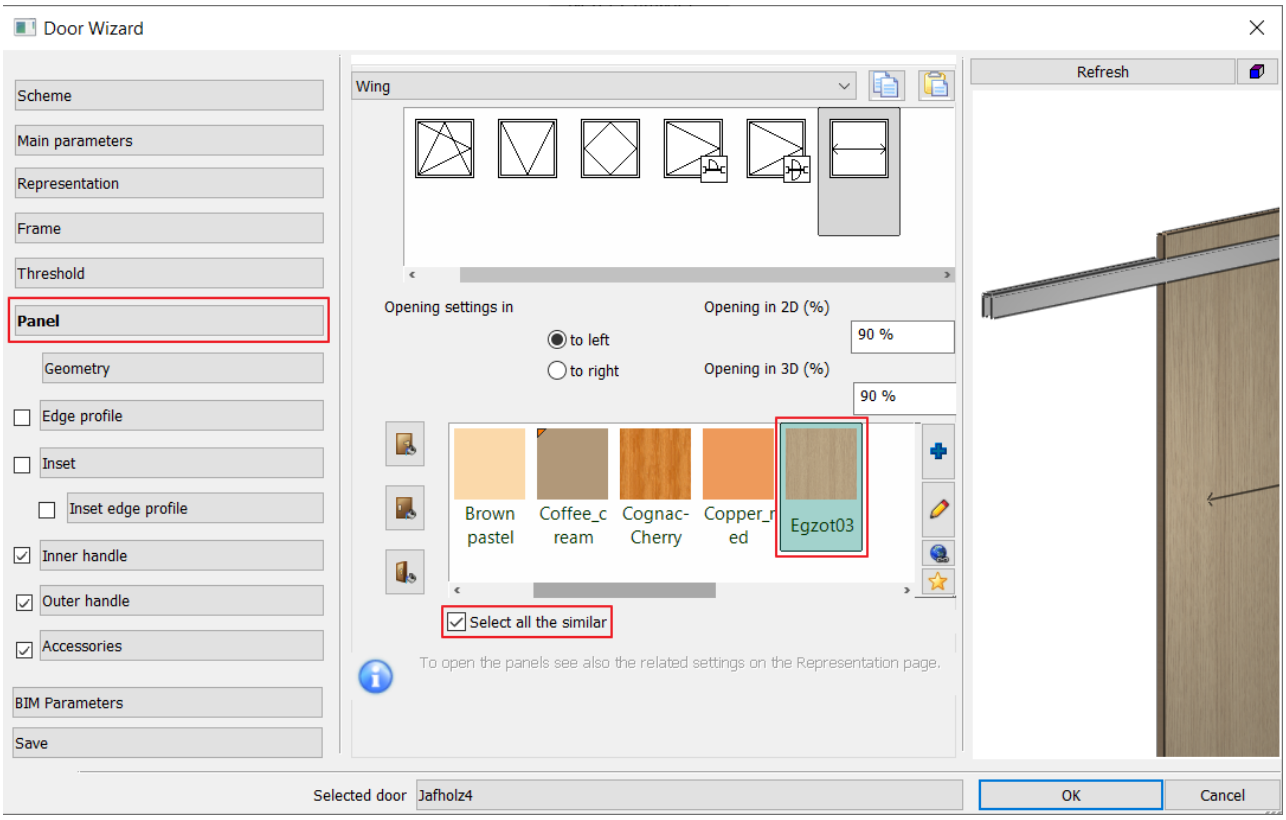
- Click on the edit button to mirror the U profile along the Y axis and specify Bright Aluminum as the material:


Edit profile
U profile
Mirror on X
Mirror on Y
Rotate
Uniform scaling operation
Width:
0.1 m
Height:
0.2 m
Select Profile
Redraw
Create variant

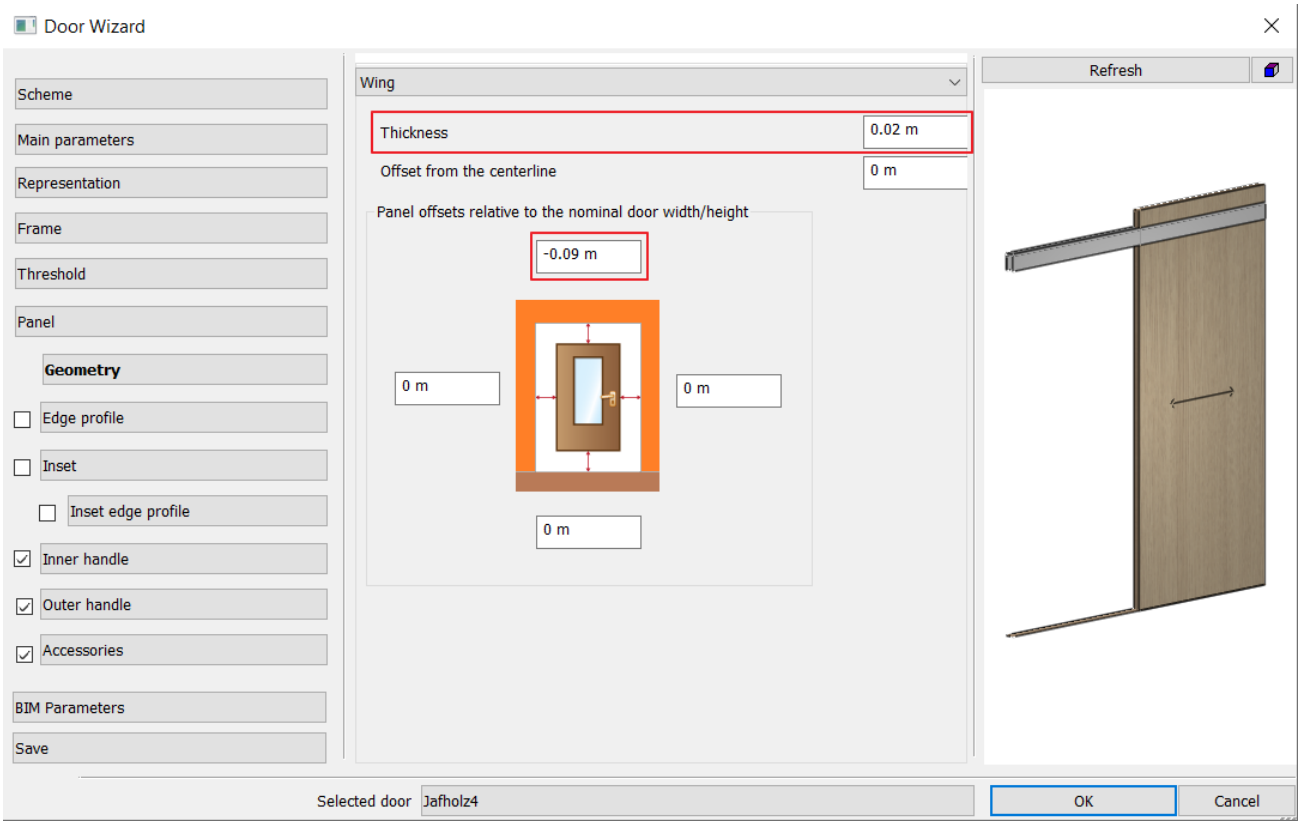
Threshold


Door Wizard
Scheme
Main parameters
Representation
Frame
Threshold
Panel
Geometry
Edge profile
Inset
Inset edge profile
Inner handle
Outer handle
Accessories
BIM Parameters
Save
Enable threshold
Threshold 1
Threshold 2
Threshold 3
Threshold 4
Threshold sliding
Rectangle Simple
Profile width
0.05 m
Profile height
0.005 m
X offset
0 m
Y offset
0 m
Additional length
1.01 m
You can enable 2D threshold on the Representation page separately.
Refresh
Selected door
Jafholz4
OK
Cancel

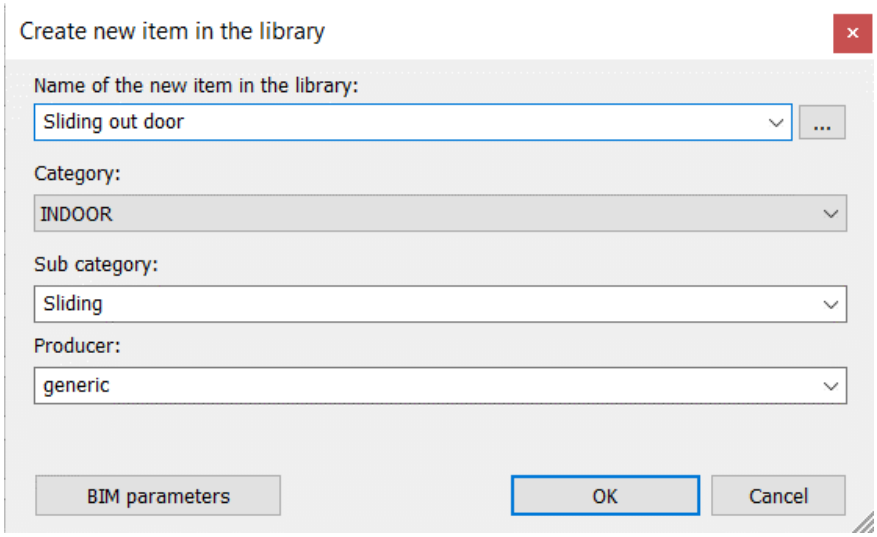
Panel



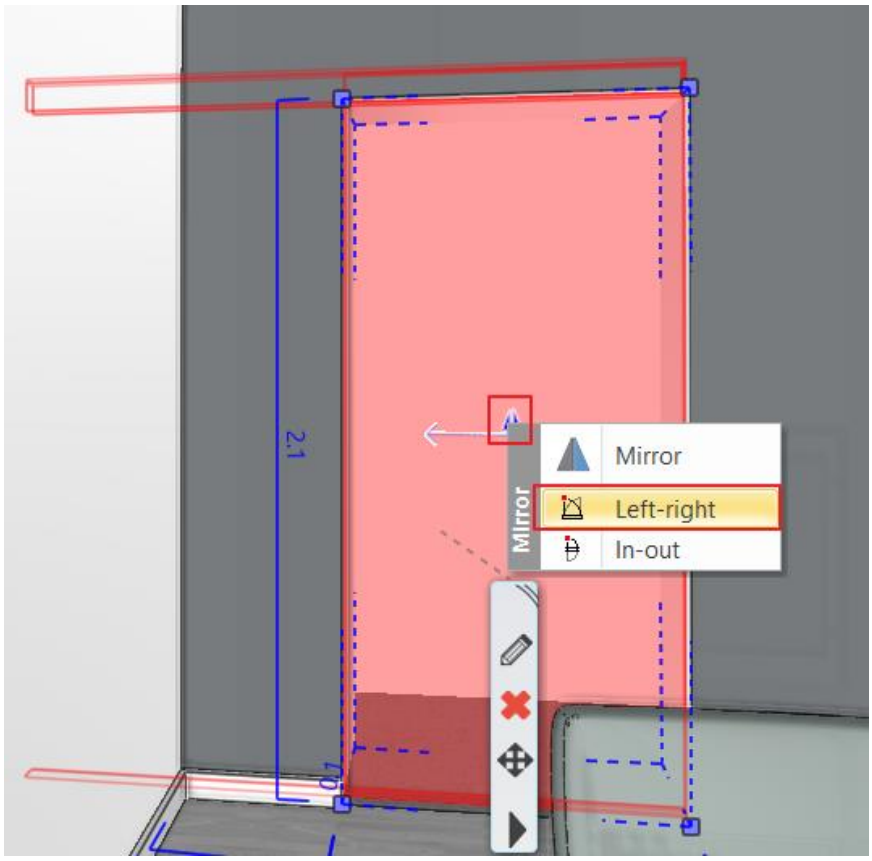
Panel - Geometry



Save



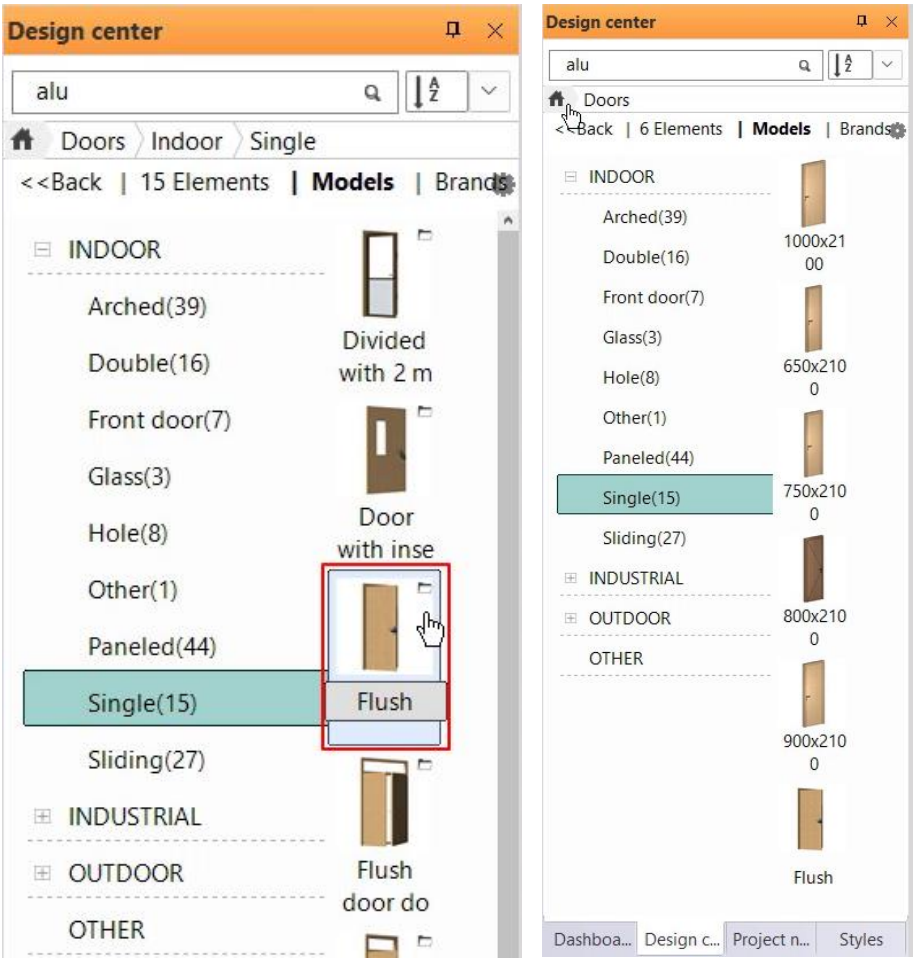
- In the last step, reverse the opening direction and then try the 3D opening animation.



2.4. Variants of doors/windows

In the door/window library, Categories are at the top level of the hierarchy, with elements located within these categories. Elements can be saved into styles along with their configured properties.
However, most elements have numerous parameters, and even small differences would require creating many styles. For example, a manufacturer often produces a family of doors/windows that differ only in their primary dimensions, such as width or height.
This led to the creation of the next level in the hierarchy: Variants.
Variants are elements that differ only slightly from similar elements. They provide a convenient way to record new elements in the library by modifying just a few parameters.
The advantage of variants is that they appear in schedules, lists, and consignments as separate entities. This makes it easy to narrow down grouped editing to a specific variant, such as focusing on 0,9 m-wide windows within a family.

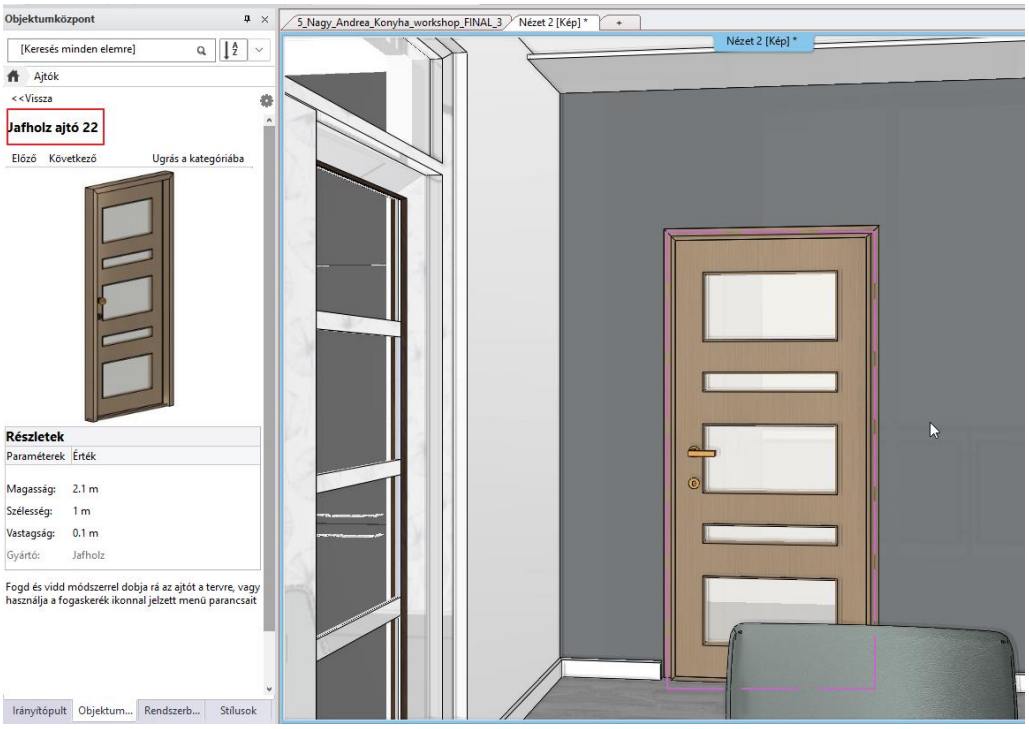
Example of a variant in the library:



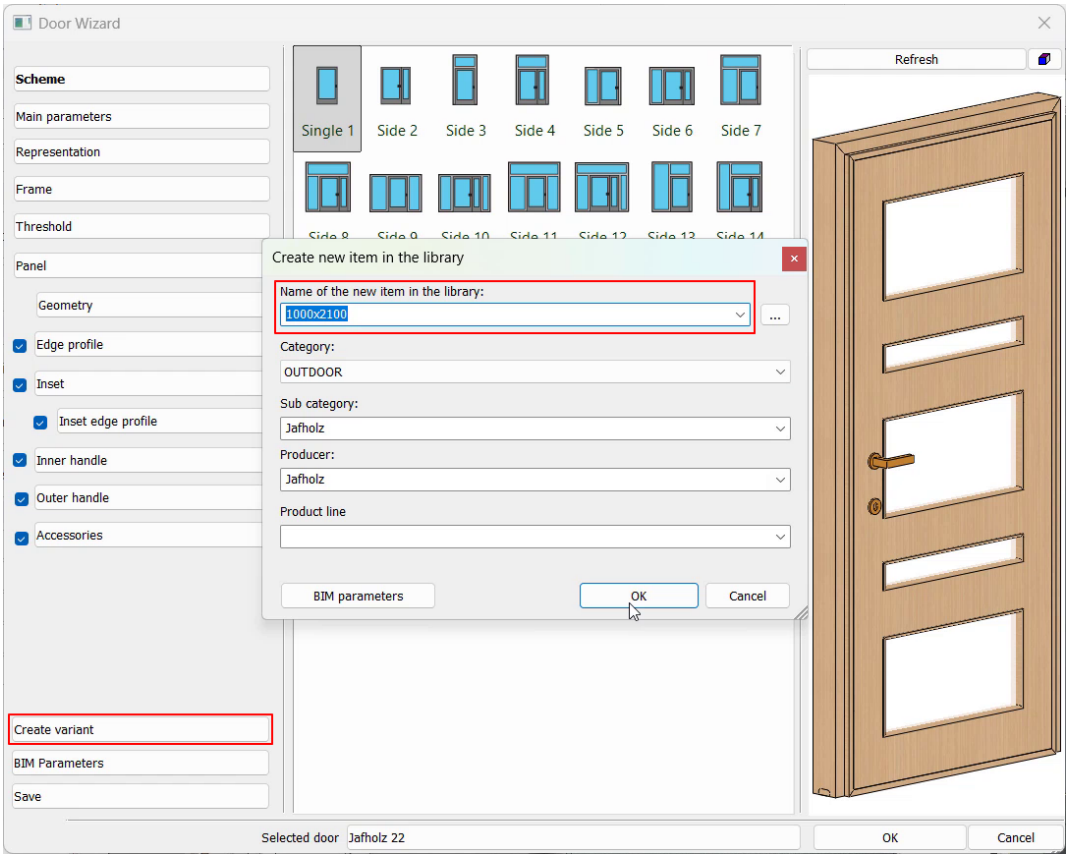
Variants can also be assigned to elements created with the Door/Window Wizard. However, the method used to create the insert must be considered.

- the plan, replace the last placed sliding door with the previously created Jafholz Door 22:

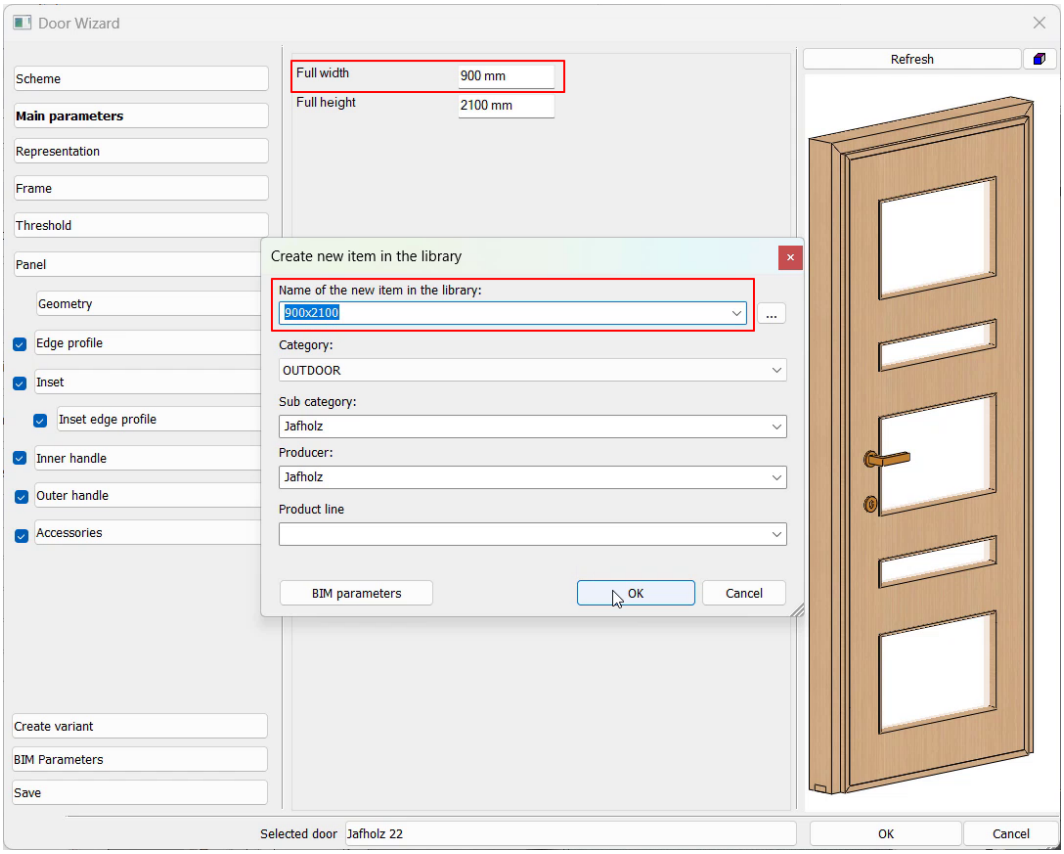
  We will create variants for this door.



- In the properties modification of the door, save this door as a variant in the Door Wizard properties window with the size 1000x2100.



- Then, further modify the door in the Door Wizard: set its width to 0.9 m and save it as a new variant: 900x2100. The placed door on the plan is now 0.9 m wide.



- Continue modifying the door in the Door Wizard: set its width to 0.8 m and save it as a new variant: 800x2100.
  The door's width has changed to 0.8 m.
- Create a copy of this door on the plan:
  Now two doors with a width of 0.8 m appear on the plan.

The task is to replace all 0.8 m wide Jafholz Door 22 instances on the plan with the 0.9 m wide variant:

- From the Design Center, select the variant and drag it onto one of the doors.
- Choose the Replace opening option.
  Do not keep the current settings.

Workshop 3: Lighting plan

3. Workshop: Lighting plan

Lighting plan shows how electrical items and wires are connected, where lights, light switches, socket outlets and appliances locate. Therefore, it means to create several types of plans. These mostly depend on the project, designer, and expectations.
In this workshop, we demonstrate through an example of how you can create the following type of electrical plans:

1. **Wiring layout**
2. **Socket layout**
3. **Switches layout**
4. **Lamp layout**

The lighting plan instructions help create the lighting plan by pairing switches with lamps. The symbolic representation of lamps ensures a uniform floor plan display.

- Open your browser and watch the following video tutorial:
https://www.archlinexp.com/enrollments/courses/advanced-course/lighting-plans/1

- Open …\Documents\ARCHlineXP Draw\2024\Workshop_Advanced\3_Lighting_plan\Lighiting_Plan_Start.pro file. Save it under a new name.

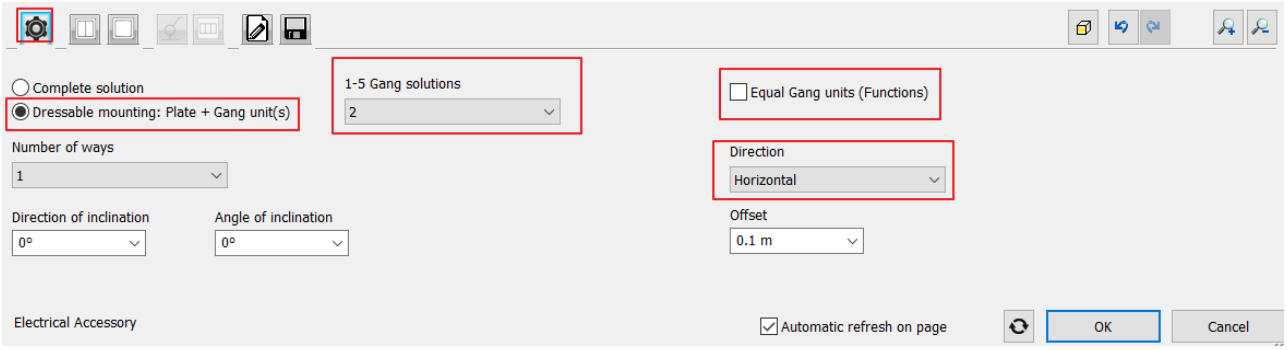
3.1. Electrical accessory

You can install electrical accessories from the library, download them from the AL Warehouse or make your own version.

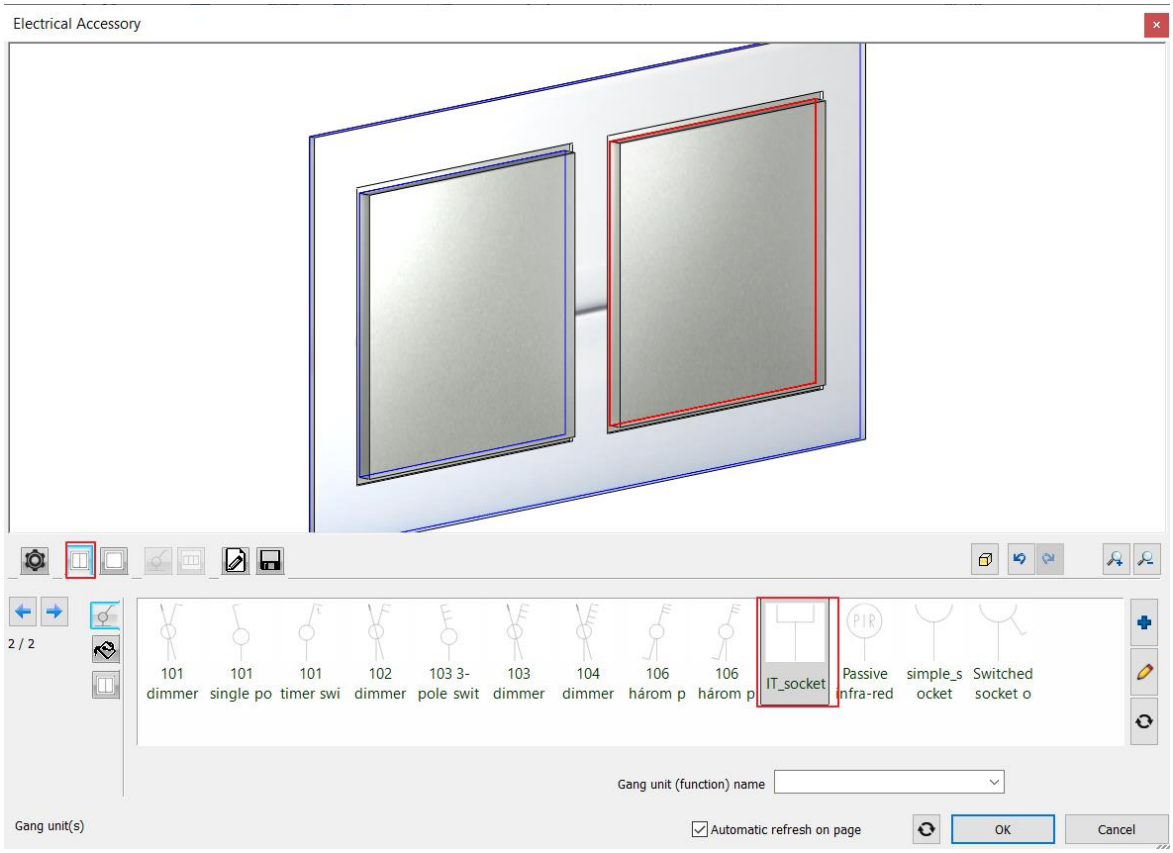
- Select Interior / Electrical accessory / Customized items.

  In the example, we create an outlet and an IT socket in horizontal alignment.

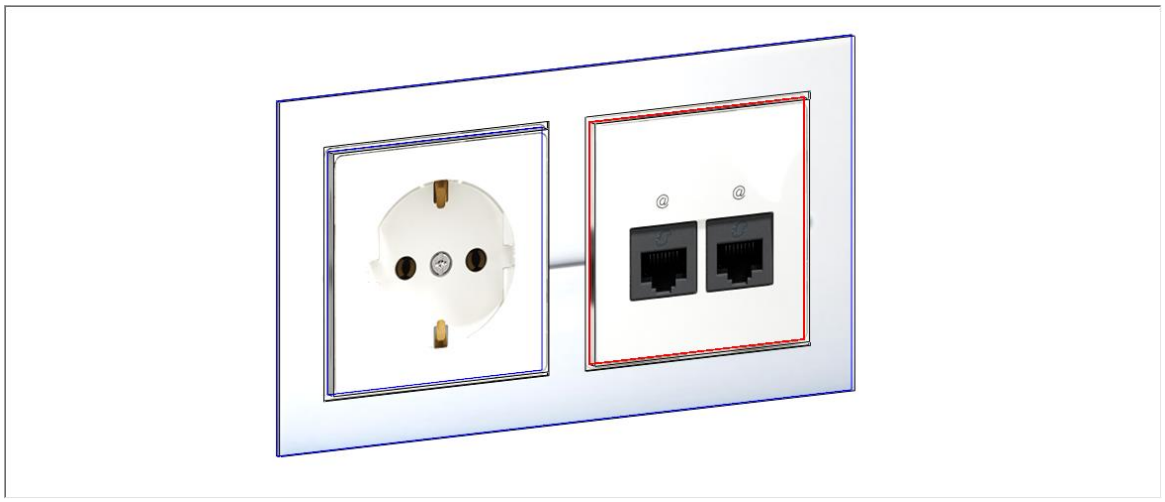
- Select the Dressable mounting: Plate + Gang unit(s) option, set the Gang solutions to 2 and turn off the Equal Gang units (functions) option.



In the Gang unit(s) tab, select the outlet function for the left mechanism and the IT socket function for the right mechanism.



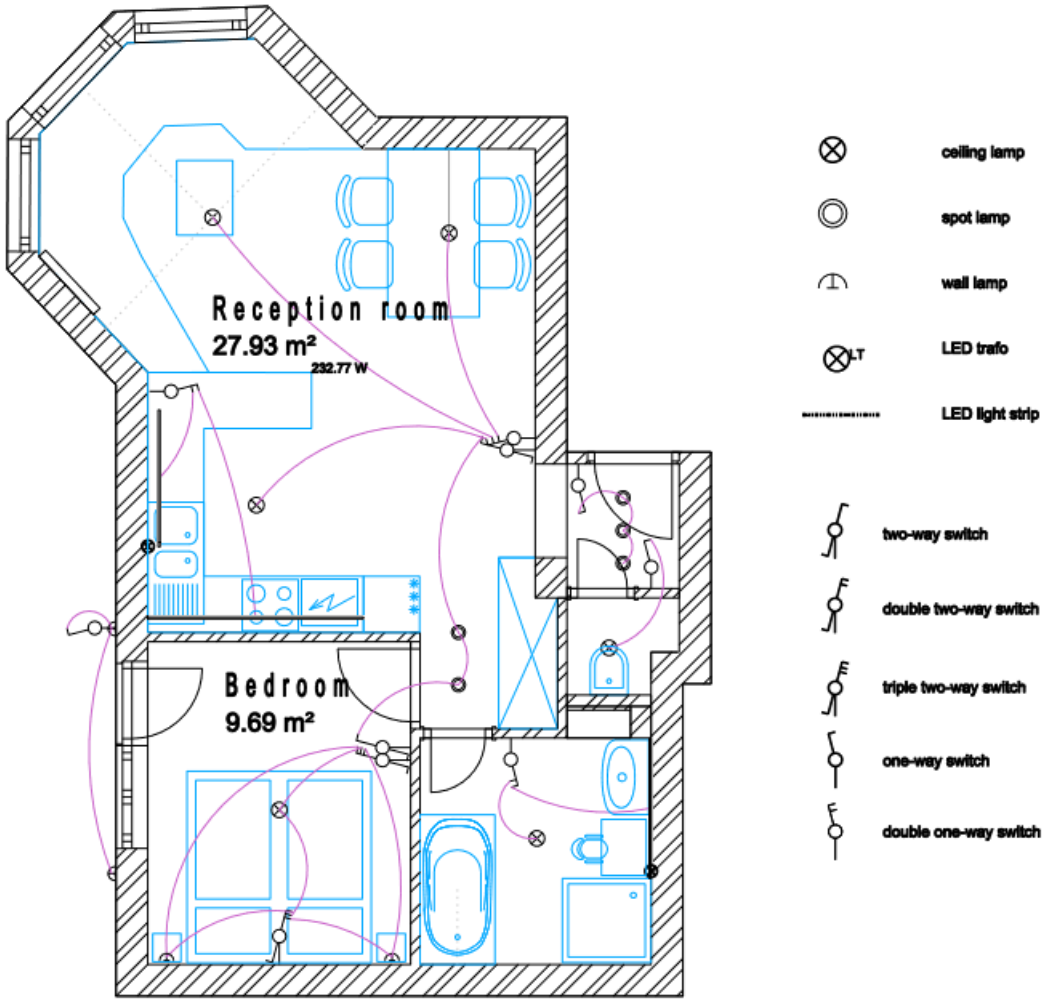
- On the second tab of the Gang unit(s) tab, uncheck the Same image for all units option and select SE_socket outlet and SE_data socket material for the corresponding mechanism.



- On the Plate tab, set the frame color to Legrand Valena material, then on the General settings tab, change the layer to - sockets layer. Save it under a new name in the Switches and sockets, socket outlets category.
- Place it on the floor plan on the wall opposite the bed in the bedroom.

3.2. Wiring layout

The task is to bind switches with luminaires as the sample illustrates below.

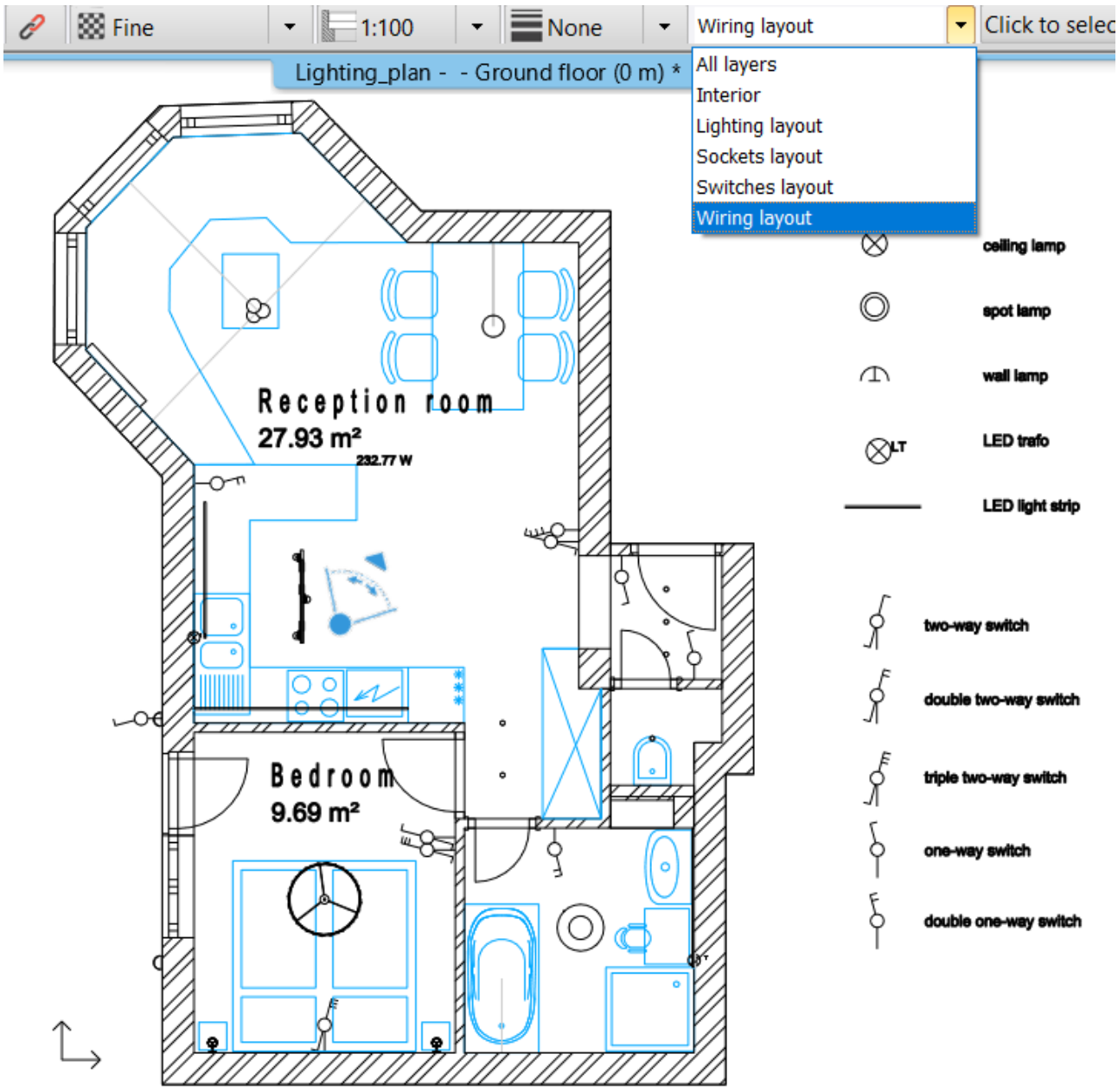


On the layout, we use symbols for representing the electrical items, which makes possible the unified appearance on the floorplan.

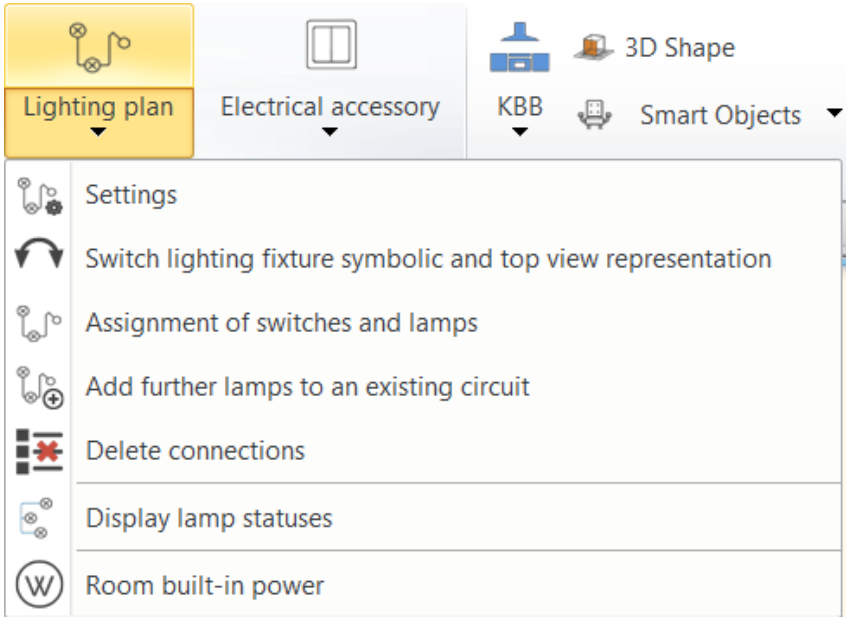
The method is the following to create a wiring layout:

- Define the type of lighting fixture: ceiling, wall, table, pendant or spot lamp
- Define settings
- Switching to a lighting fixture symbolic representation
- Assigning switches to luminaires
- Check the switches and lamp statuses: free or fully connected switches; free or connected lamps
- Finally, the program provides information about the power consumption to be built in a room.

- In the project, select the **Wiring layout** from layer variations. We start from here:



We are going to use Lighting plan commands these can be found under the Ribbon menu / Interior tool groups.



3.2.1. Lighting fixtures

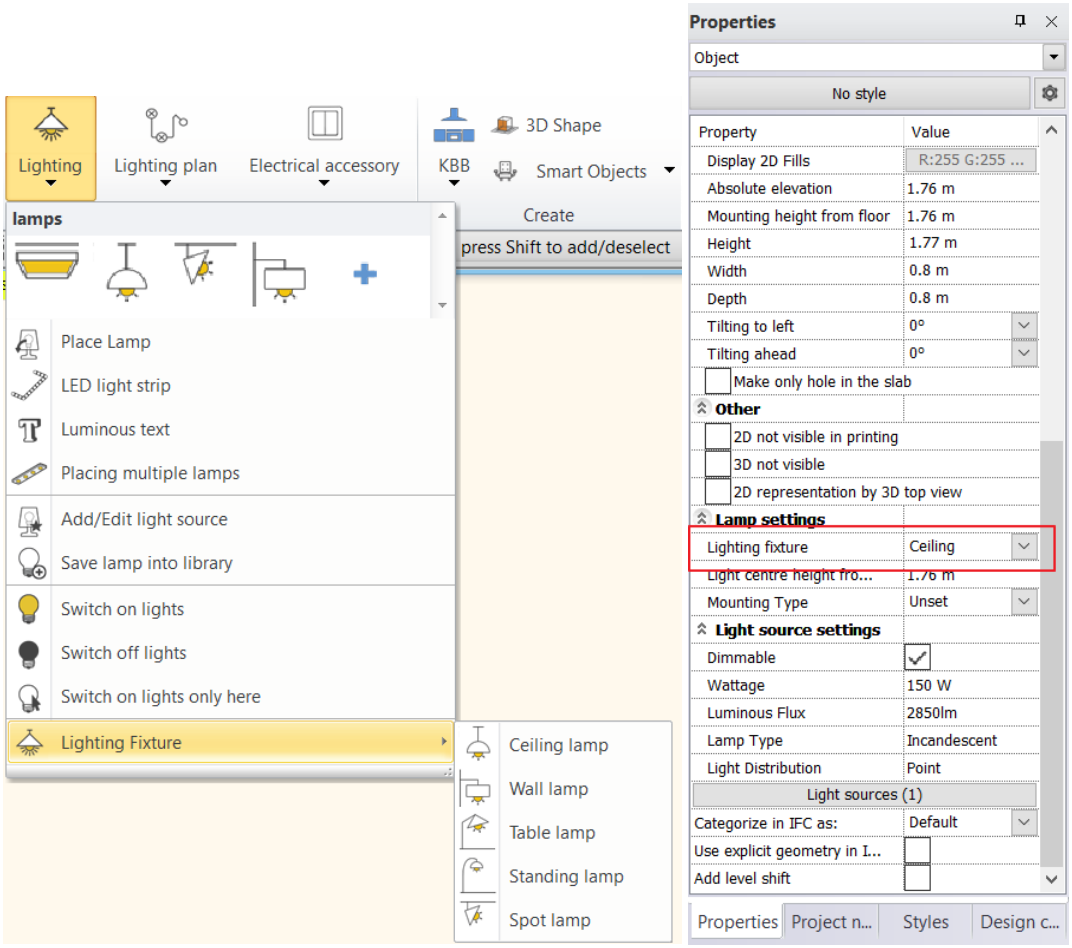
To create a lighting plan, we recommend assigning the lighting fixture type to the lamps on the floor plan.
By turning on the symbolic mode, we can create a consistent floor plan in accordance with the lighting fixtures types.

There are five types of lighting fixtures such as ceiling, wall, table, standing, spot. We have to assign these to the lamp to create an accurate lighting plan.

The assignment can be executed using the local menu of the lamp, or in Properties dialogue under Lamp settings; or using the Lighting fixture tool under Ribbon menu / Interior / Lighting group.

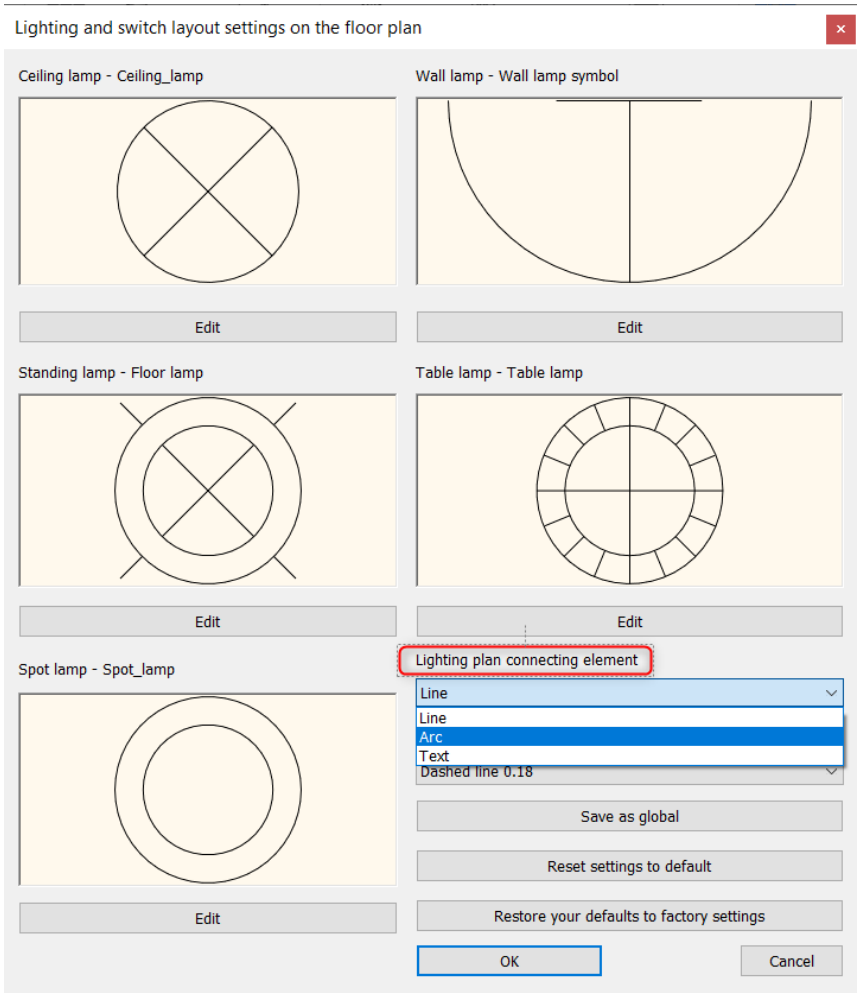
- Set the type of lights. Select the command for one of the types, then select the lights.

  You can also change the type in the side menu after selecting the luminaire.



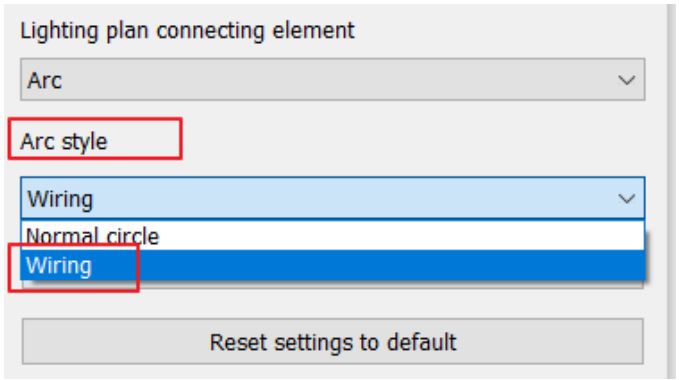
3.2.2. Settings

The Settings dialogue can be opened from the Interior / Lighting plan tool group. Here you can replace the lamps representation on the floor plan with a symbol. For replacement, it is essential to define the types of lighting fixture such as ceiling, wall, table, standing, spot lamp: we have to assign these types to the lamps.

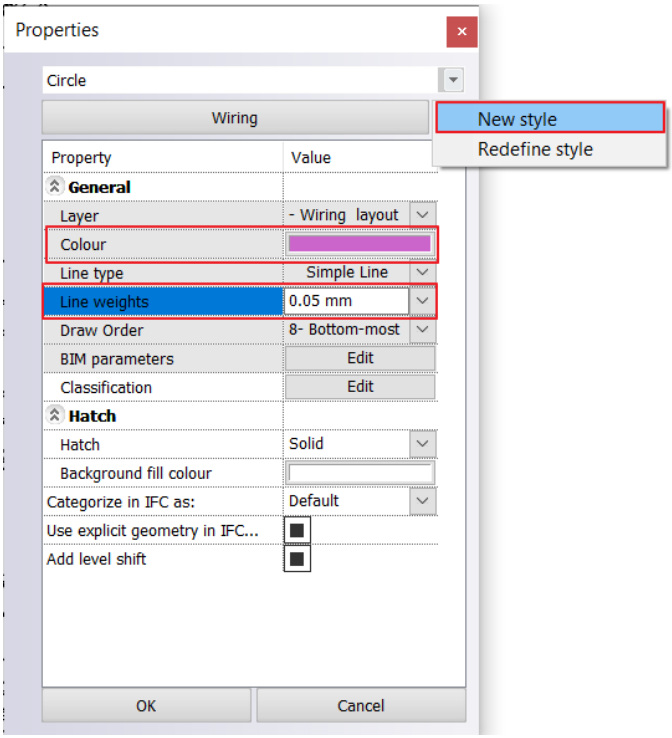


Lighting plan connecting element

We can choose from line, arc and text.
Here you can also set the style of the connecting element. We can create new styles for representation in the Line, Arc, Text properties dialogue window.

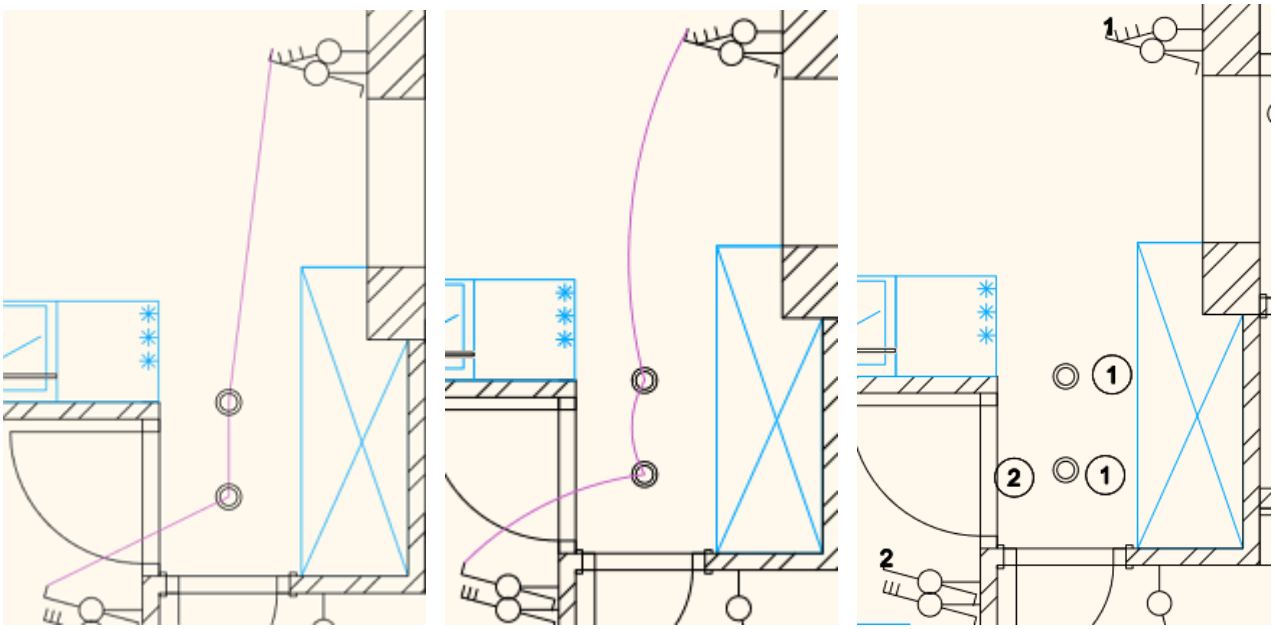


- Create your own arc style in the Circle properties, which is purple in color and the line weight is 0,05 mm. Set the layer to wiring layout and select this under Lighting plan, Settings.



Examples:

Line ***Arc*** ***Text***



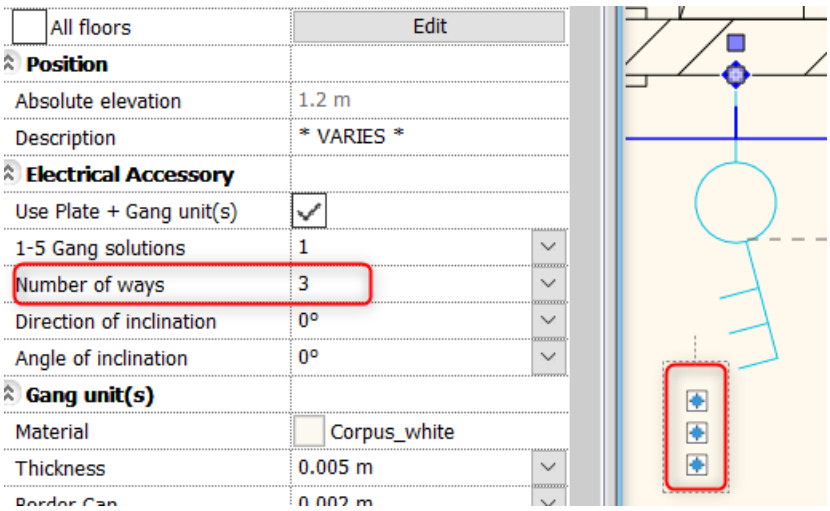
3.2.3. Switching between lighting fixtures symbolic and top view representation

This command switches between the symbolic representation and the top view representation.

- Switch to the symbolic representation.

3.2.4. Multi-pole switches

In case of multi-pole switches, we can designate the number of the ways in Properties dialogue. This way we know the number of the closed path for electrical circuits.



3.2.5. Assignment of switches and lamps

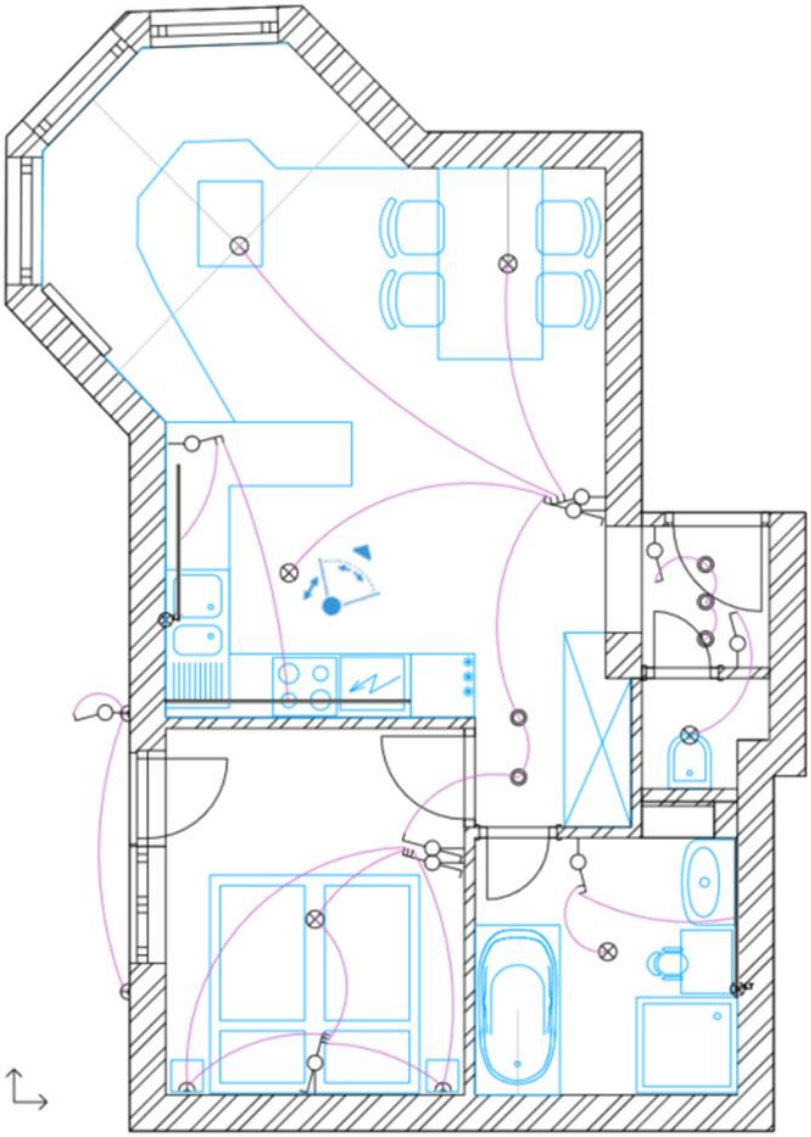
The lighting plan represents the connection between the switches and lamps as a 2D element. The lighting plan is not displayed in 3D. In the example below, we chose the arc connection type, and we created an arc style with purple line color.

You can reach the “Assignment of switches and lamps” command from Ribbon menu / Interior / Lighting plan or by clicking on the free pole of switch the command automatically comes up.

- Assign switches to the lamps room by room.
- Select the switch, then the lamp.
- Connect them by using the arc starting from the lamp’s midpoint to the switch.
- In case of more lamps, continue the selection.

- Make the assignment by room as shown in the diagram.

  The program automatically creates the connecting arcs.

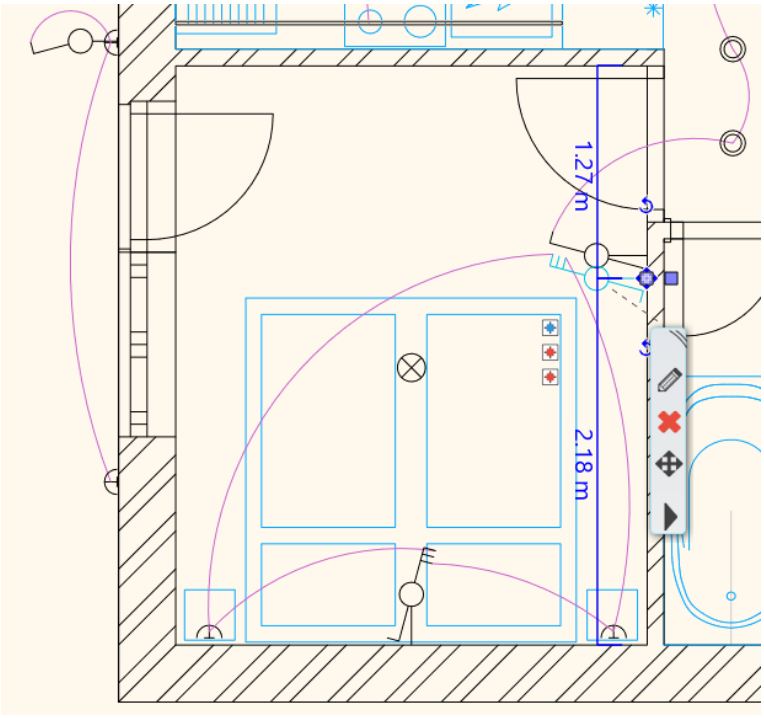


3.2.6. Lighting plan - delete connection

The connection between the already assembled switch and lamp can be deleted.
When selecting a switch, the connected poles are displayed in red.
The command depending on the selected item, disconnects the following assignments:

- Selecting a lamp: all connections of the selected lamp cease.
- Selecting a connection line: the link between lamps and connecting ways are deleted, freeing the affected lamps and switch paths.
- Selecting a switch: all connections of the switch cease.

In the example below, we deleted the ceiling lamp connections.

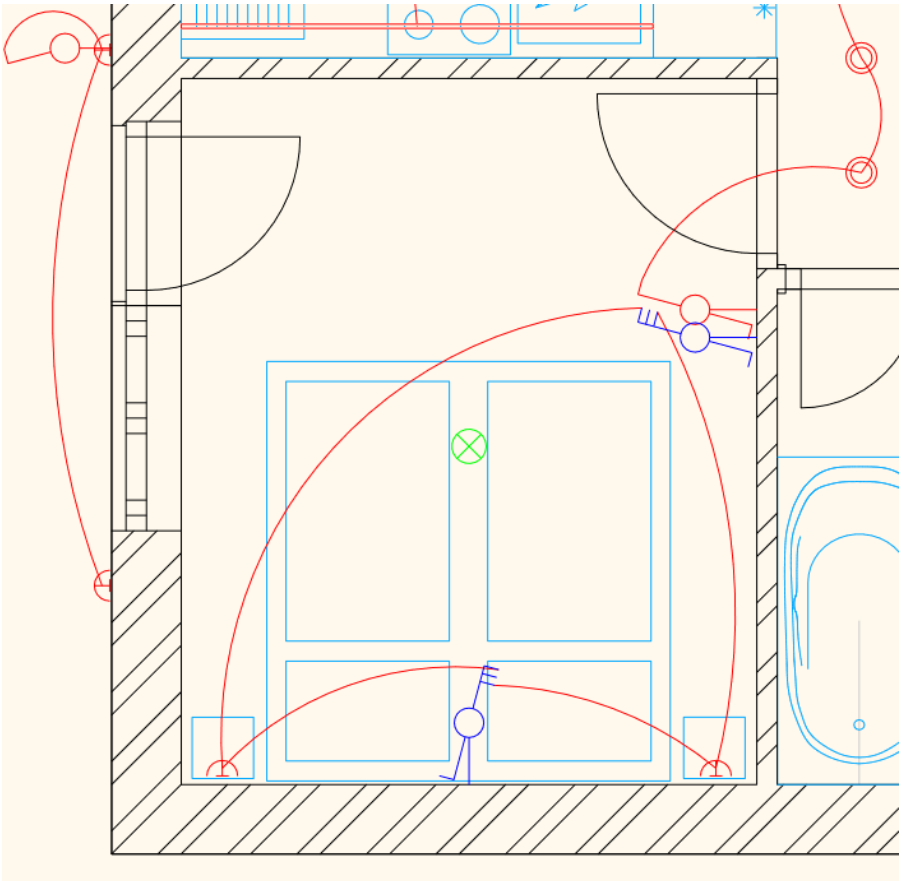


3.2.7. Lamps - Switches statuses

After the assignment of lamps and switches, we recommend checking the wiring status. This way we can get information about the connected or non-connected switches and lamps.

The command displays statuses in different colors:

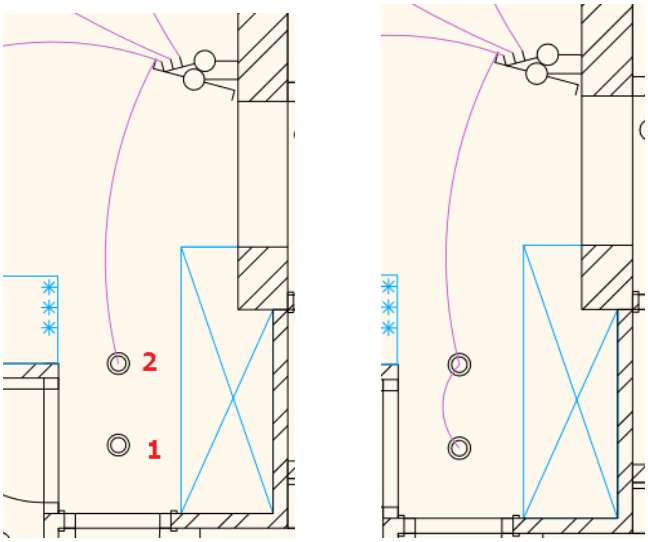
- **Red:** connected switches and lamps
- **Blue:** lamps and switches with free poles
- **Green:** free lamps and switches



3.2.8. Add further lamps to an existing circuit

If we want to add more lamps to a current electrical path, we can do as follows:

- Select a non-connected lamp (1)
- Select a connected lamp on an electrical circuit to assign the non-connected item. (2)



3.2.9. Room built-in power

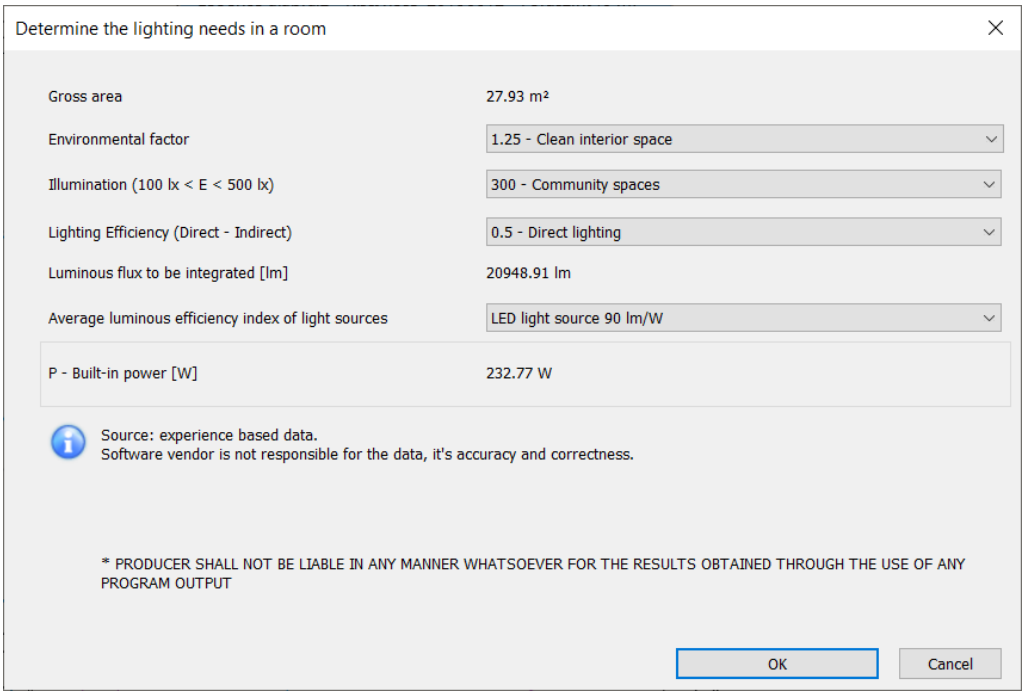
This command helps to calculate the indicative value for the electric power consumption. For this we need the room plot stamp.

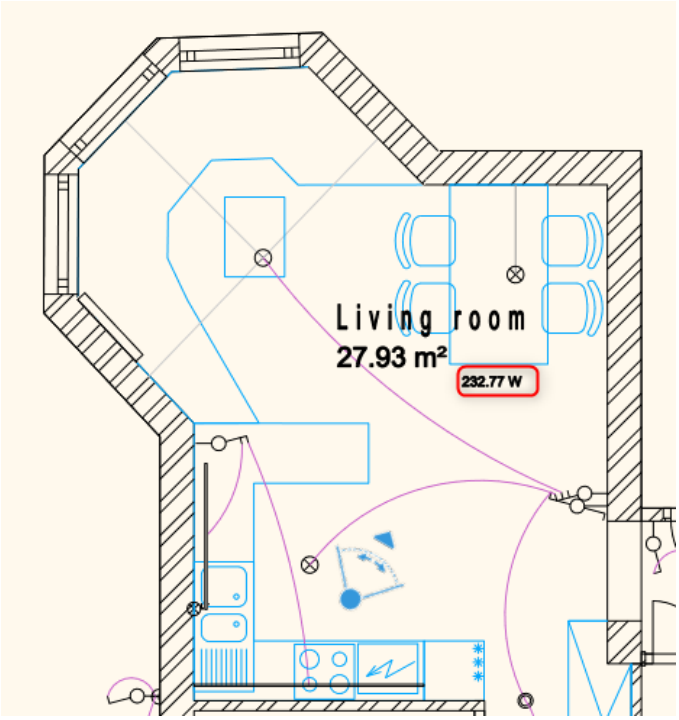
The basic data required:

- ❖ Gross area,
- ❖ Lighting efficiency,
- ❖ Illumination (lx),
- ❖ Average luminous efficiency index of the light source (lm/W).

The built-in power (W) is an indicative value for providing the planned luminous flux (lumen) in the room.

- Click on the plot stamp.
- Set the parameters as shown in the diagram.
- Place the built-in power.

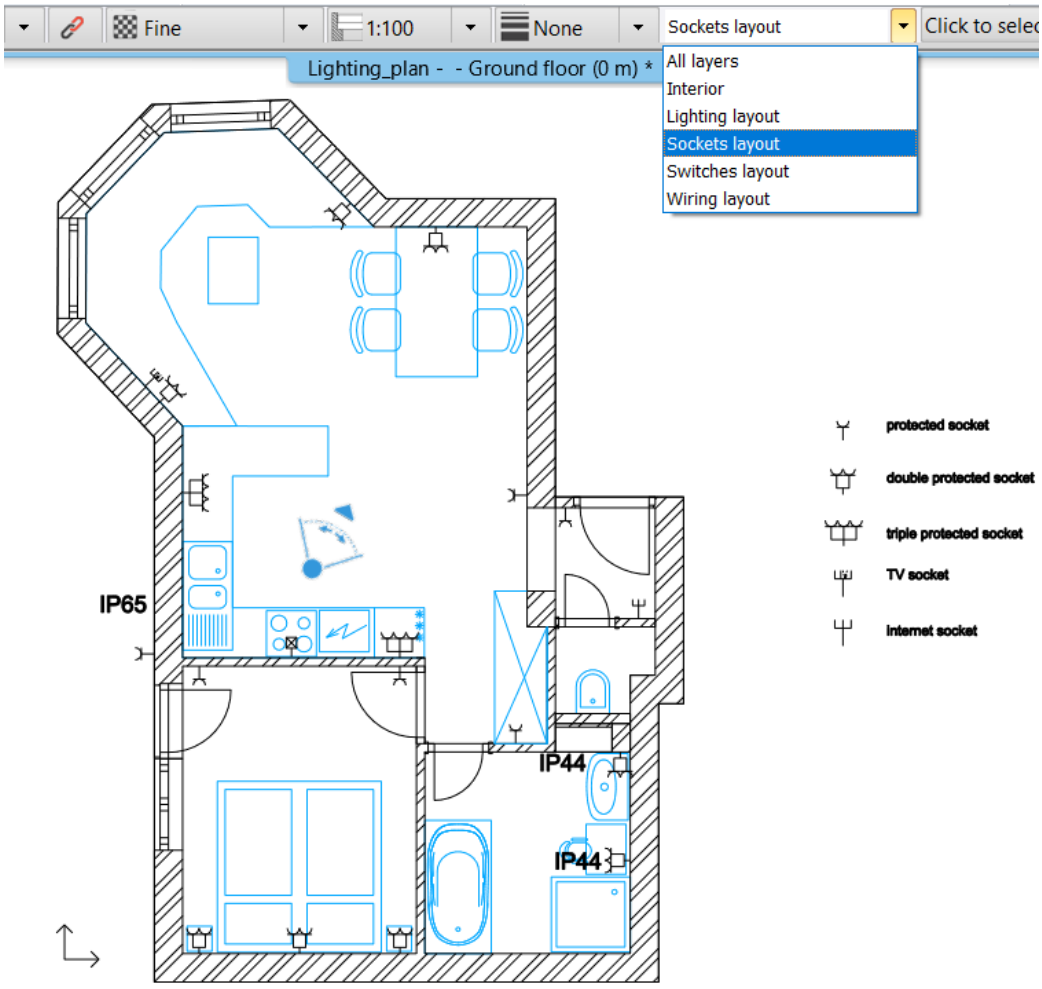




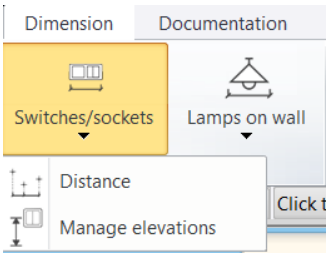
3.3. Socket layout

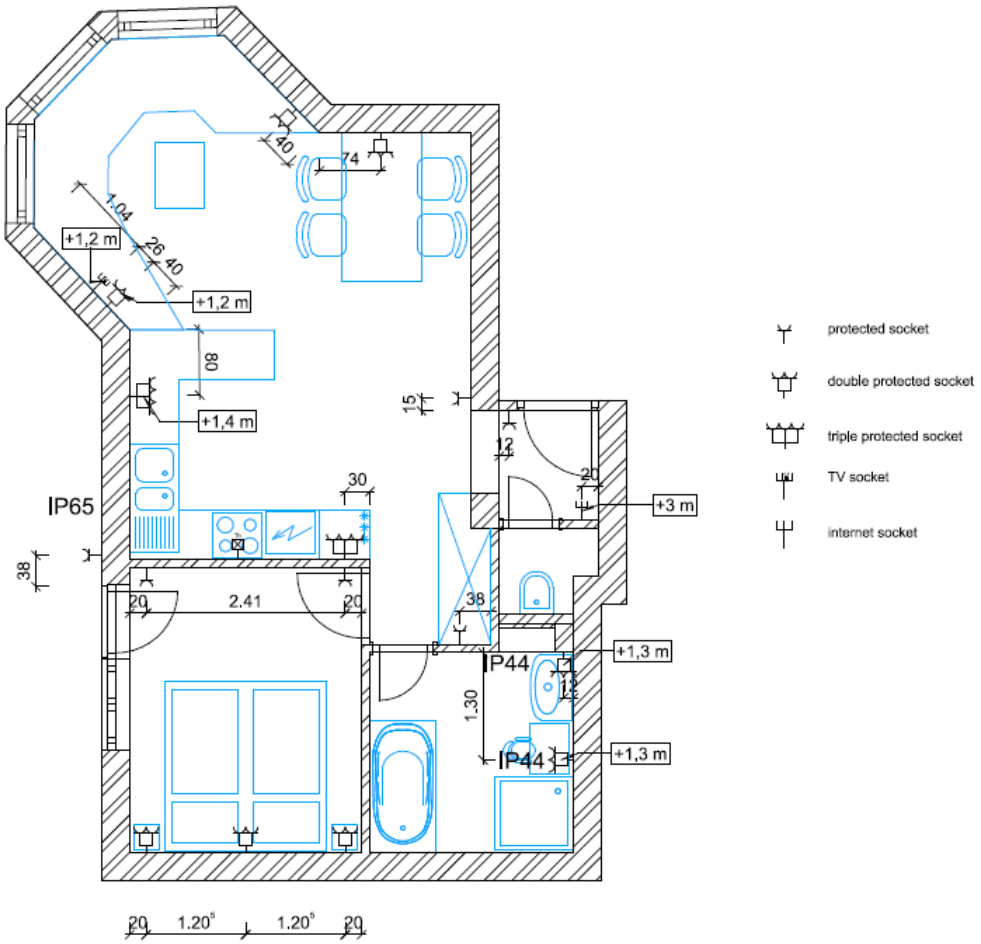
The task is to measure the distance and mounting height of the sockets.

- In the project, select “Socket layout” layer variation. We start from this position.

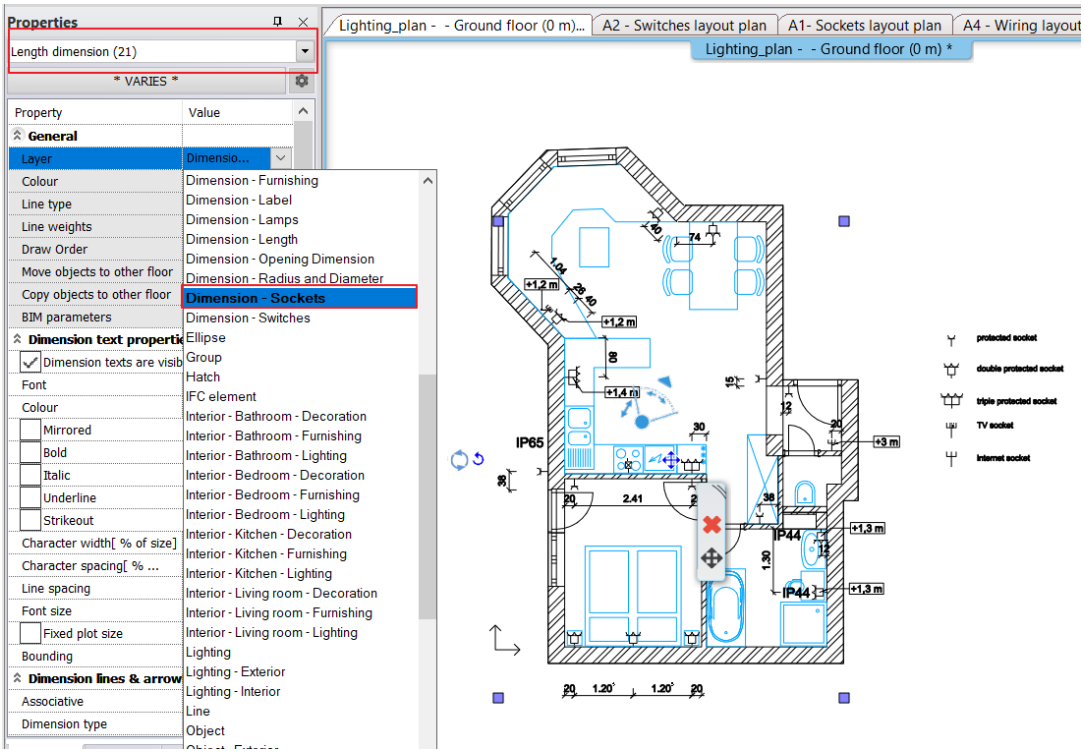


- Turn on the Dimension - Sockets layer to display the already created dimensions.
- Under the **Ribbon menu / Annotate / Switches/Sockets** command group, select commands to get the dimensions relative to walls and openings; and show the relative height on the floor plan.





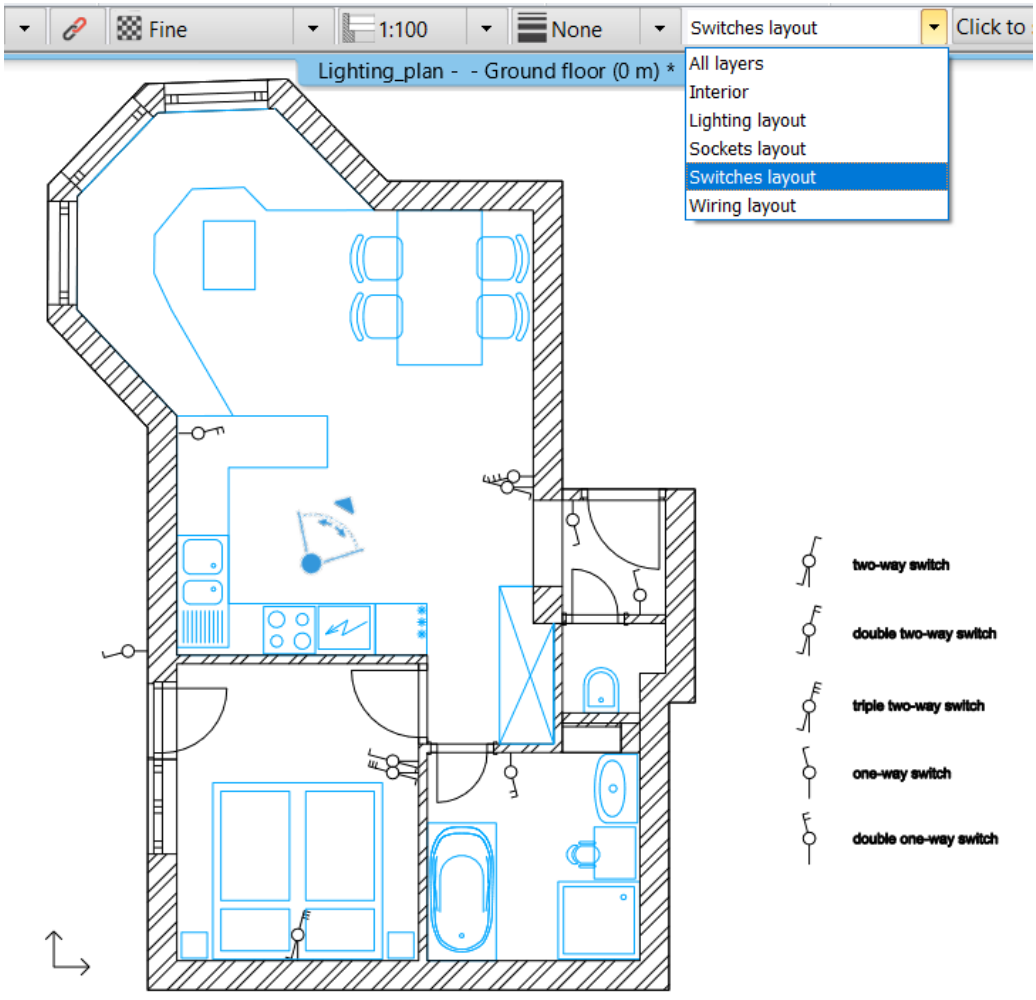
- Select the floor plan, choose Length dimension under Properties, then move the created dimensions to the Dimension – Sockets layer.



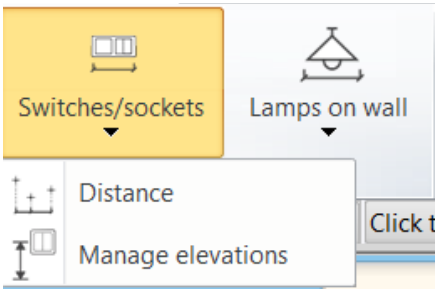
3.4. Switch layout

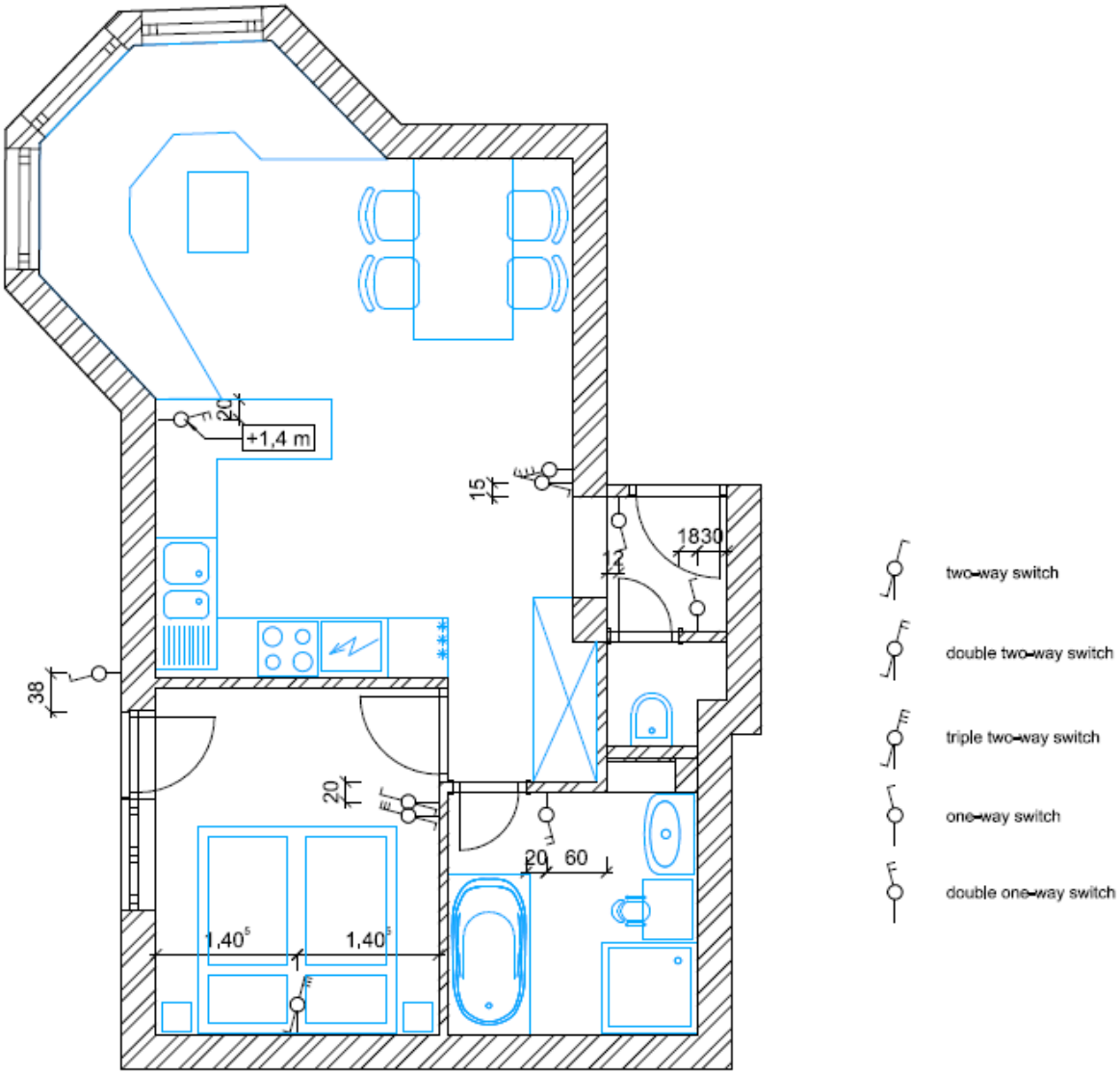
The task is to measure the distance and mounting height of the switches.

- In the project, select “**Switch layout”** layer variation. We start from this position.



- Switch on the Annotate - Switches layer to display the already created dimensions.
- Use the commands in the **Annotate - Switches and Sockets** menu to create the missing length and height dimensions.



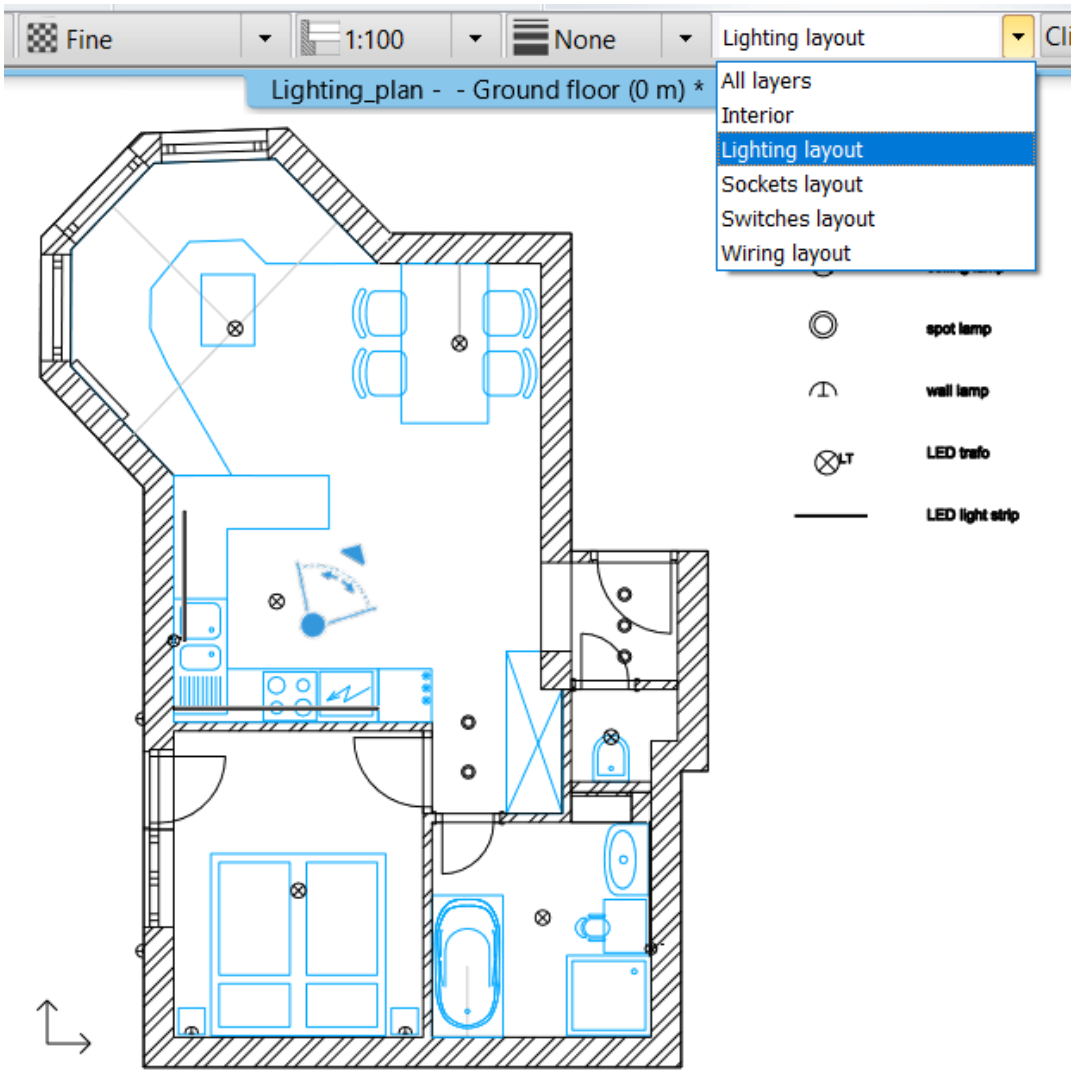


- Transfer the dimensions you have created to the Dimension, Switches layer.

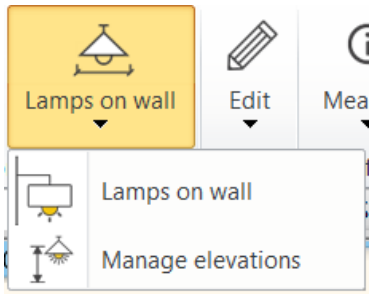
3.5. Lighting layout

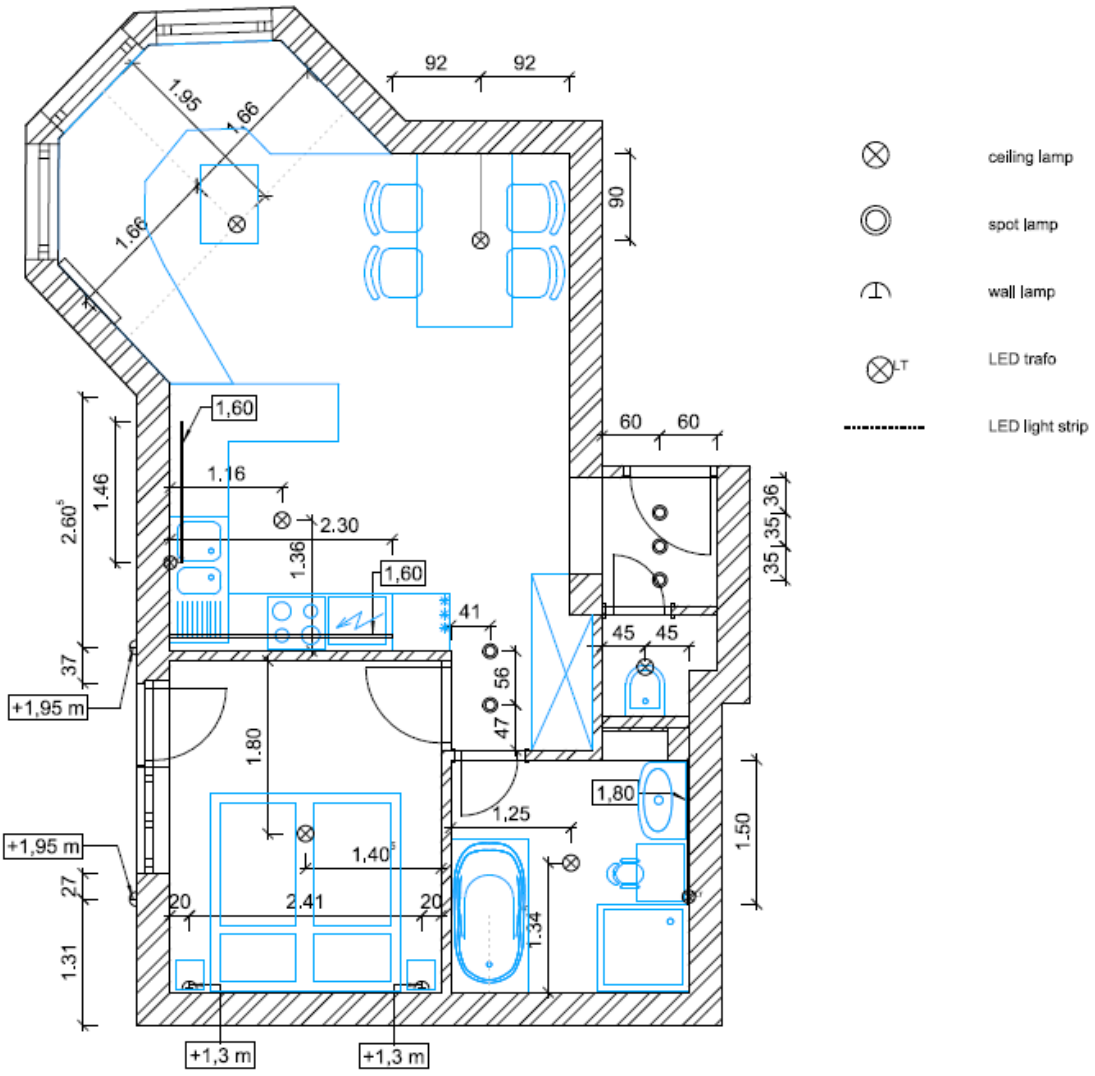
The task is to measure the distance and mounting height of the lamps.

- In the project, select **“Lighting layout”** layer variation. We start from this position.



- Switch on the Dimension, Lamps layer.
- Under the **Ribbon menu / Annotate / Lamps on wall** command group, select commands to get the dimensions relative to walls and openings; and show the relative height on the floor plan. This command is only for wall lamps. To dimension ceiling lamps, use Length dimension command.





- Transfer the dimensions you have created to the Dimension, Lamps layer.

Update layer variations

- Open the layer manager and update the layer variations so that the corresponding dimension layers are also switched on in the given variation.

3.6. Creating documentation

- Display the pre-made plan layouts in the project navigator.
- On the floor plan, select the corresponding layer variation, then drag the floor plan at a scale of 1:50 from the project navigator.
- Repeat the steps to place each plan.

- Print in A3, landscape format.

Workshop 4: Suspended ceilings

4. Workshop: Suspended ceilings

Designers mostly create a suspended ceiling as a decorative element, but it is also useful in terms of insulation and acoustics. In ARCHLine.XP we can create a suspended ceiling such as:

1. **Grid ceilings (such as a suspended grid system)**
2. **Plain ceilings (such as plasterboard)**

These types of suspended ceilings differ from each other in structure and appearance. Through the following project, we will explain these differences.

- Open your browser and watch the following video tutorial:
  https://www.archlinexp.com/enrollments/courses/advanced-course/suspended-ceilings/1

- Open …\Documents\ARCHlineXP Draw\2024\Workshop_Advanced\4_Suspended_ceiling\Office_suspended_ceiling_plan.pro file. Save the project under a new name.

4.1. Grid ceiling

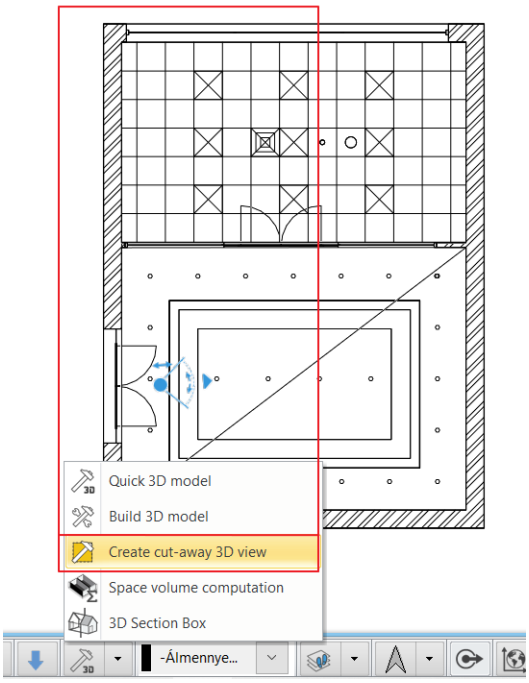
The components of the grid ceiling are the main and cross runners; and panels. Ceiling is a host element. It means the ceiling can host components into its structure. It can include light fittings, ceiling fans, CCTV cameras, etc.

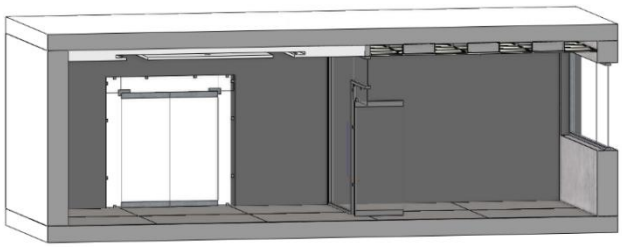
4.1.1. Creating grid ceilings

The grid ceiling has a specific pattern, in which the elements are interchangeable, geometric shapes are forming the ceiling (typically square or rectangular shaped ones).

- **Grid Auto Ceiling**: the program automatically recognizes the closed boundary of the room inside the building, clicking inside the room the program automatically creates the grid ceiling.
- **Grid Ceiling by polygon**: by drawing a closed polygon, the program creates the grid ceiling in the defined shape.
- **Grid Auto ceiling in all rooms:** the program automatically recognizes the closed boundary of each room inside the building, and the program automatically generates the grid ceiling throughout the building.

Turn off the Furniture and Decoration layers and create a cut-away view to see the structural design of the suspended ceilings you want to create.





- Activate the 3D view and select 3_Meeting_room view. Delete the existing suspended ceiling.
- Place a grid suspended ceiling in the office using the **Building / Ceiling / Grid auto ceiling** command.

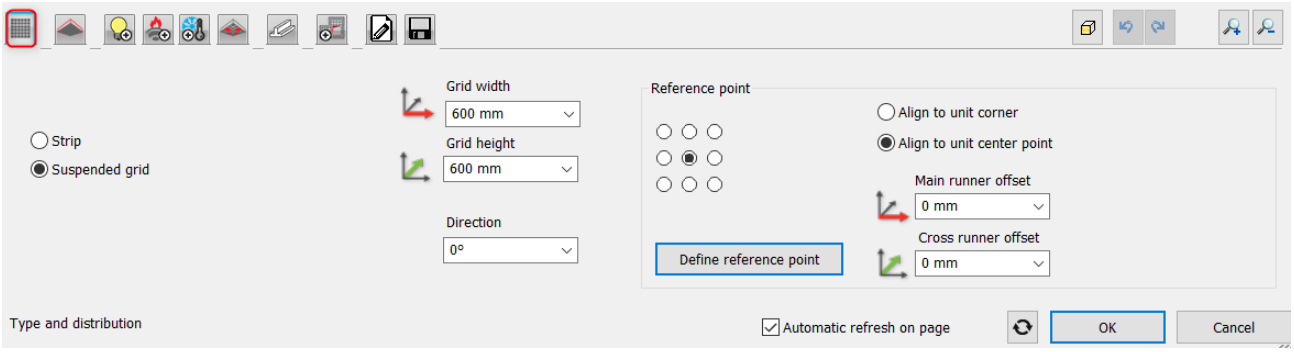
4.1.2. Grid Ceiling Properties

By opening the Grid Ceiling properties window, we can specify its parameters to the most optimal arrangement.

- Select the suspended ceiling and change its relative height to 3 m, then enter its properties.

Type and distribution

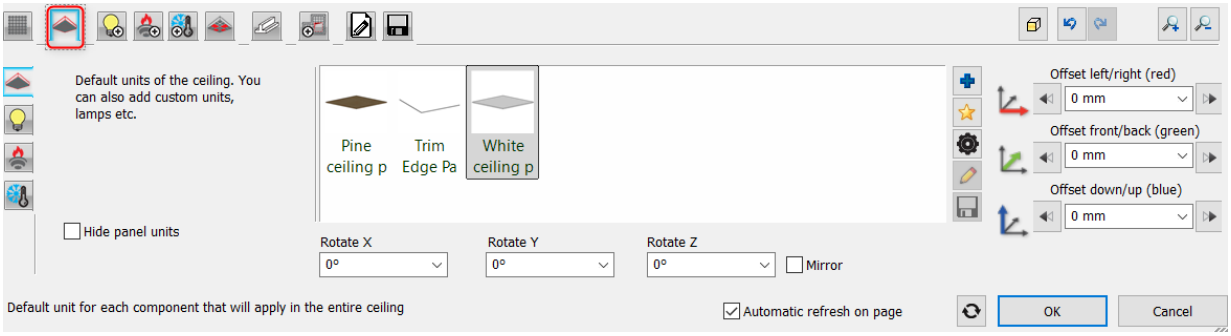
The basic structure can be set here: by choosing the strip structure, the grid ceiling is created by rectangular elements all along the entire width of the room, while the suspended grid ceiling consists of units with a given width and height.
On this tab, we can define the size of the units, the offset, the direction of the rotation relative to North and the reference point.



Default units

On this tab, you can customize the default units, for each component that will be applied on the entire ceiling.
Here you can select the unit types, lamp units, fire protection units, air distribution units as well.

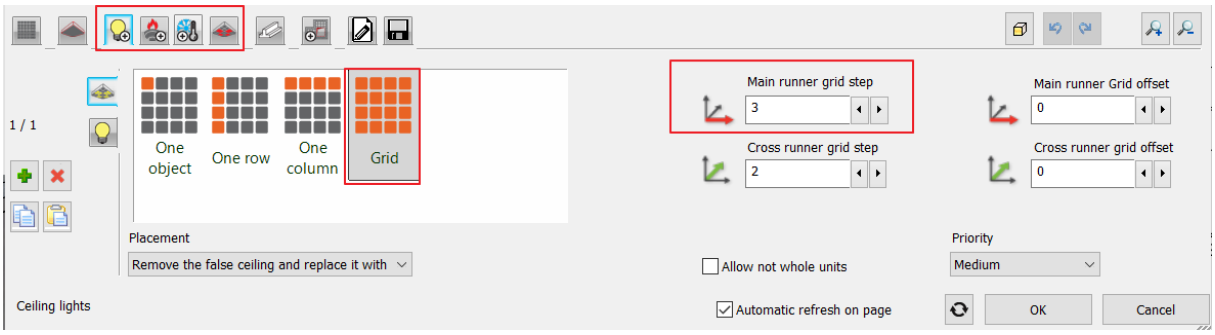
- In the lamp unit tab, choose the LED Luminar type.



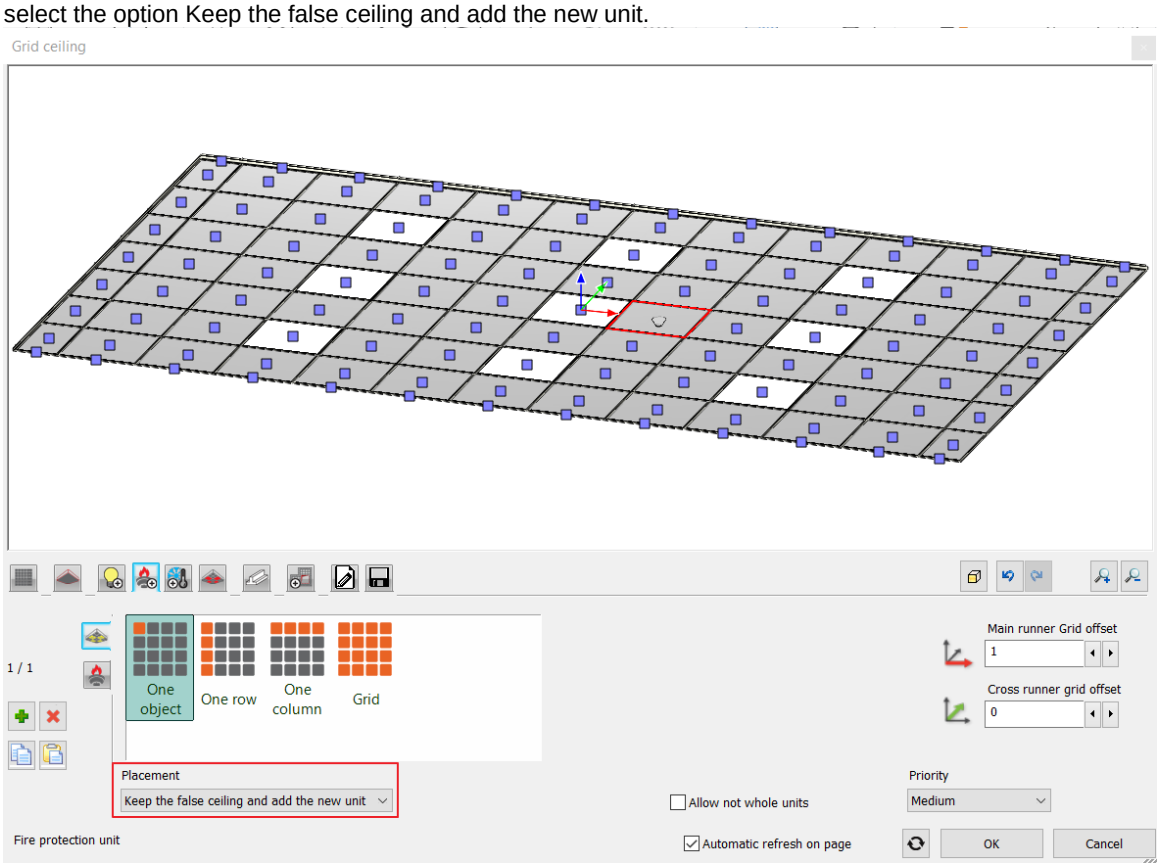
Lamp, Fire Protection, Air Distribution and Other Units

Under these tabs, you can define the lamp unit, fire protection unit, air distribution unit, and other units to be built-in or arranged according to a specific pattern in the suspended ceiling. Also, you can set the type of the predefined placement on the ceiling, furthermore here you can change the unit type individually in case that is not the same as the default unit setting.
When selecting different units, the size is an essential factor, except the fire protection unit, all others should fit in the grids.
Elements can also be freely placed by clicking on the blue squares visible in the 3D preview.

- For lamps, select the Grid layout and rewrite the Main runner grid step to 3.



- In the Fire protection unit tab, select the panel shown in the figure and place the fire alarm. At the placement segment, select the option Keep the false ceiling and add the new unit.



- Place a vent on the left side of the light next to the fire alarm, select remove the false ceiling and replace it with for placement.
- In the Other units tab, add a CCTV camera, then position it as desired on the suspended ceiling. For the placement, keep the false ceiling and add the new unit onto it.

Grid ceiling – grid system

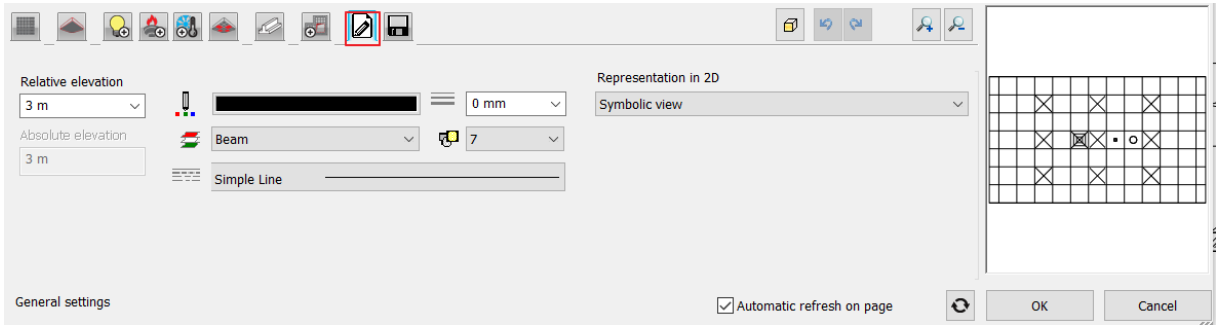
The grid system is based on default profiles in case of the grid ceiling. Also, you can create a customized profile by drawing a cross-section profile. You can set different profiles for the Main runner, the Cross runner and the Perimeter Wall Angle.

Holes and insets

An area can be created in the suspended ceiling with a different shape, where a suspended ceiling can be placed with customized settings.

General settings

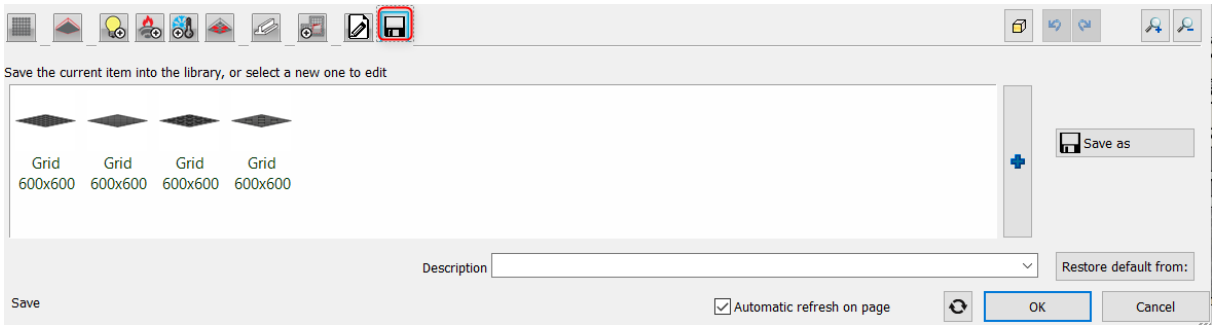
Here you can set the presentation of the grid ceiling on the floor plan.



Save

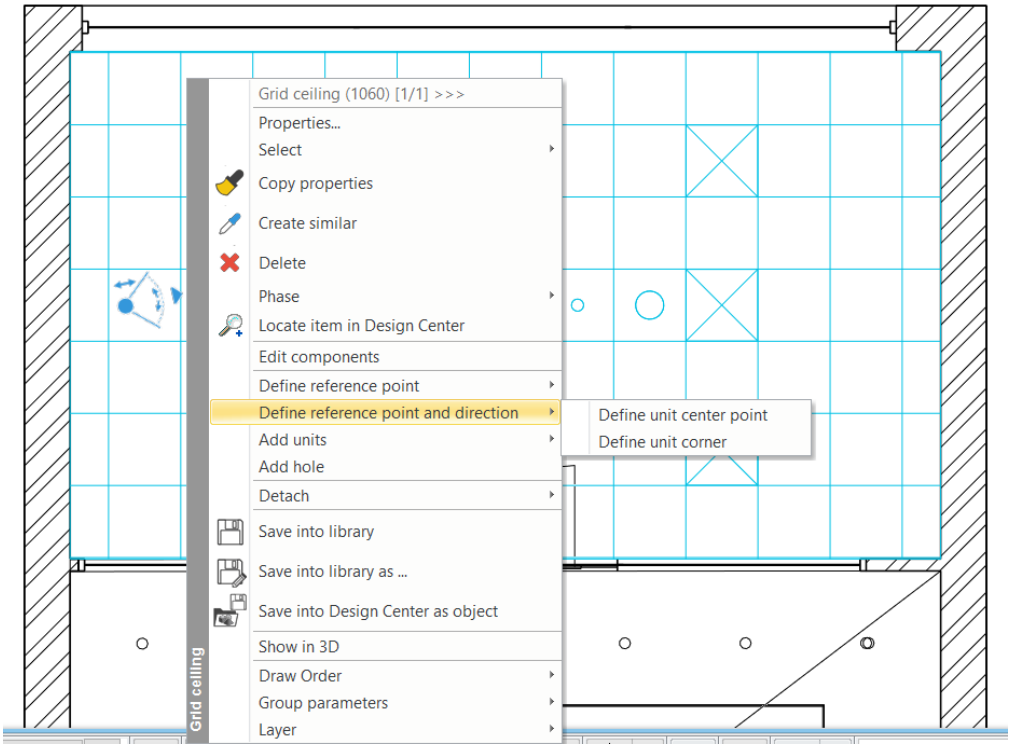
You can save the newly created or modified ceiling into the Design Centre by using the *Save* or the *Save as* option. You can use the saved assets any time later on.

- Save the suspended ceiling as Meeting_room_grid_ceiling in the My category, Suspended ceiling subcategory.



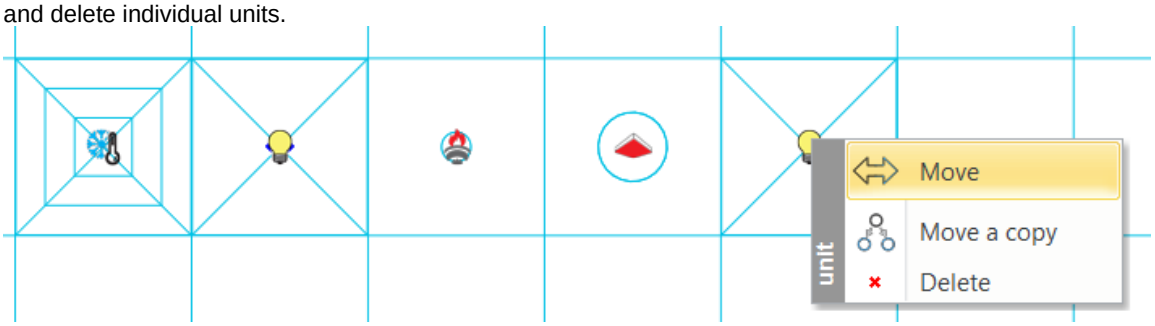
4.1.3. Rotate the grid layout on the floor plan

If it is necessary, you can rotate the grid layout directly on the floor plan by using the “Define reference point and direction” commands from the local menu of the grid ceiling.



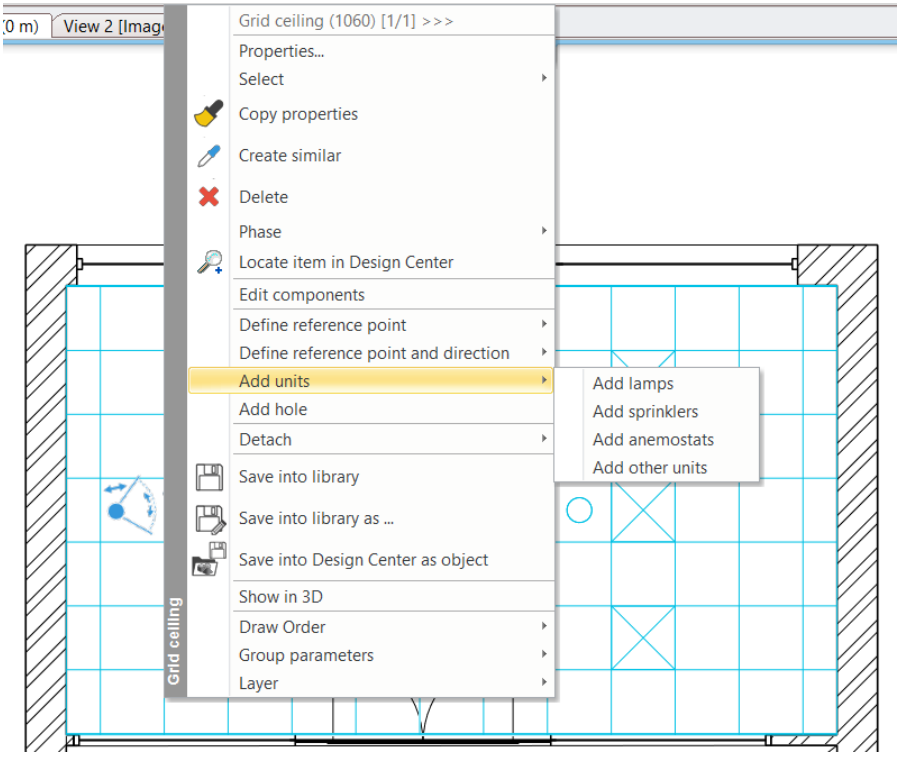
4.1.4. Modifying units on the floor plan

On the selected grid ceiling, the different units appear with different markers. Using these markers, you can copy, move and delete individual units.

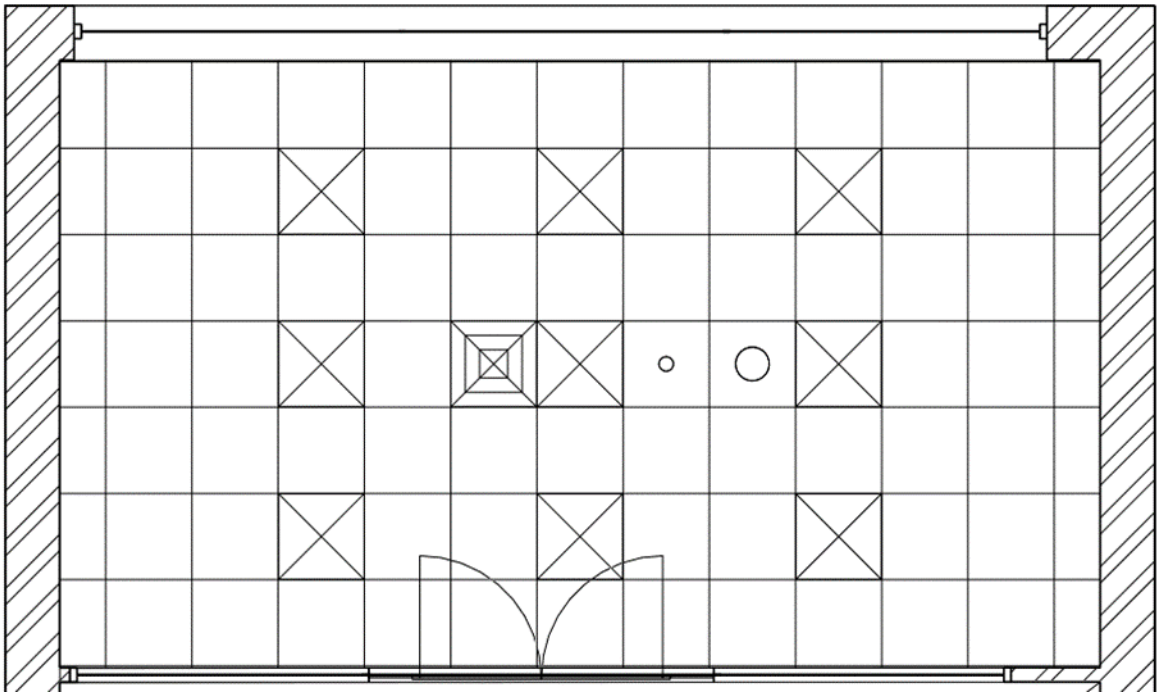


4.1.5. Add units on the floor plan

Right-click on the 2D symbol of the grid ceiling on the floor plan, and from the local menu choose ”Add units” tool. Select the unit type and place the desired item on any empty grid points.



After placing grid ceilings, the floor plan should look as below:



4.2. Plain ceiling

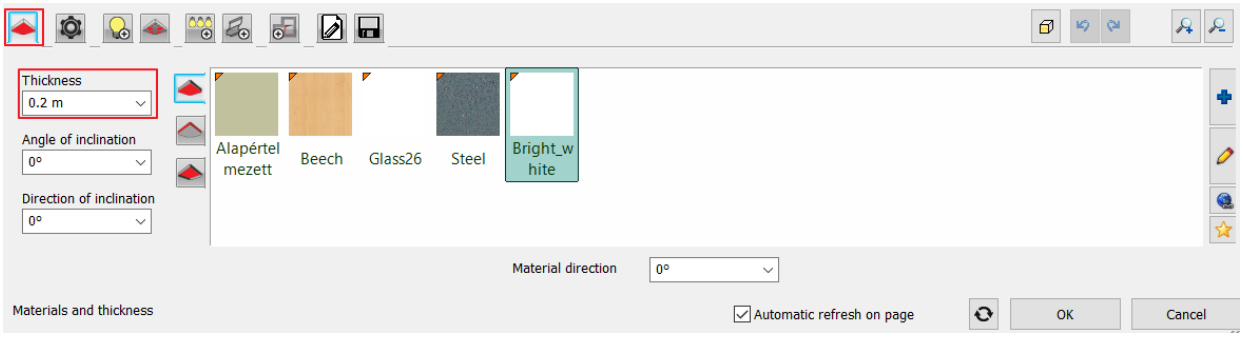
The plain ceiling aims to create a suspended ceiling which has a smooth, even surface, and its shape can be fully customized.

4.2.1. Creating plain ceilings

You can create plain ceilings automatically or manually by drawing the contour of the ceiling.

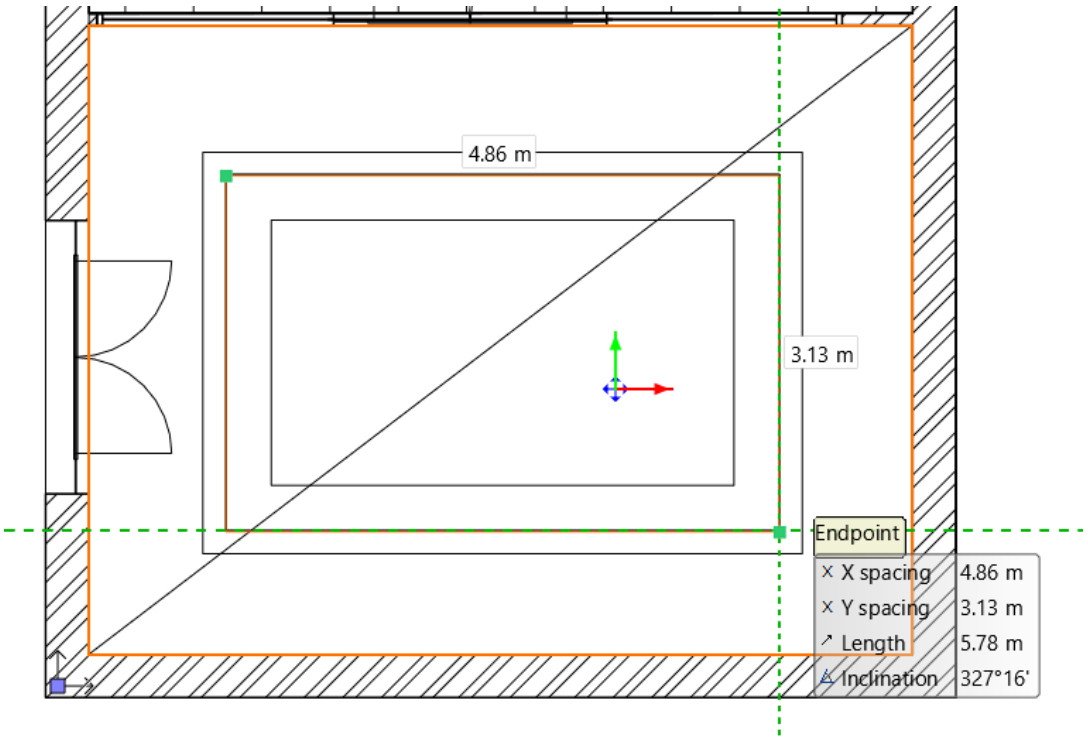
- **Plain Auto ceiling**: the program automatically recognizes the closed boundary of the room inside the building, clicking inside the room the program automatically creates the plain ceiling.
- **Plain Ceiling by polygon**: by drawing a closed polygon, the program creates the plain ceiling inside the defined shape.
- **Plain Auto Ceiling in all rooms**: the program automatically recognizes the closed boundary of each room inside the building and automatically generates the plain ceilings throughout the building.

- We place plain ceilings in the reception room on the floor plan. Delete the existing false ceiling and use the **Plain Auto Ceiling** command to install the false ceiling. Switch to 1_Reception 3D view.
- Change the relative height to 3000 mm and then enter its properties.
- In the Materials and Thickness tab, set the thickness of the suspended ceiling to 200 mm and click OK.



4.2.2. Creating recesses and attachments

- Activate the floor plan view and select **Ceiling, Recess/Attachment, Create recess** command**.**
- Select the suspended ceiling, then use the rectangle tool to draw the center contour line.

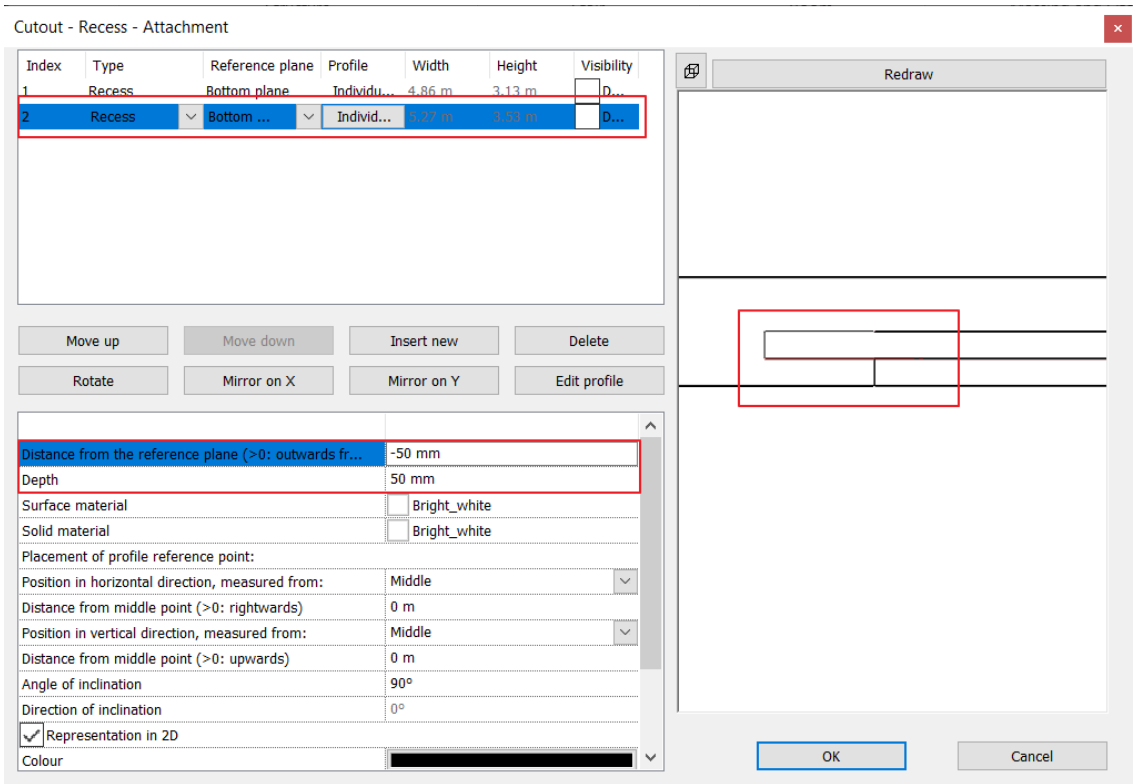


- Select the **Ceiling, Recess/Attachment, Edit Recess/Attachment** option and select the suspended ceiling.
- In the dialog, rewrite the depth of the recess to 100 mm, then click OK to accept the setting.

Creating recess for LED strip

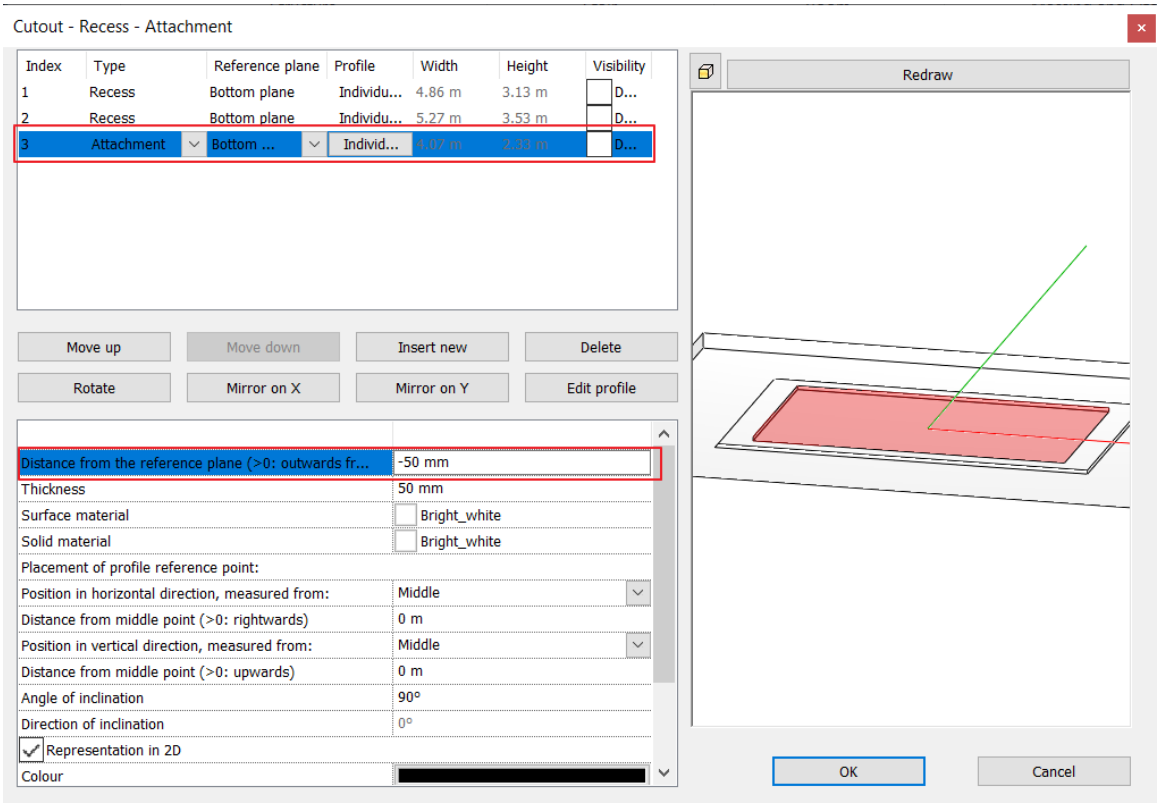
- Create another recess along the outer contour. Select **Ceiling, Recess/Attachment, Edit Recess/Attachment** again and select the 2nd recess.
- Set its depth to 50 mm and its distance from the reference plane to minus 50 mm.

  The goal is to have the reference plane of the recess 50 mm above the bottom plane of the original suspended ceiling.



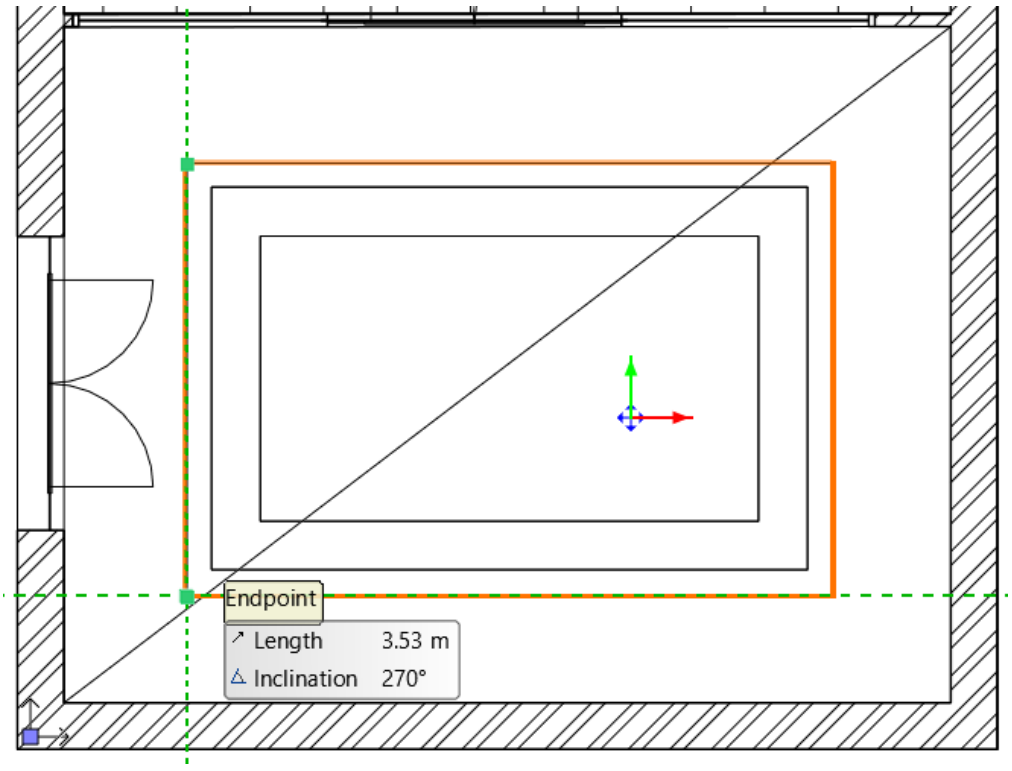
Creating an island

- Select **Ceiling, Recess/Attachment, Add Attachment** and select the false ceiling.
- Draw a rectangle around the inner contour, then press Enter to close the command.
- Edit the attachment using the **Ceiling, Recess/Attachment, Edit Recess/Attachment** command.
- Select the 3. attachment and rewrite the distance from the reference plane to minus 50 mm.



Placing the LED strip

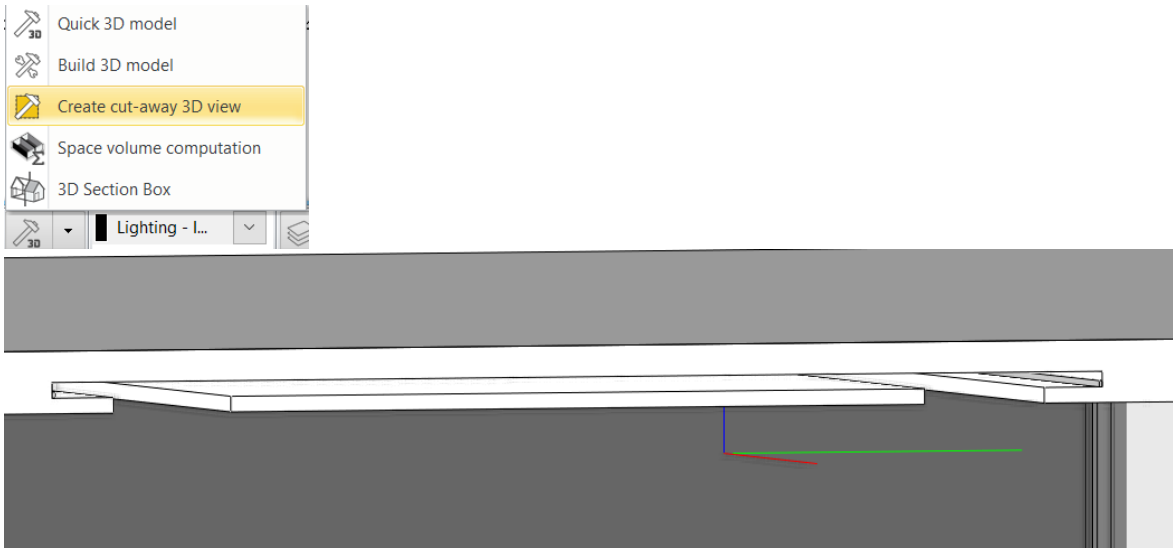
- Select **Interior / Lighting / LED light strip** command and draw along the outer contour.



In the LED lighting dialog, set the following:

- In the Size and lighting parameters tab, set the dimming level to 50%,
- In the Section profile tab, change the width to 10 mm and the height to 20 mm.
- In the General Settings tab, set the relative elevation to 3050 mm, since the channel for the LED is 50 mm above the lower plane of the suspended ceiling.
- Click OK to accept the settings.

You can check the position of the LED strip by using the Crete cut-away 3D view command.



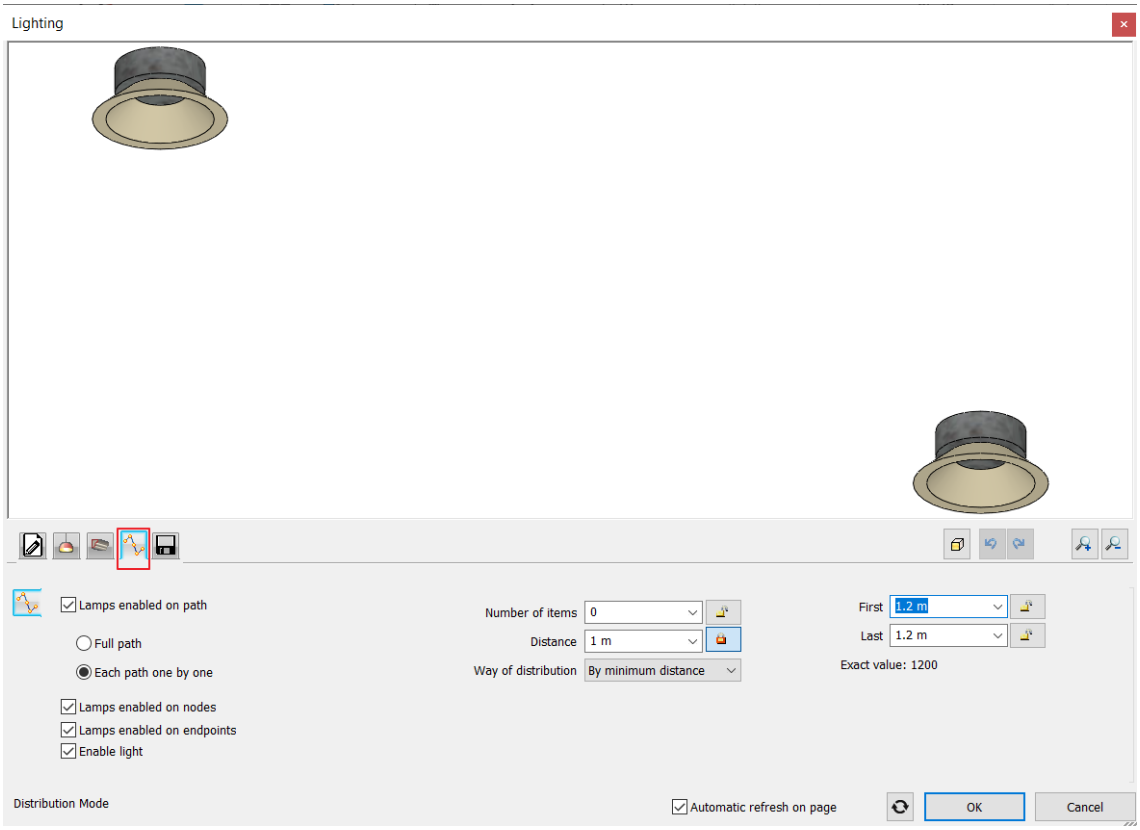
4.2.3. Plain Ceiling Properties

Within the plain ceiling properties, there are the same options as we described in case of the grid ceiling apart from the grid structure settings.

Units

- On the second tab of the Units tab, select Spotlamp 1000.

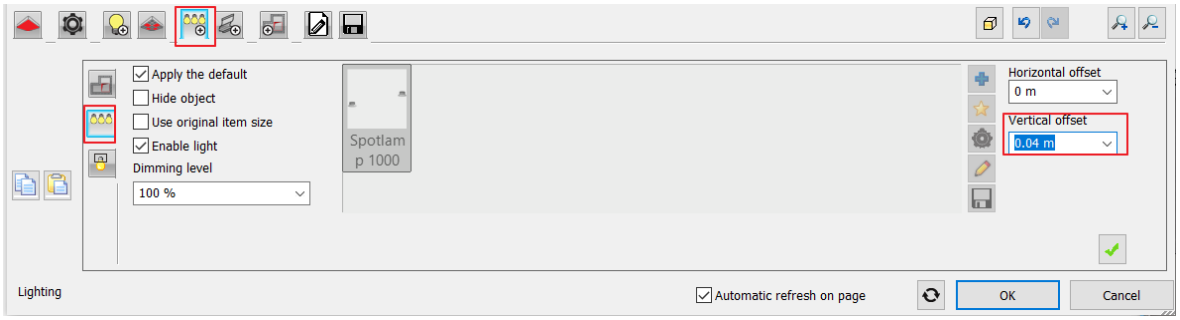
Check the Distribution Mode using the pencil icon.



Lighting

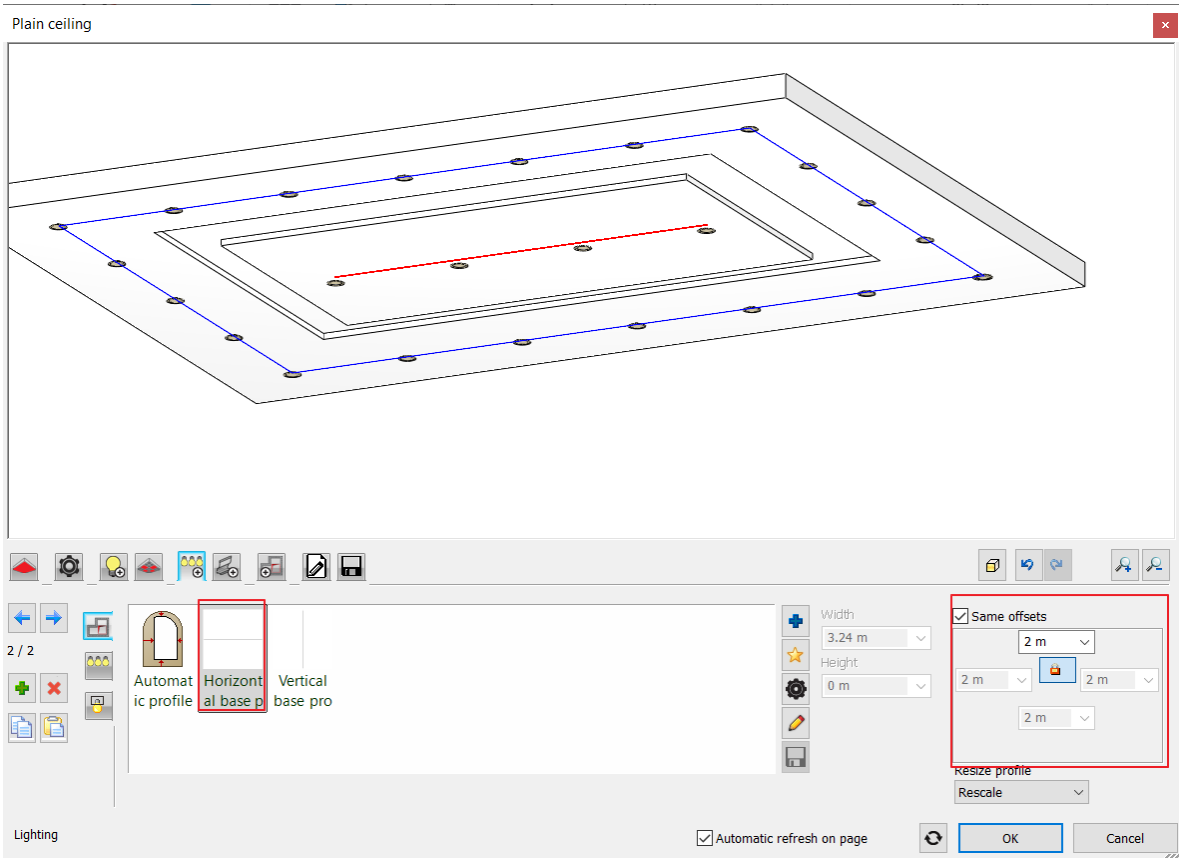
- In the Lighting tab, create spot lights along the Automatic profile.

- Move the lamps up 40 mm to be flush with the bottom of the suspended ceiling, then cut the area of the lamps out of the suspended ceiling.



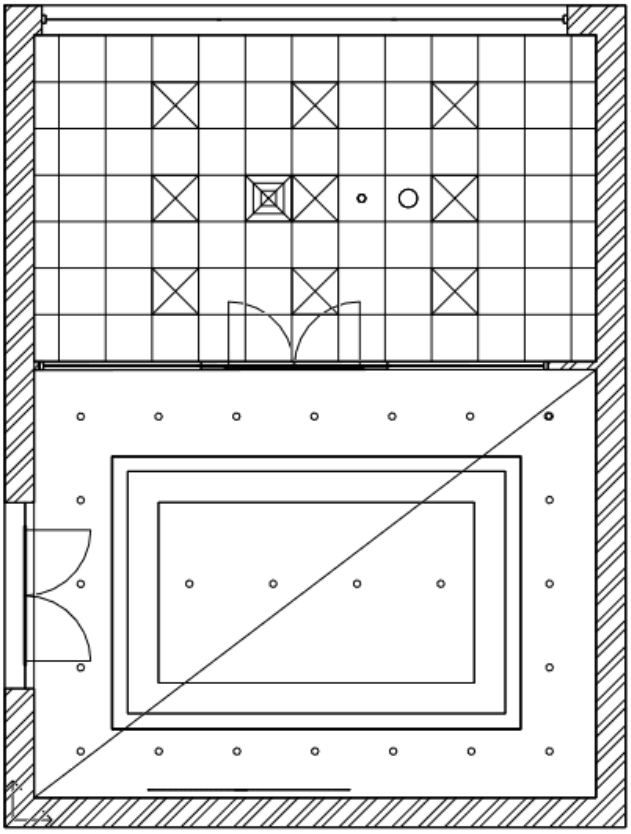
We place another row of spot lights on the center line of the island.

- Click the plus button  to add a new distribution.
- Select the Horizontal base profile on the first tab of Lighting. Keeping the Same offsets, rewrite the size to 2000 mm and create the spots with the green check mark.



Save the plain ceiling as Reception_plain_ceiling into the My category, Suspended ceiling subcategory.

The picture below shows the result on the floor plan:



- Turn back the Furniture and decoration layers, then rebuild the model.

  After editing the suspended ceilings, the 3D view:

  And the rendered image:

Workshop 5: Curtain walls

5. Workshop: Curtain walls

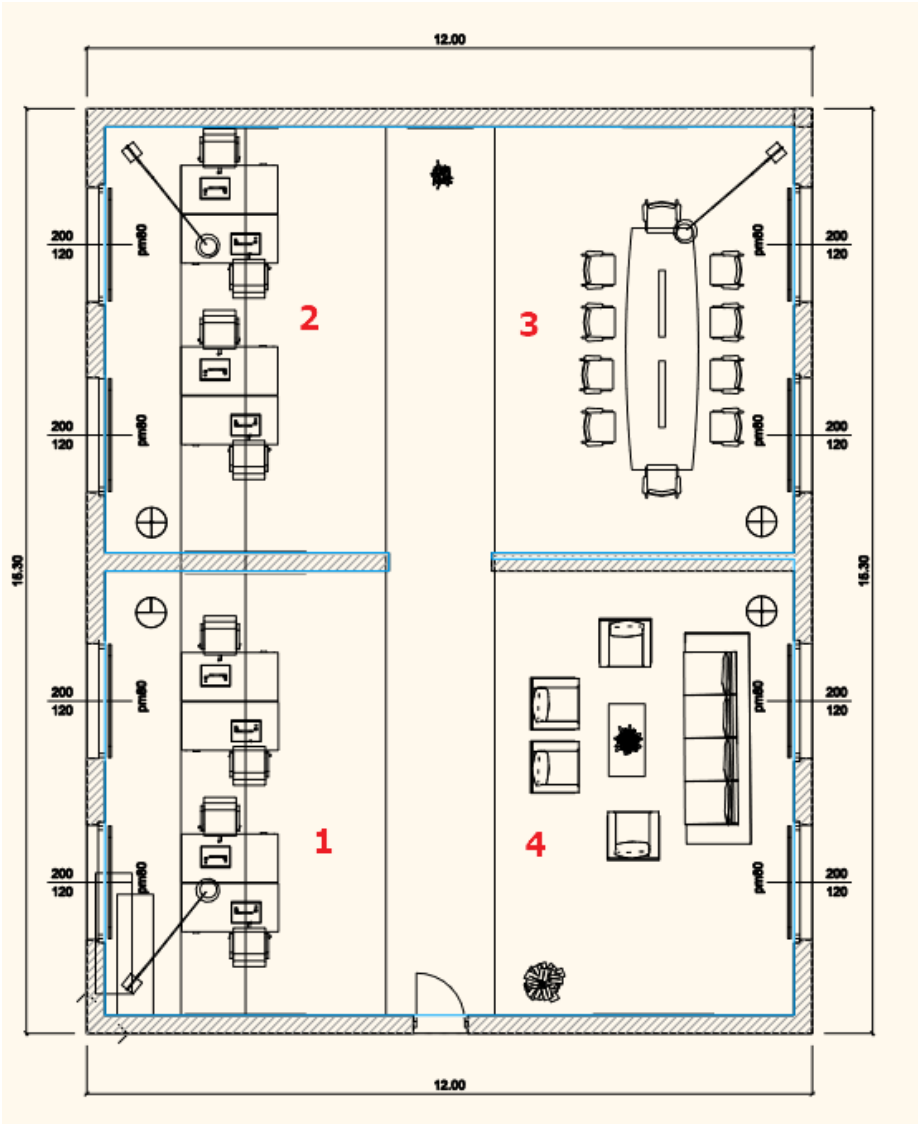
We frequently use curtain walls as room divider or as a building's exterior such as a shop front. Because they can be installed in any size and design, you can create unique and visually stunning exteriors.

The curtain wall is a special wall and consists of the frame, panels and mullions. Doors and windows can be inserted in the curtain wall. Since the curtain wall is based on the wall tool, you can apply wall tools such as resizing, editing, joining. Curtain wall behavior is the same as standard walls in connection to slabs, roofs and spaces.
We can solve many tasks with the curtain wall tool:

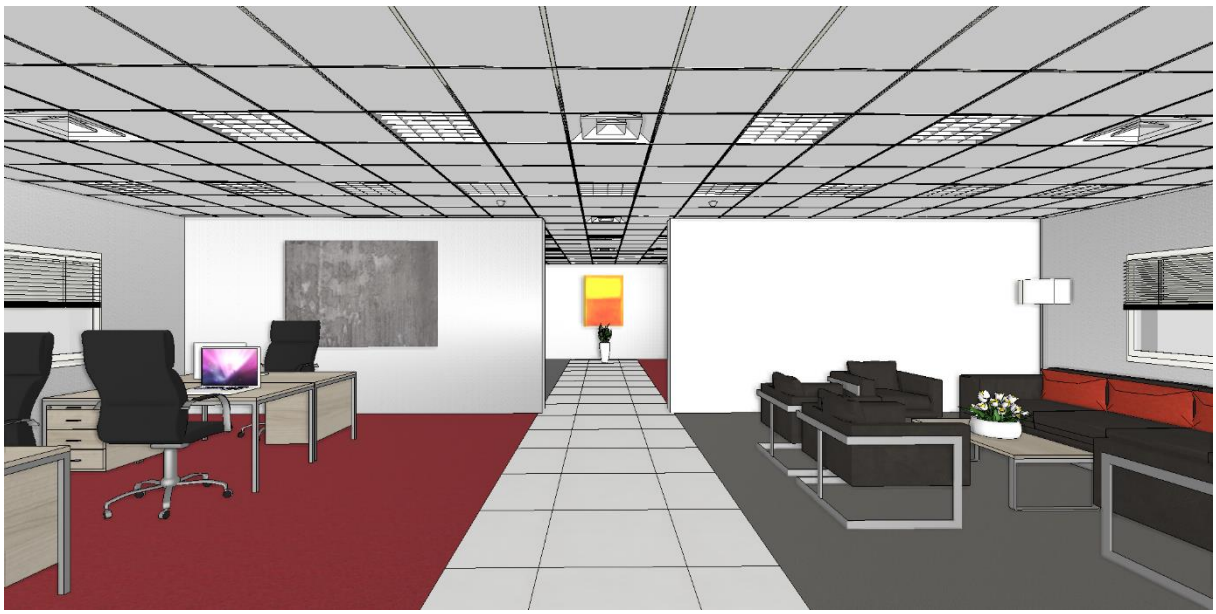
- create new curtain walls as room divider or shop front
- convert existing walls to curtain walls
- join more curtain walls
- create unique and customized glass insets in the wall

In the next example, we will alter an open-plan office in a way that we divide the space by functions, at the same time keeping the space open, airy and light.

- Open your browser and watch the following video tutorial:
  https://www.archlinexp.com/enrollments/courses/advanced-course/curtain-wall-design/1
- Open …\Documents\ARCHlineXP Draw\2024\Workshop_Advanced\5_Curtain_wall\ Office_with_curtainwall_Start.pro file. Save it under a new name.

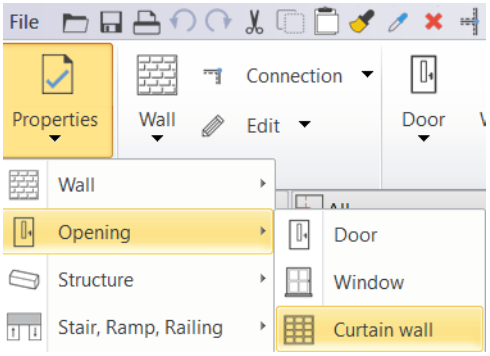


1. Office
2. Office
3. Meeting room
4. Lounge



5.1. Converting the 1st office to closed-space

Now we create a curtain wall to separate the first office space.

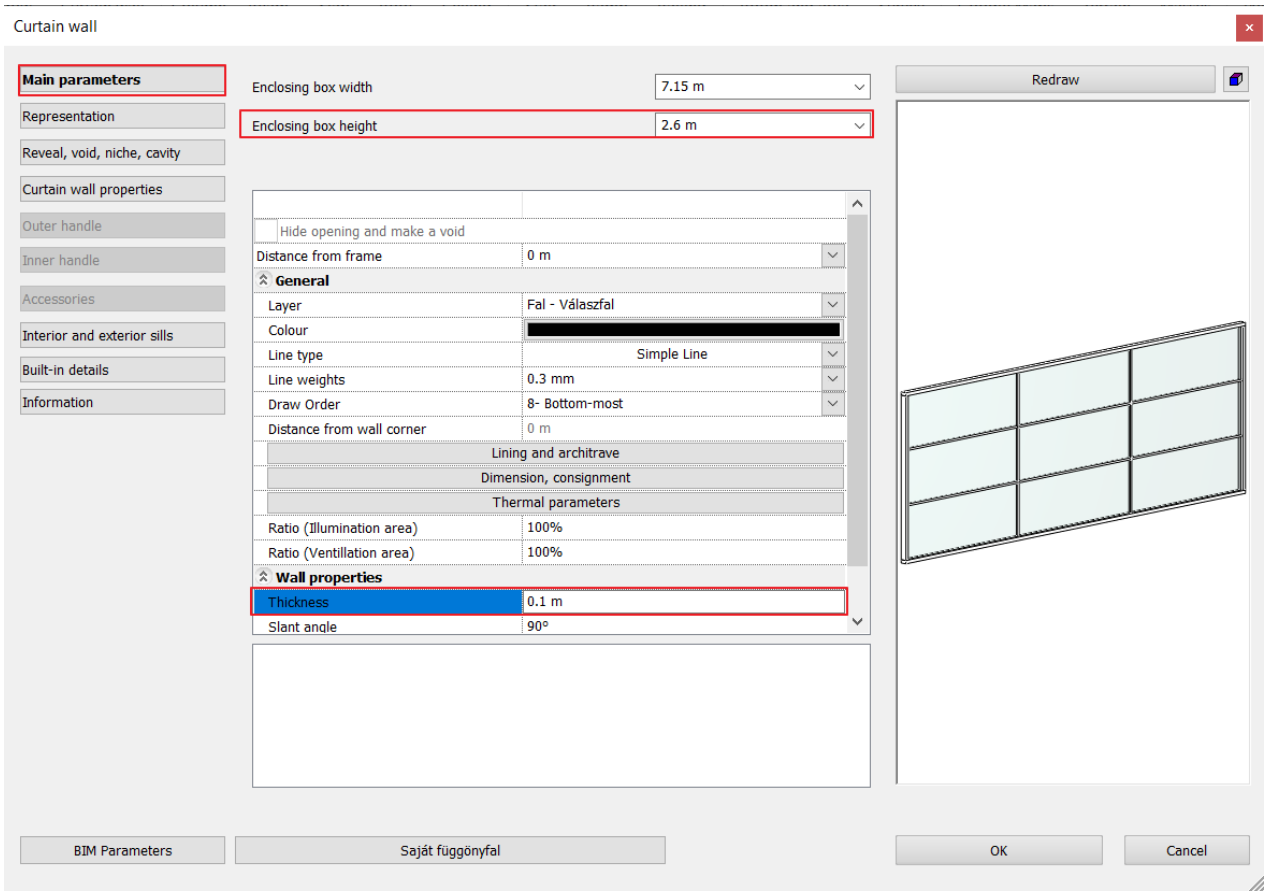


5.1.1. Set properties

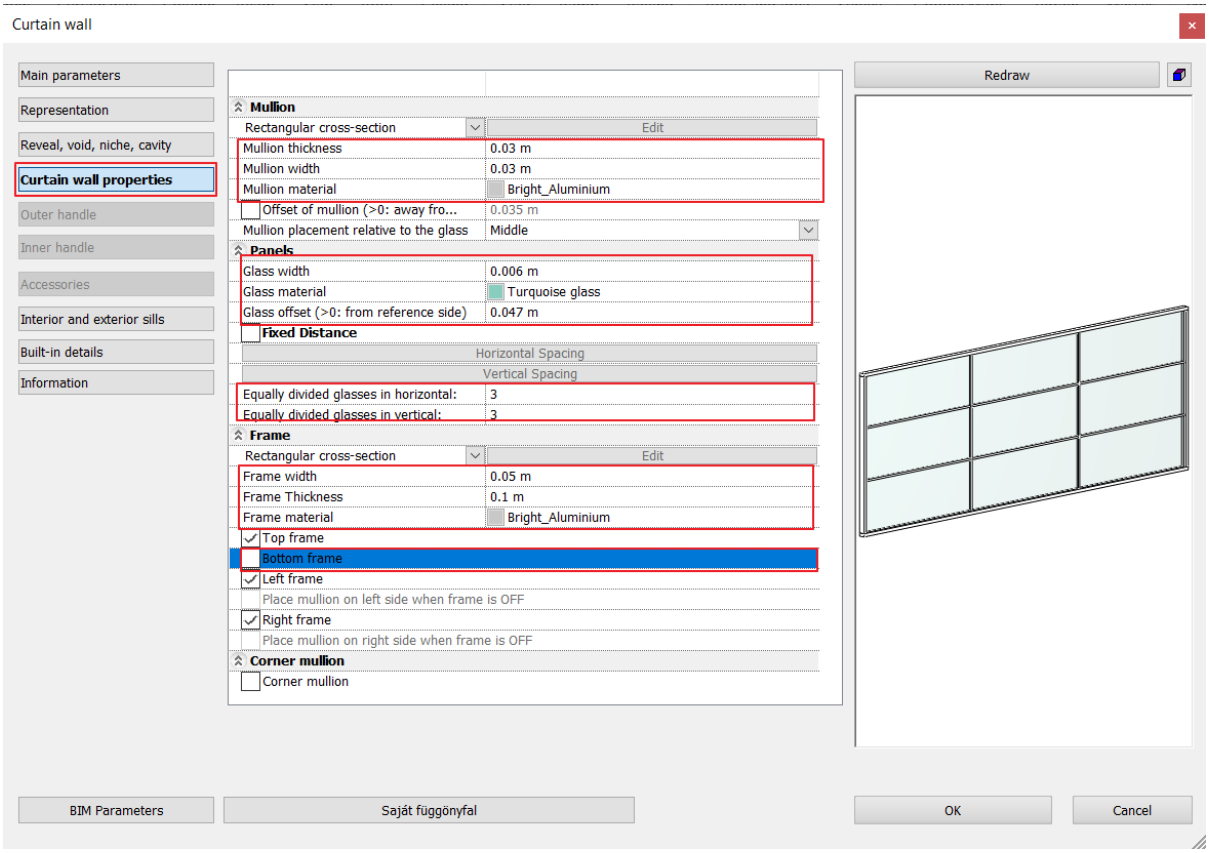
First set the curtain wall's properties and save it under a new style.

- Use the following parameters as the diagram shows below:

Main parameters



Curtain wall properties

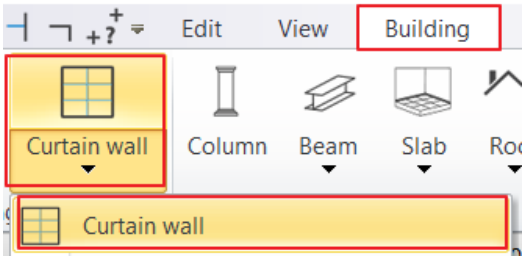


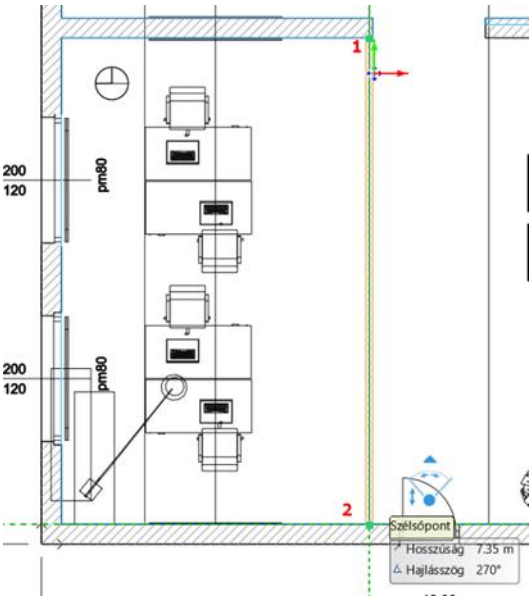
- Save the new the setting under a new style.

5.1.2. Create and edit the curtain wall

Draw the curtain wall

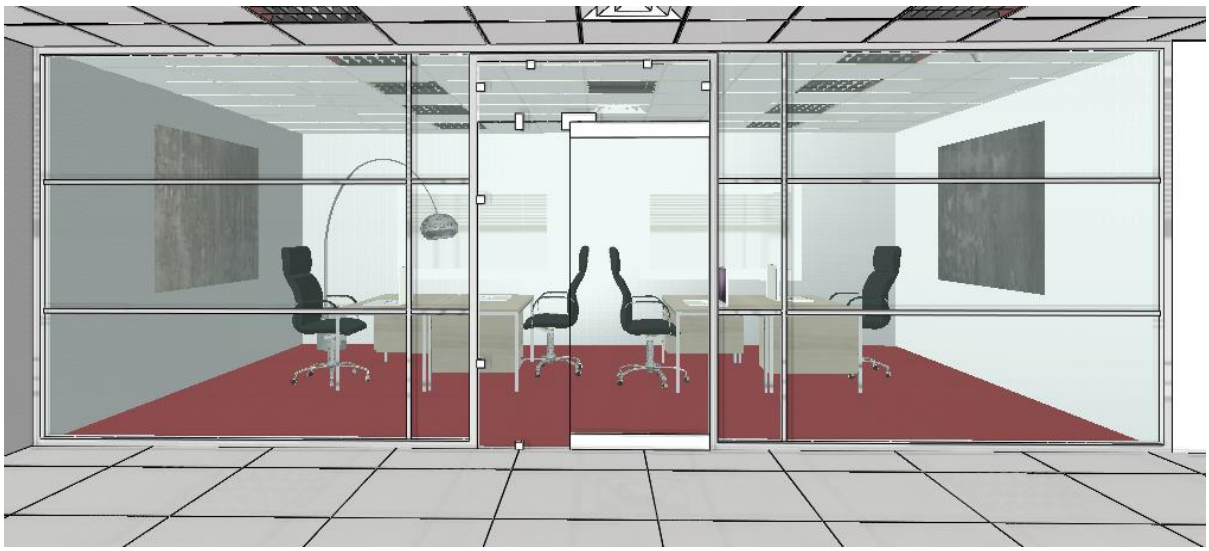
- Draw the curtain wall by using the Building – Curtain wall – Curtain wall command as it is shown below. You can use the wall midline as a reference (1, 2).





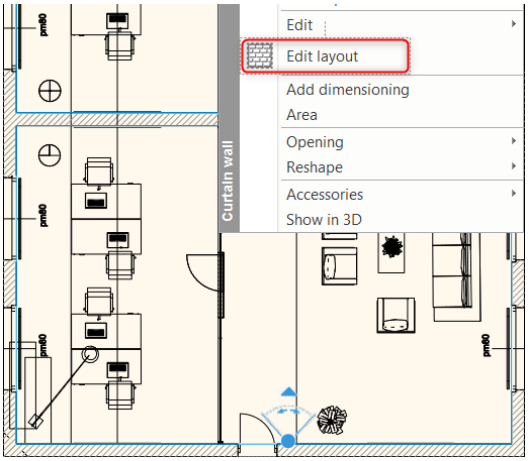
Insert a door

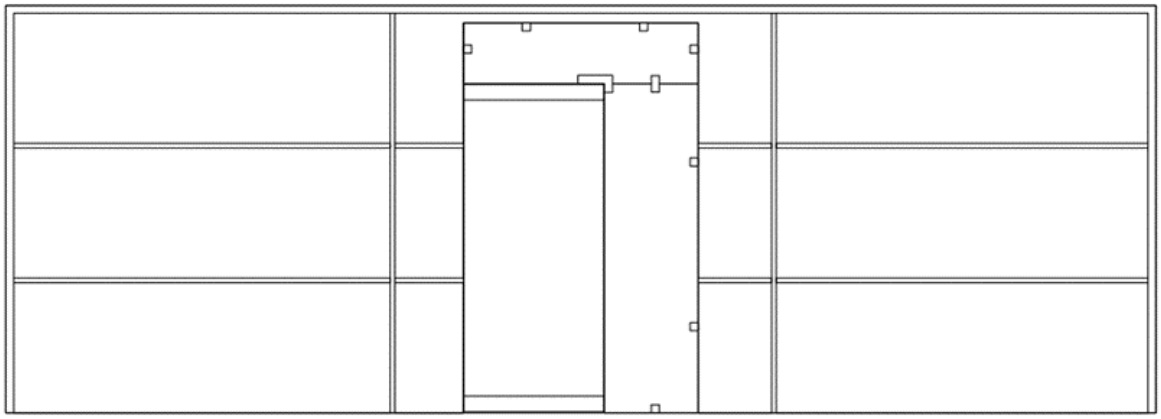
- Choose the “Single leaf glass door” from the Design Center - Building – Door - Outdoor - Glass folder and place it to the middle of the curtain wall.
- Modify the door height to 2490 mm. Set the “Distance from wall line” to 5 mm. The glass material is Turquoise glass.



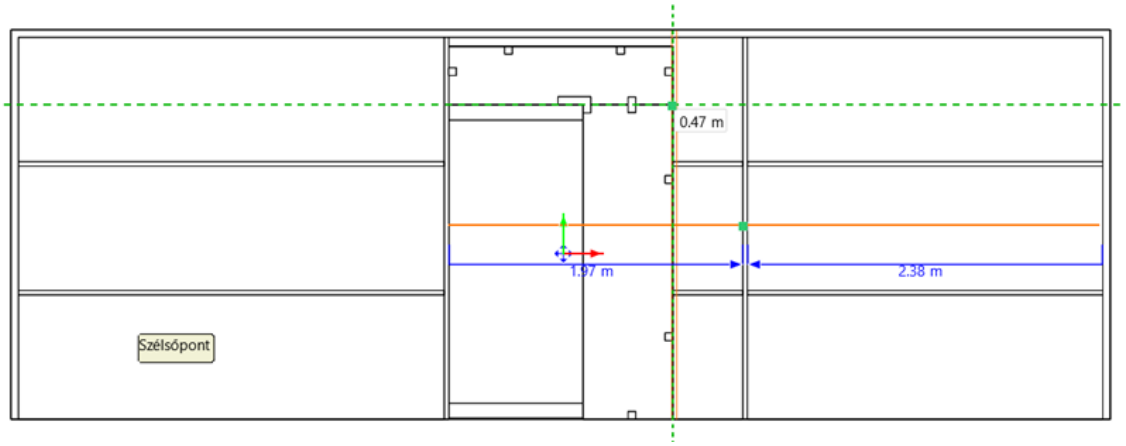
Edit layout

We can modify the divisions on the layout. Click on the side of the curtain wall which facing to the corridor; and then select the Edit layout command from the local menu.

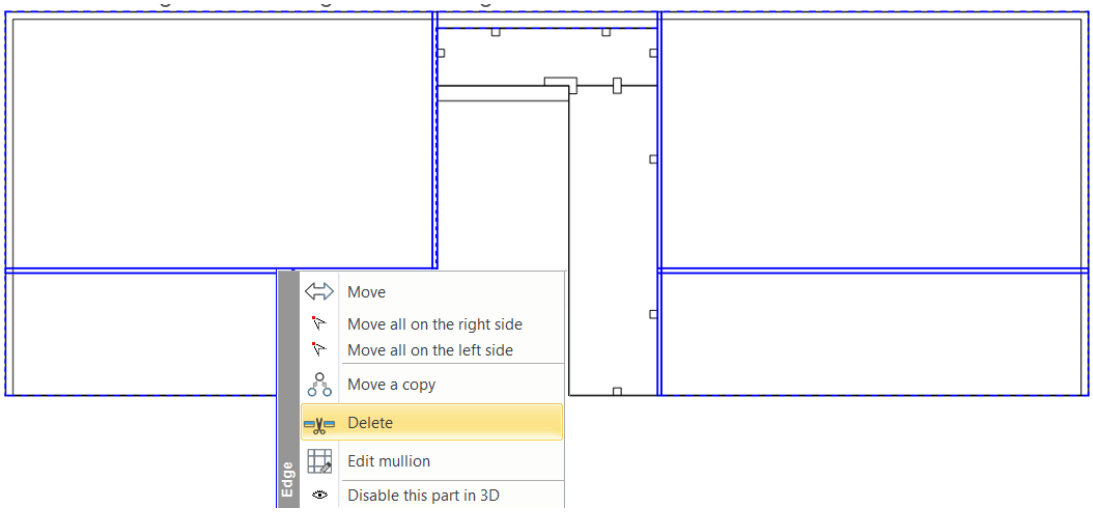




- Move the vertical dividers so that they are directly next to the door.



- Delete the vertical dividers.



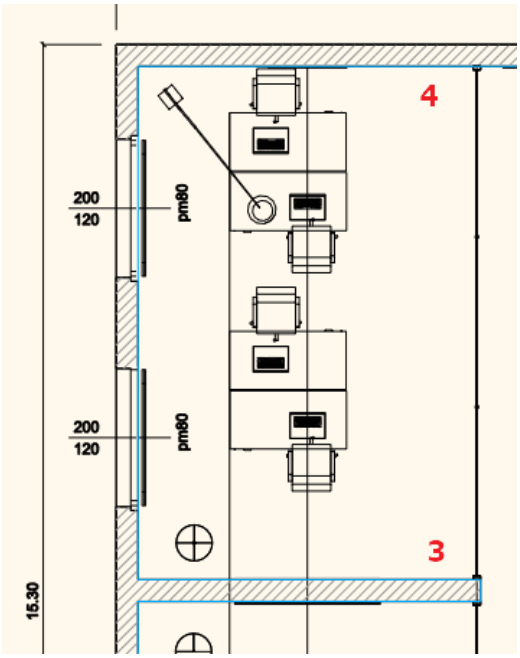
We get the following result:

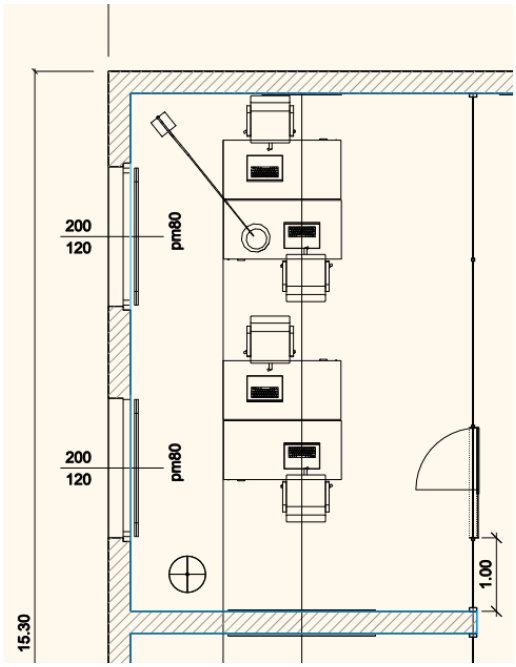
5.2. Converting the 2nd office to closed-space

We separate the other office by a curtain wall with the same method, but we use different divisions in this example.

Create the curtain wall

- Draw the curtain wall by using the Building – Curtain wall command as it is shown below. You can use the wall midline as a reference (3, 4).



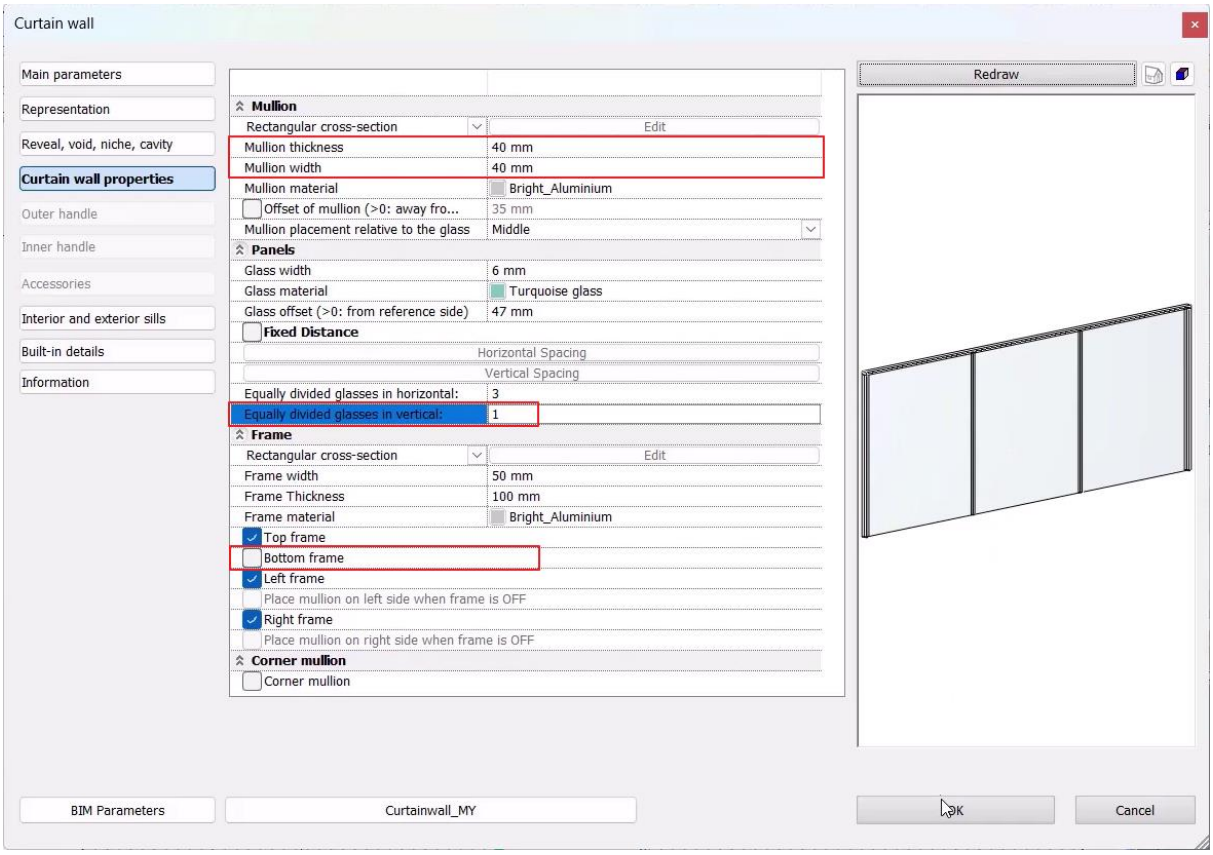


Insert a door

- Choose the “Single leaf glass door” from the Design Center - Building - Door - Outdoor - Glass folder and place it 1000 mm from the 3rd point.
- Modify the door height to 2490 mm. Set the “Distance from wall line” to 5 mm. The glass material is Turquoise glass.

Modify properties

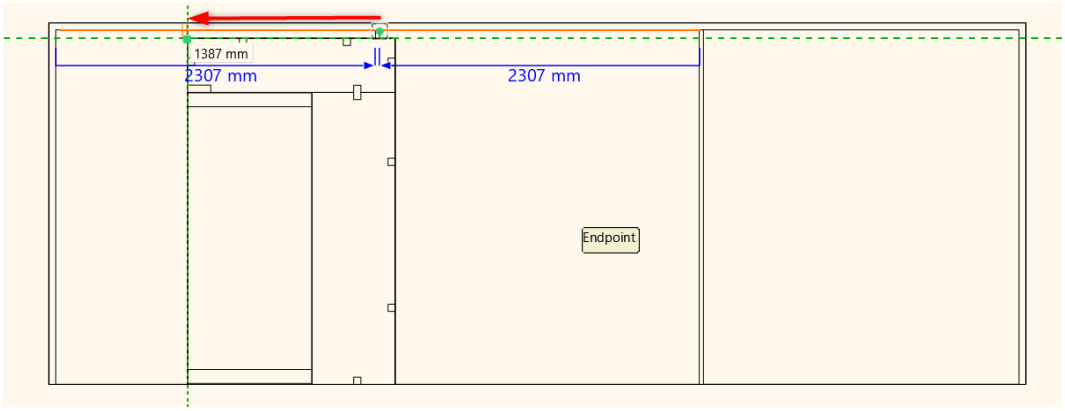
In the Curtain wall dialogue window change the width and height of the divider bar to 40 mm, and the “Number of the glasses in vertical” to 1 and switch off “Bottom frame” option.



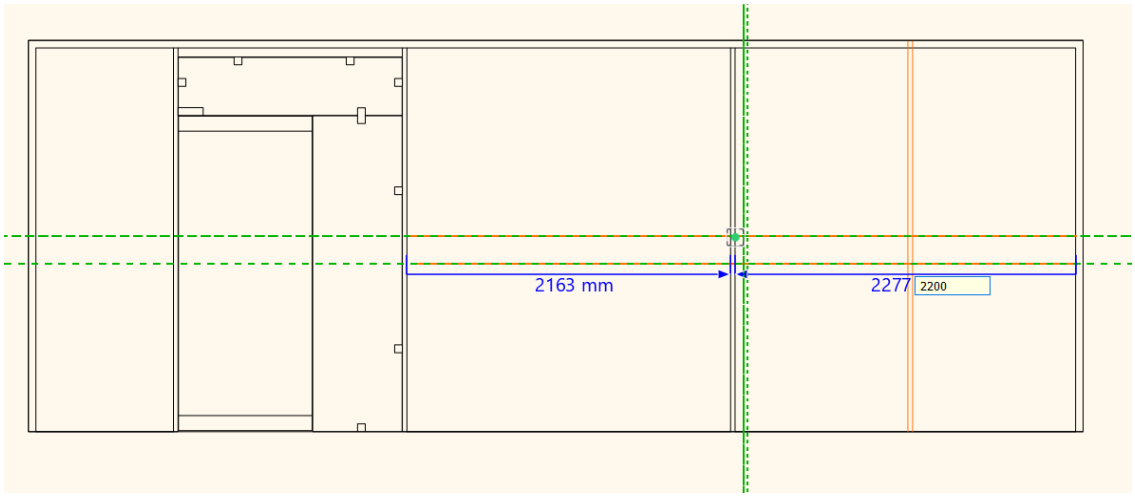
Edit divisions on the layout

We modify the vertical mullions on the layout:

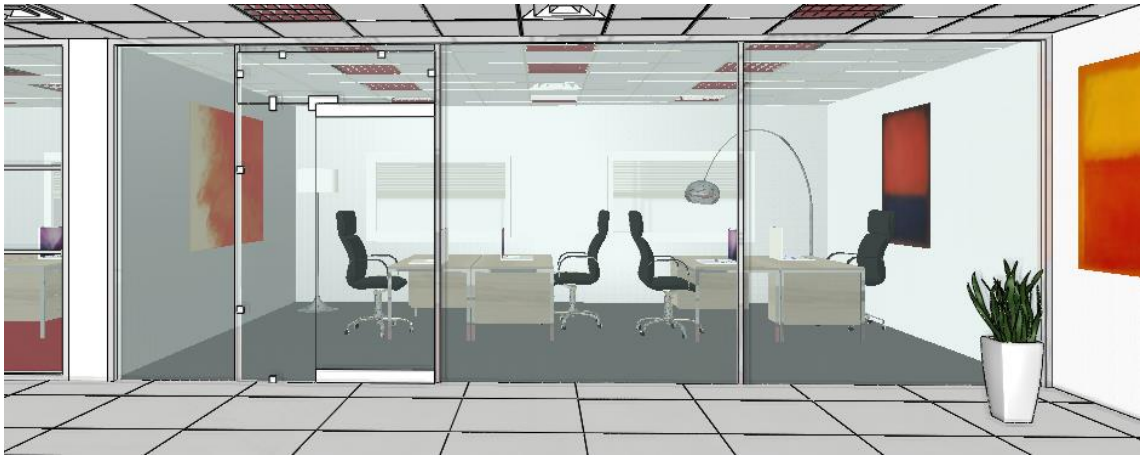
- Move the first mullion to the left side of the door.



- Move a copy of the second mullion to the right side of the door.
- Move 2200 mm, the third mullion from the door frame.



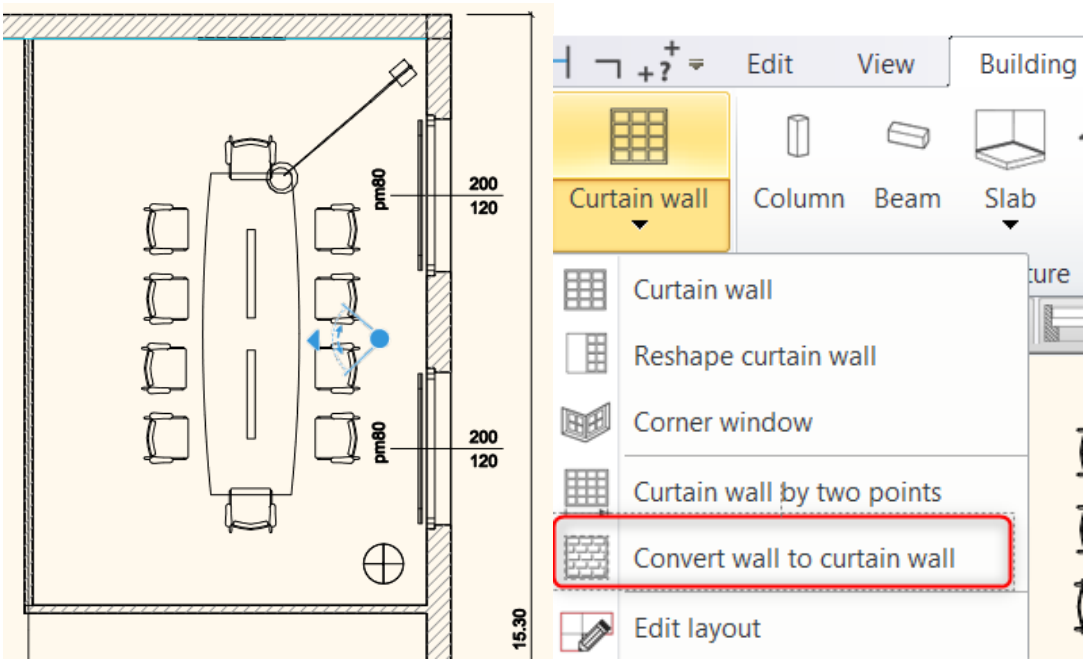
The result is the following:



5.3. Creating the meeting room

We partition the meeting room with curtain walls on two sides. This way, we form a corner room.
At the moment, the meeting room is separated from the lounge with a wall, which is not structural. We can modify this wall.

- Modify the wall thickness to 100 mm and draw the same type of wall to separate the meeting room from the corridor.



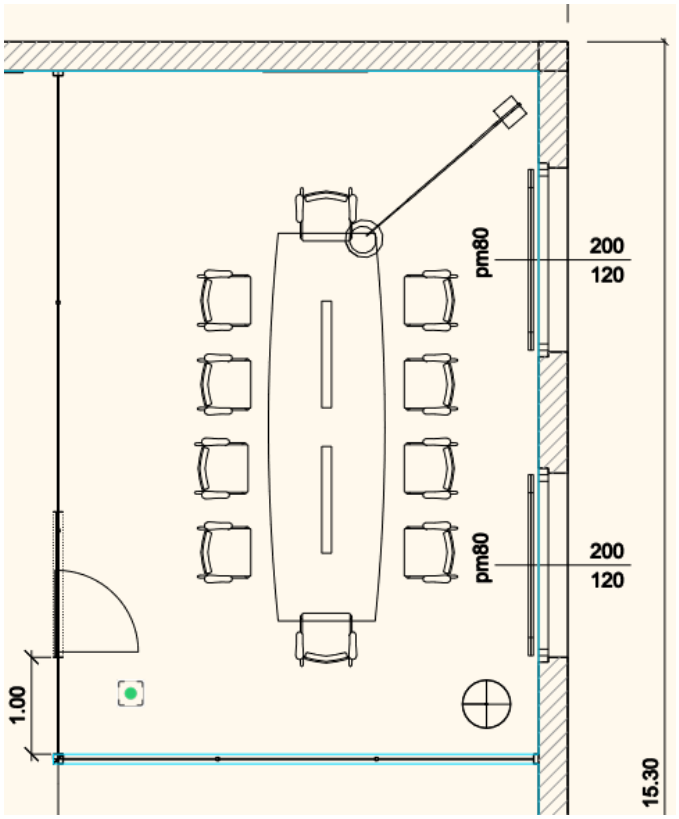
Convert wall to curtain wall

We convert two walls to curtain walls in the meeting room.

- Choose the “Convert to wall to curtain wall” command, and then click on the two walls.

Insert a door

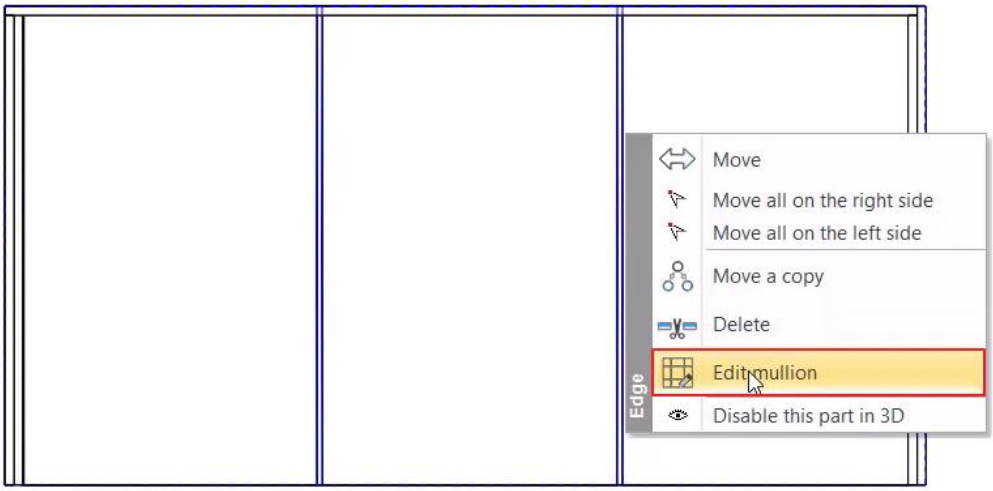
- Now we insert a door on the wall facing the corridor. Choose the “Single leaf glass door” from the Design Center – Building – Door – Outdoor – Glass folder and place it 1000 mm from the corner.
- Modify the door height to 2490 mm. Set the “Distance from wall line” to 50 mm. The glass material is Turquoise glass.

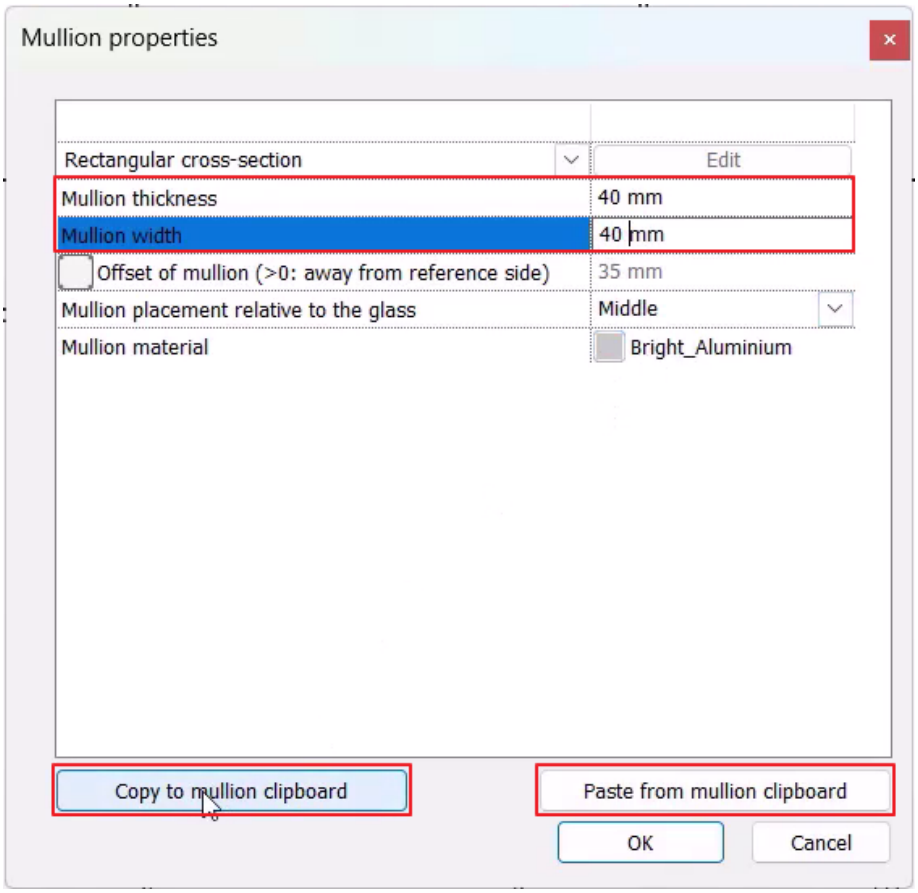


Edit divisions on the layout

- Move the vertical mullions to the right and left sides of the door.
- Create a new vertical mullion at the midpoint of the right section.
  Delete the horizontal mullions.

- On the second curtain wall, also delete the horizontal dividers, then adjust the width and height of the vertical mullions to 40 mm. Update the values for both mullions, or use the Copy to/Paste from mullion clipboard command in the dialog to transfer the values easily.

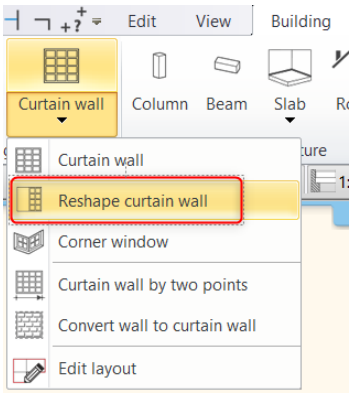

Move
Move all on the right side
Move all on the left side
Move a copy
Delete
Edit mullion
Disable this part in 3D
Edge


Mullion properties
Rectangular cross-section
Edit
Mullion thickness
40 mm
Mullion width
40 mm
Offset of mullion (>0: away from reference side)
35 mm
Mullion placement relative to the glass
Middle
Mullion material
Bright_Aluminium
Copy to mullion clipboard
Paste from mullion clipboard
OK
Cancel

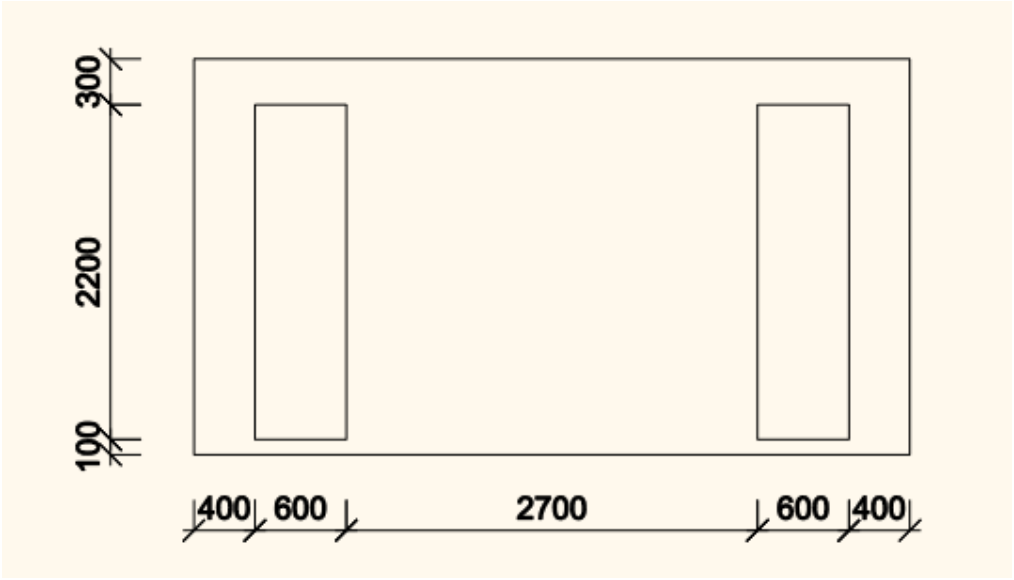
The unified design with curtain walls is now complete.

5.4. Reshape the curtain wall

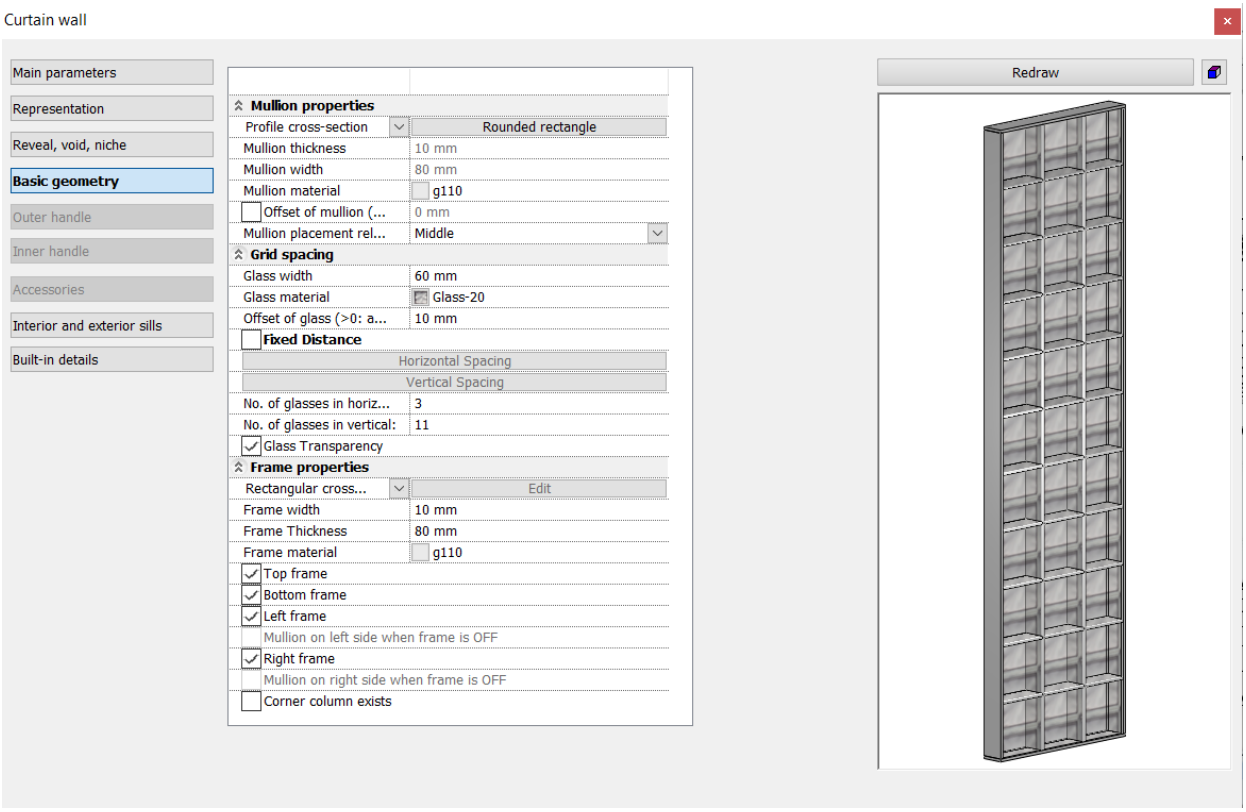
On the wall between the office spaces, we place glass blocks.



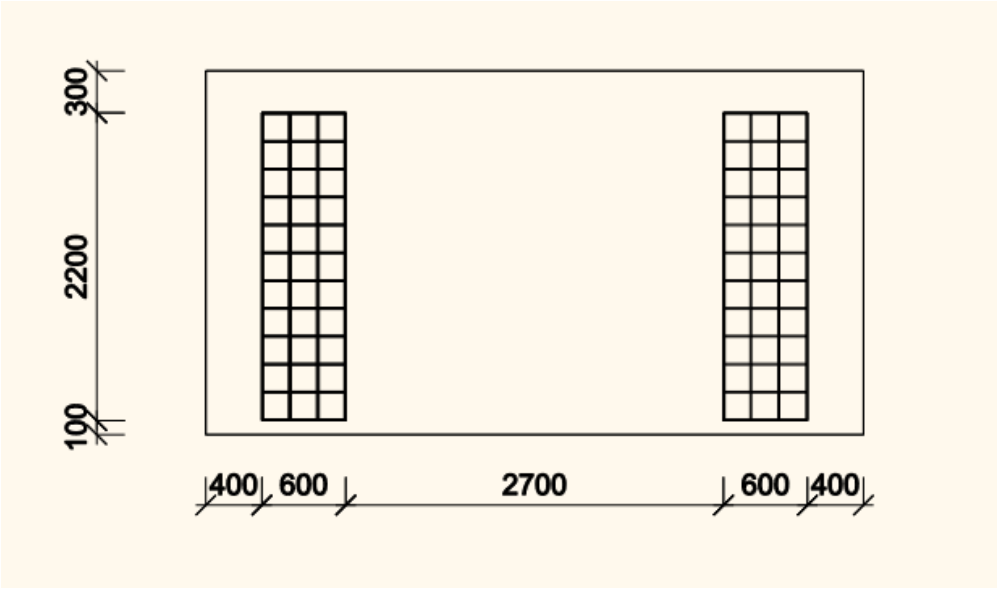
- Choose Building – Curtain wall - Reshape curtain wall command
- Click on the wall, and put the layout on the drawing on the floor plan.
- Define the first rectangle as a profile.



- Now set the curtain wall properties as it is shown below:



- Apply the same parameters on the second rectangle as well.


300
2200
100
400
600
2700
600
400

Workshop 6: Framed walls

6. Workshop: Framed walls

When adjusting the framed structure of the walls, you can create column positions, double top plates, and other similar structures that can be created by copying the original structural elements. With the help of this, a complex, parametric frame structure can be designed according to the current structural goals.

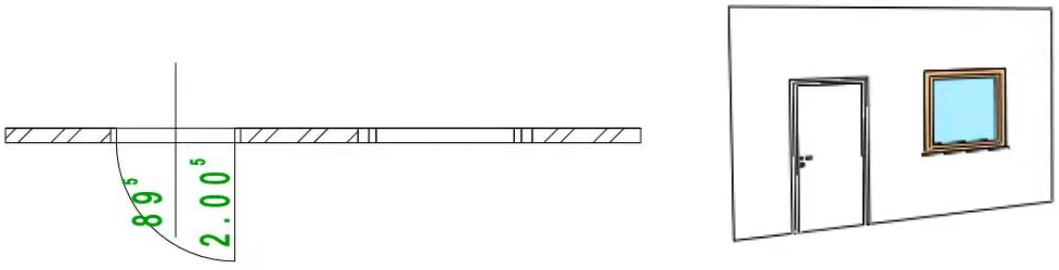
- Open your browser and watch the following video tutorial:
  https://www.archlinexp.com/enrollments/courses/advanced-course/framed-walls/1
- Open the file named… \Documents\ARCHlineXP Draw\2024\Workshop_Advanced\6_Framed_Walls\01_Framed_Walls_Linz_Start.pro. Save the project as another.

  The building in the project is made with a framed wall structure, which provides a sample of what a completed frame structure is like. All parameters of the frame structure can be freely changed and adapted to individual needs.

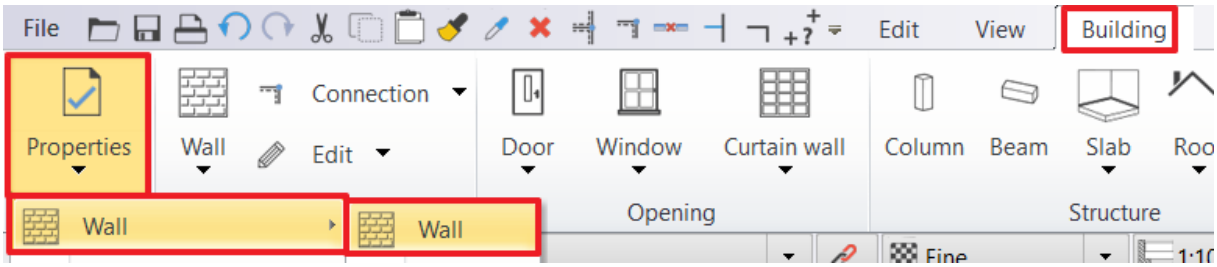
6.1. Creating framed walls

There are two ways to create a structure:

❖ Modifying an existing wall's properties



❖ Defining the default wall structure in the Building / Properties / Wall / Wall option.

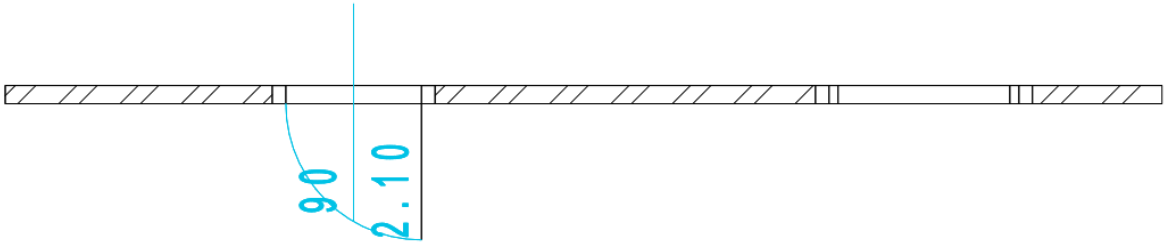


You can select the already created and saved frame structures from the side menu before drawing the wall.

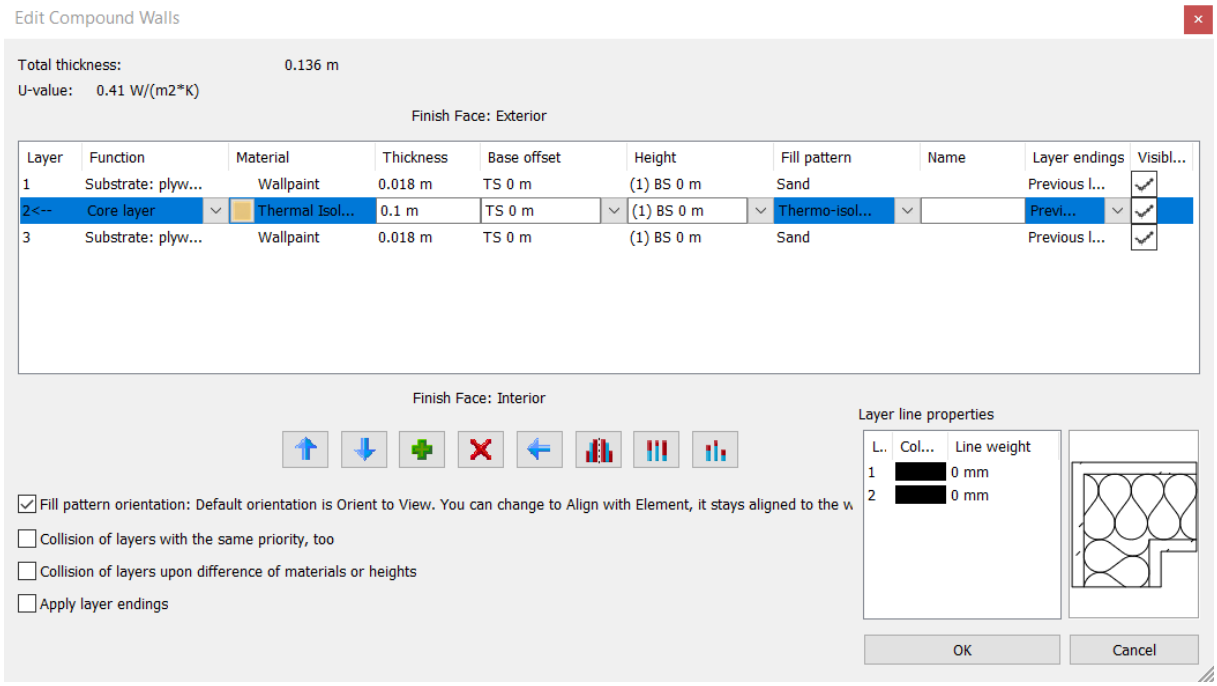
6.1.1. Setting framed wall properties

The aim of the Workshop is to build your own framed wall structure based on the existing house, which can also accommodate windows and doors.

- According to the first option, draw a 1 layered 10 wide wall section next to the house, and place a door and a 1200 x 1200 mm window on it.



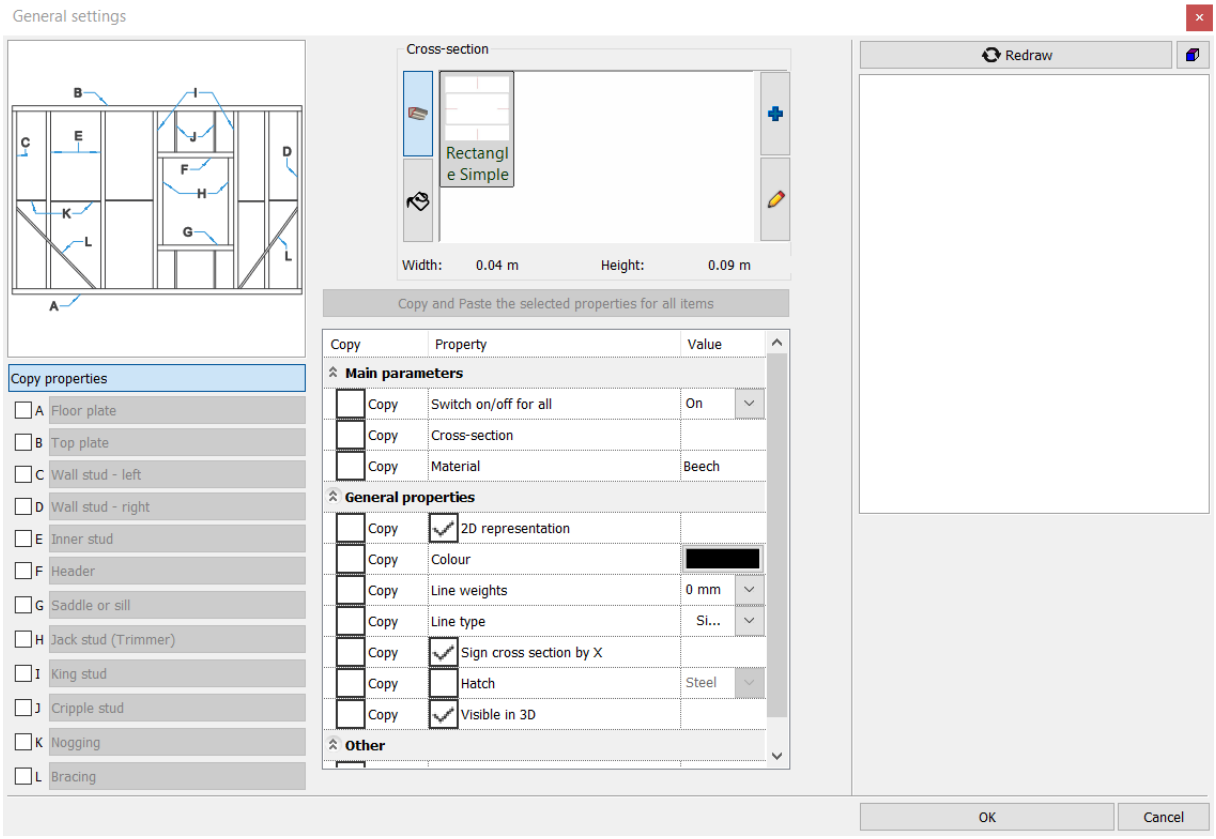
- Edit the wall layers in the properties as follows:
- Add two 18 mm thick layers and adjust the parameters shown in the image below. Set the Core layer as displayed layer using the blue arrow. 



6.1.2. Setting the framed structures' properties

- When you finished setting the wall's layer structure, click on the **Wall Framing** option in the properties of the wall.

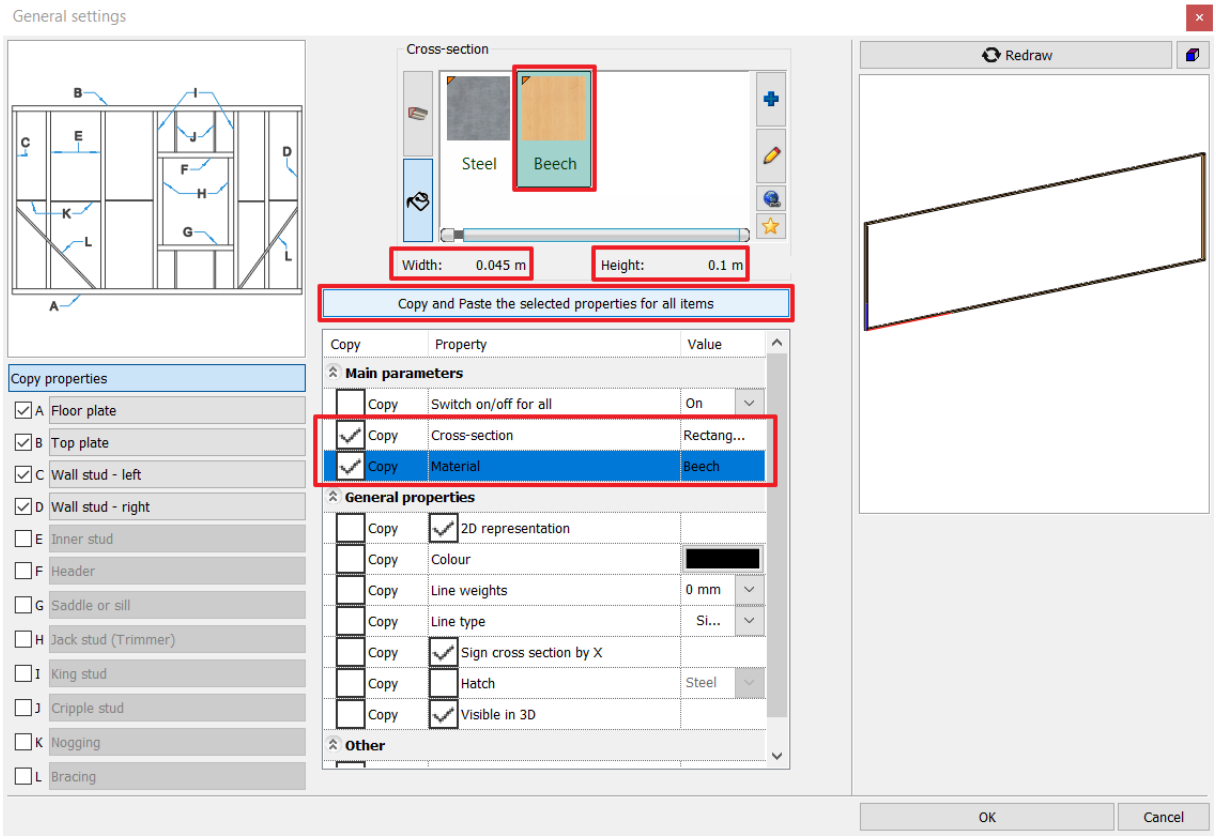
  In the wall framing settings, each element can be turned on and off separately, each element is labelled with a letter, and the explanatory figure above indicates exactly where the elements are located in the structure. In the 3D preview window, the item you select in the list is marked in red on the left. The cross-section and material of the elements can also be modified individually, the special properties of some can also be edited, these settings can be accessed by clicking on the button of the corresponding element. Some parts only appear in the structure on the right side of the dialog box when a door or window is installed.



Copy properties

On this tab, you can set the general properties that will apply to each item.

- After changing the shape and size of the cross section and its material, under the main parameters, select the properties of the elements that you want to copy to the properties of all elements, and then use the *Copy and paste the selected properties for all items* command to make changes.



Floor plate

The floor plate is a horizontal beam at the bottom of the frame structure to which the studs are attached. It can be assigned to a structure on several base elements by pressing the  symbol. Different parameters can be specified for each base element.

Top plate

The top plate is a horizontal beam at the top of the framed structure, the same settings are available as for the floor plate.

Wall stud – left

In addition to the size and material of the left-hand corner column, you can also change its floor plan display, and you can turn the X on the intersecting surface on and off. The  mark can be used to add additional corner posts to the structure if needed.

Wall stud – right

The right-hand corner column has the same settings as the left-hand one.

Inner stud

In addition to the size and material and floor plan settings, there are several ways to adjust the distance between the columns in the internal column settings. You can choose to measure the distance from the axis or edge of the column and how far apart the columns should be.

Header

A bridging beam over doors and windows is required for their attachment. The number of beams can be specified, they are placed next to each other to achieve adequate stability and thickness.

- Rewrite the number of headers to 2 and rotate the profile so that they are joined at their widest side.

Saddle or sill

The saddle is the piece that appears at the parapet line to hold and secure the windows.

The Saddle has inherited the number of beams, but here 2 beams are not needed.

- Change the number of beams to 1.

Jack stud (Trimmer)

The jack stud is the column from the saddle to the header that connects to and secures the sides of the doors and windows.

King stud

The king stud is a column running along the entire height of the structure in addition to the jack stud on either side of the doors and windows.

Cripple stud

In the case of doors and windows, vertical columns appearing under the saddle and above the header, which can be given the same settings as the inner columns.

Nogging

The nogging is a horizontal beam that increases the stability of a structure and can be incorporated into the structure in a number of ways. Either with alternating heights or with the same heights, the relative heights always denote the heights of the lowest point. These settings can also be changed freely.

Bracing

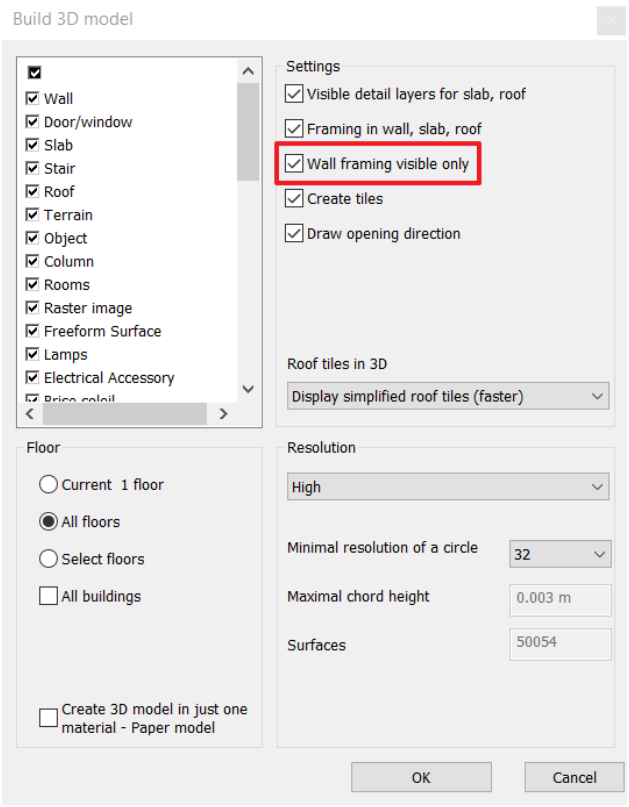
Among the properties of the bracing appearing at the edge of the structure, the location of the endpoints can be adjusted and they typically have a different size than the other elements of the structure.

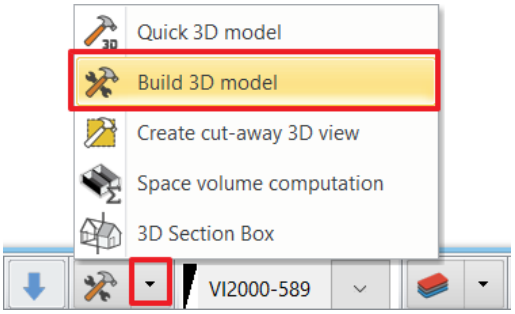
- Set the properties of the frame structure listed above to the appropriate values and then accept the changes by pressing the OK button, and save it as a new style.

  Like other wall properties, framed wall structure settings can be saved by creating a wall style, so you can create ready-made structures with different layer orders and framed structures that you can use in new projects by selecting the appropriate style.

6.1.3. Show only the framed structure in 3D view

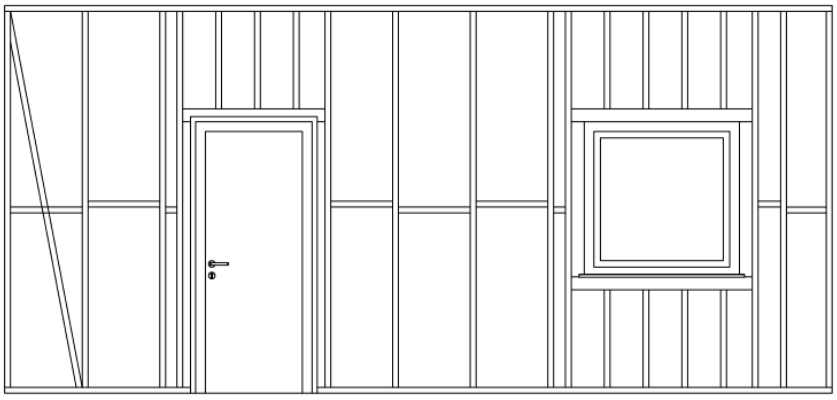
The changes appear immediately in the floor plan view, and by selecting the wall in the 3D window, you can see that there is a framed structure in the wall. When displaying walls in 3D, it is possible to display only the frame structure with doors and windows, but not the wall layers and cladding. To do this, click the Build 3D model and activate the *Wall framing visible only* option.

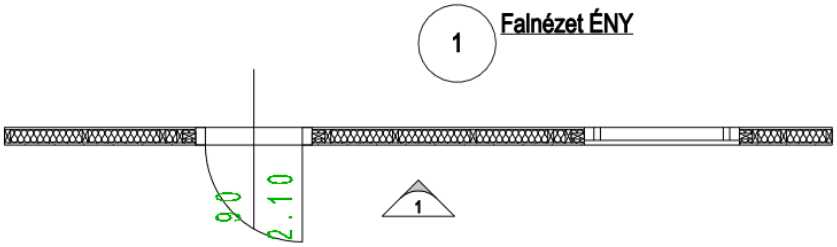




6.1.4. Dimensioning of frame wall

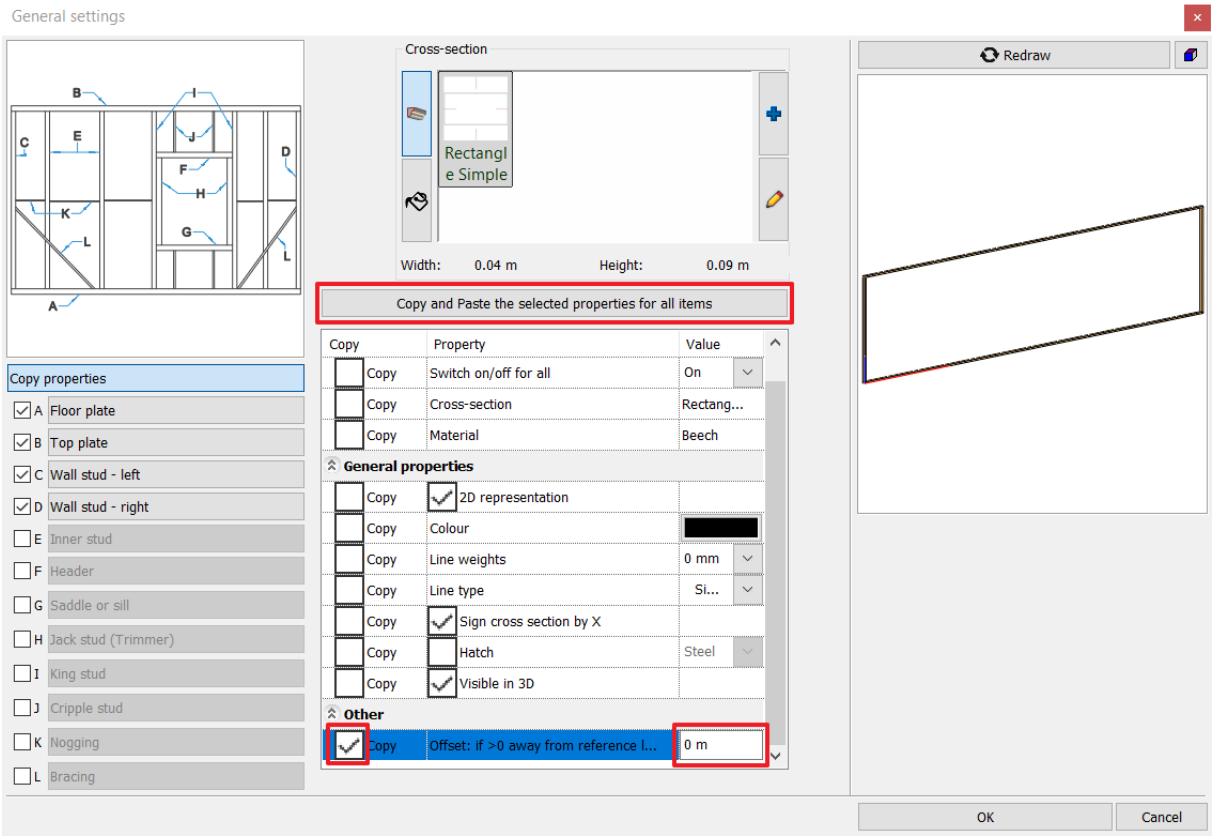
It is possible to dimension the frame wall structure. From the local menu of the wall, select Accessories and then place wall framing frontal view to get an expanded view of the wall structure.





6.1.5. Shifting the framing

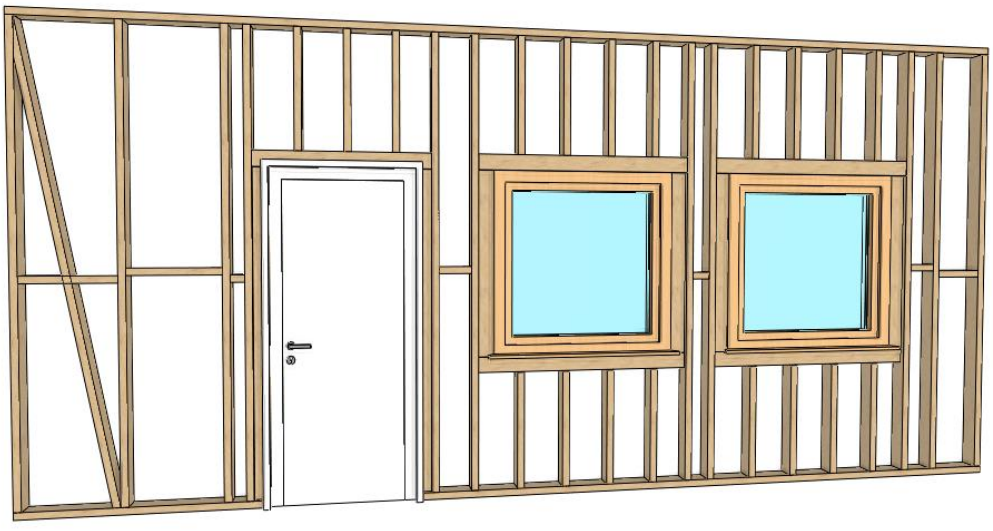
The default setting for the framed structure is that the center of the framed structure is always aligned with the center of the selected wall layer, which in some cases (for example, in the case of a two-layer overlay frame structure) is not appropriate for the design. This can be solved by the frame structure offset function, which can be set in the frame structure settings on the Properties tab for the entire structure. In the "Other" field of the property list, enter the amount of offset, then check the box and click on *Copy and Paste the selected properties for all items* option.



6.1.6. Placing new opening

When a new opening is installed, the program automatically creates the necessary frame elements around the new opening.

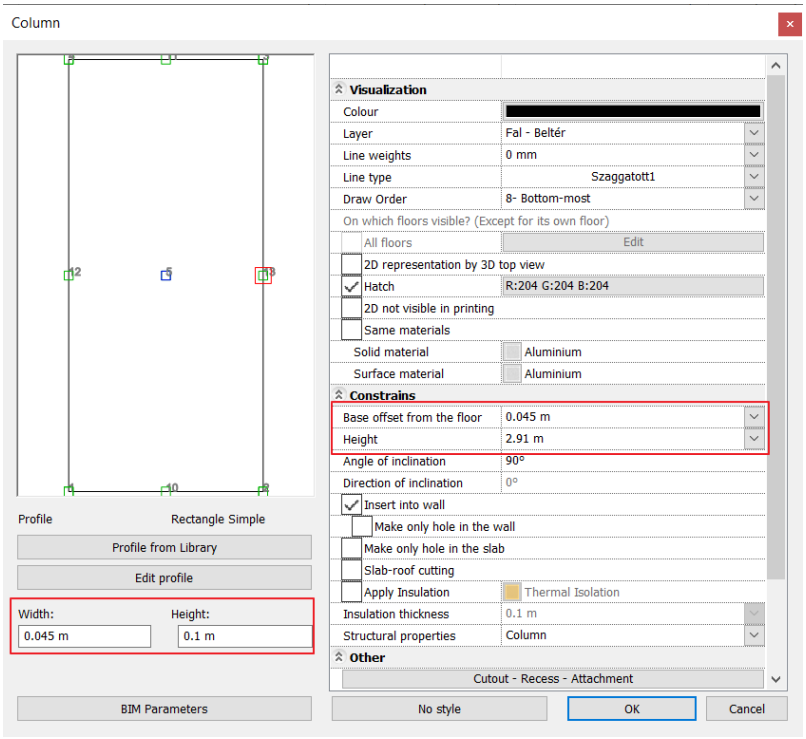
- Copy the placed window and place it next to it.



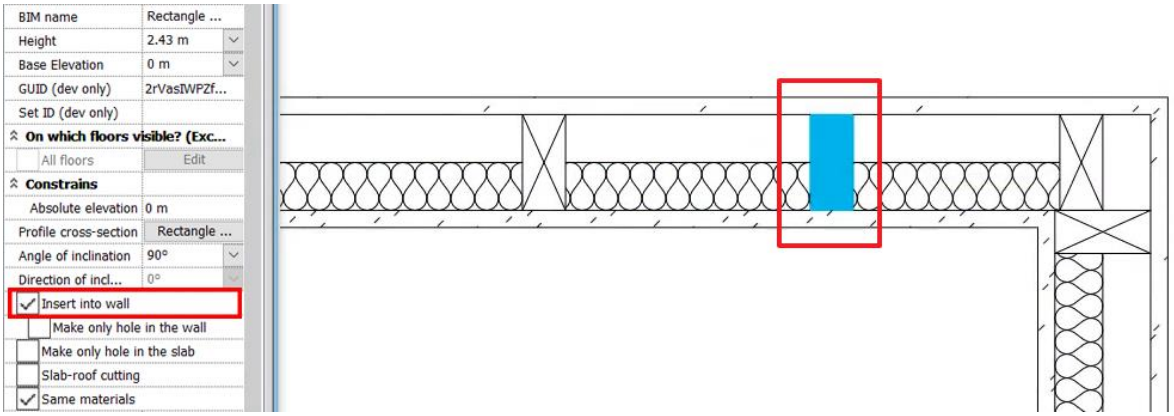
6.1.7. Placing studs in the structure manually

You can use the Building / Column command to place a column of any property individually in the frame structure.

- Set the properties of the column, and place it in the structure.



- To enable this column to engage the frame structure, enable the Insert into wall option in the properties. The columns attached in this way move along with the wall as you move the wall.



6.1.8. Wall connections

When connecting walls, the program automatically creates the structural elements required for the connection. Wall connections can be modified in the same way as for any wall style.

6.2. Planning with grid lines

With the help of the grid lines, it is possible to easily and quickly design framed hall buildings or any building / structure, which consists of columns and beams fitting to the mesh.

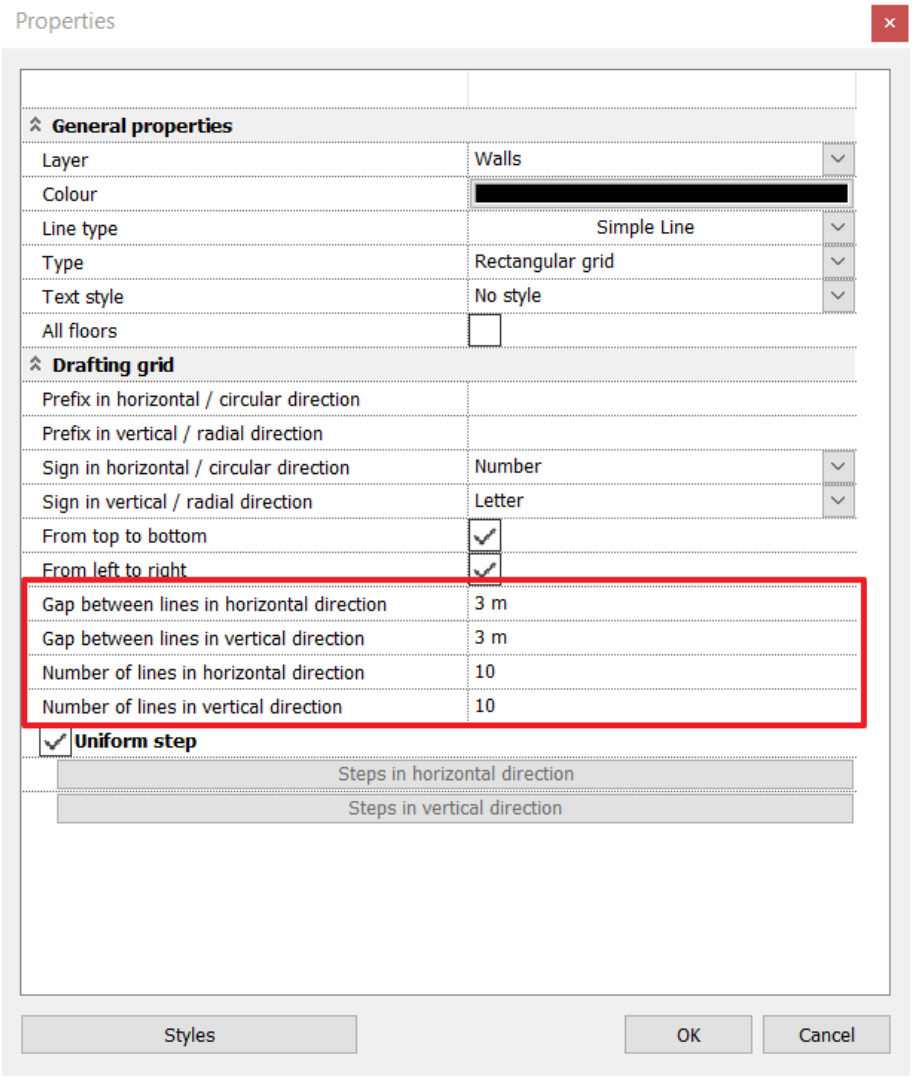
After placing the grid lines, the columns and beams placed above the intersection points and lines automatically establish a connection with the mesh, so that the position change of the mesh lines is followed by the objects placed onto them. As a result, the workflow is significantly faster.

6.2.1. Setting the default parameters of the grid lines

You can set the properties of the grid lines in the Ribbon menu / Drafting / Properties / Grid lines option.

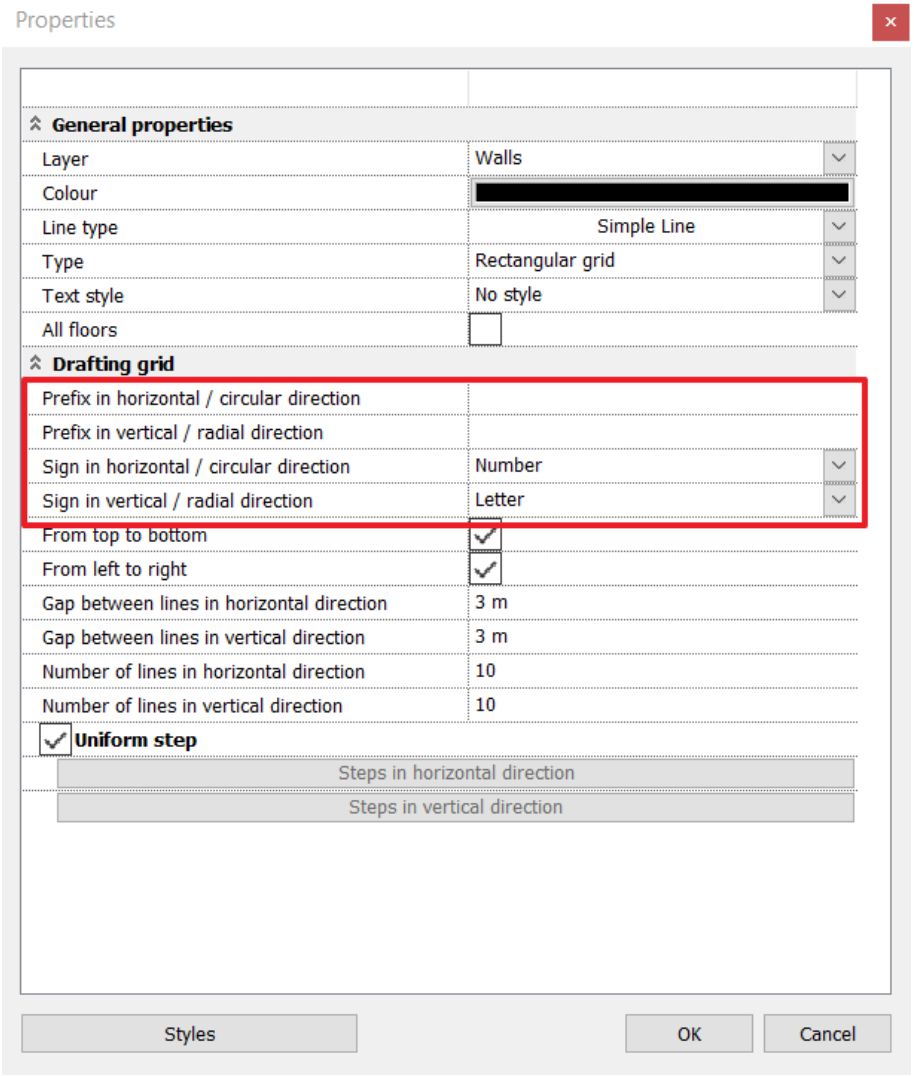
Allocation of the lines

In the properties you can set the distance between the horizontal and the vertical lines and how many lines to place in each direction.



Setting the symbols of the lines

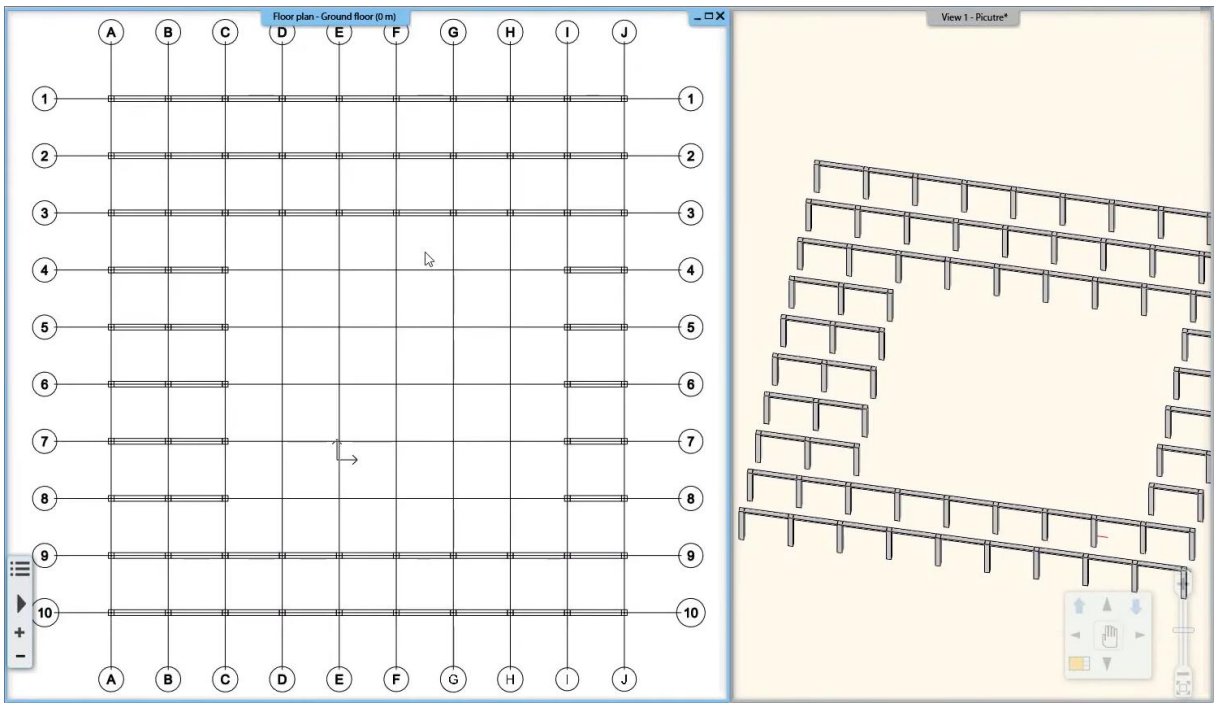
Not only can you specify the placement of the lines, but also what symbols are associated with those lines, which helps you define parts of the grid. For both vertical and horizontal lines, you can specify a letter or number, and you can specify a unique prefix for the characters you set.



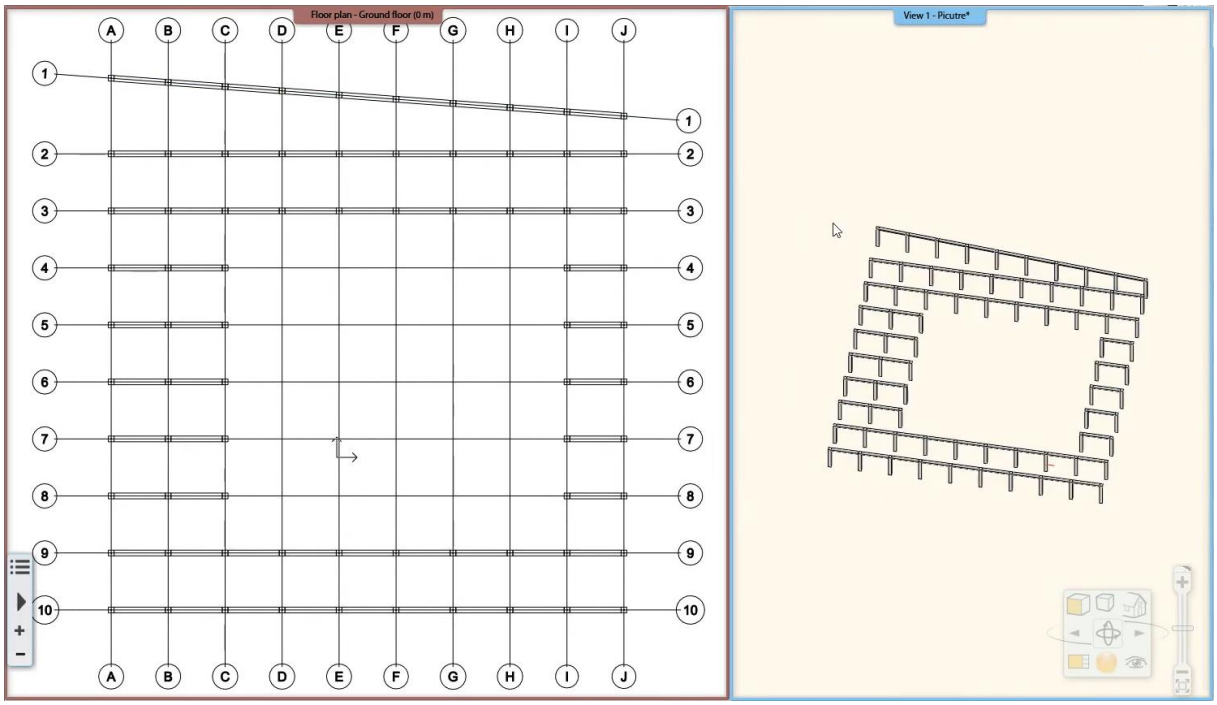
6.2.2. Placing the grid lines

Use the **Drafting / Grid / Place** function to create the mesh.

- Place a mesh of 10 horizontal and 10 vertical lines spaced 3 meters apart, then place columns at the intersections. Also draw beams between the columns. Use duplicate commands to efficiently create large amounts of items. Remove some elements from the center of the mesh to create a hall-like layout.

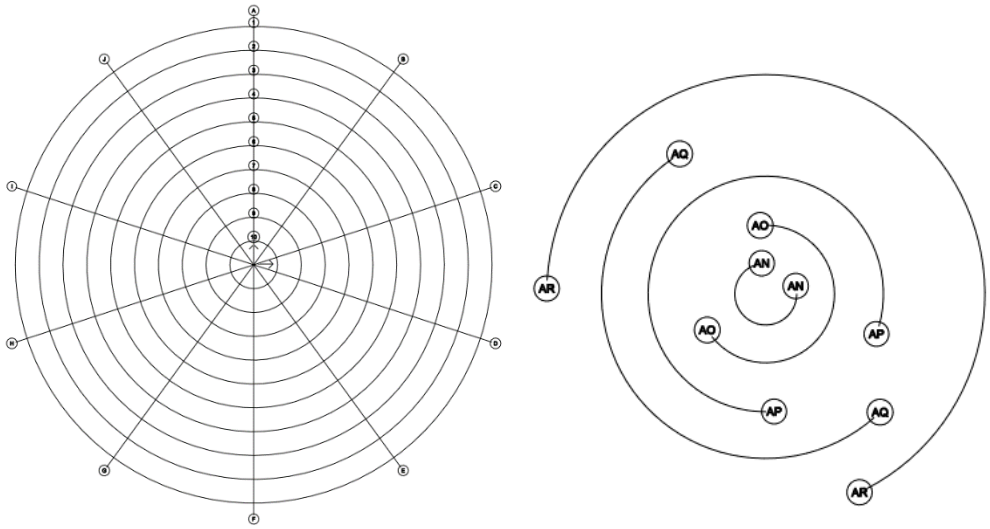


- Move any line in any direction — you can even rotate it — and observe how the elements on it follow the movement without selecting them too.



Placing circle grid

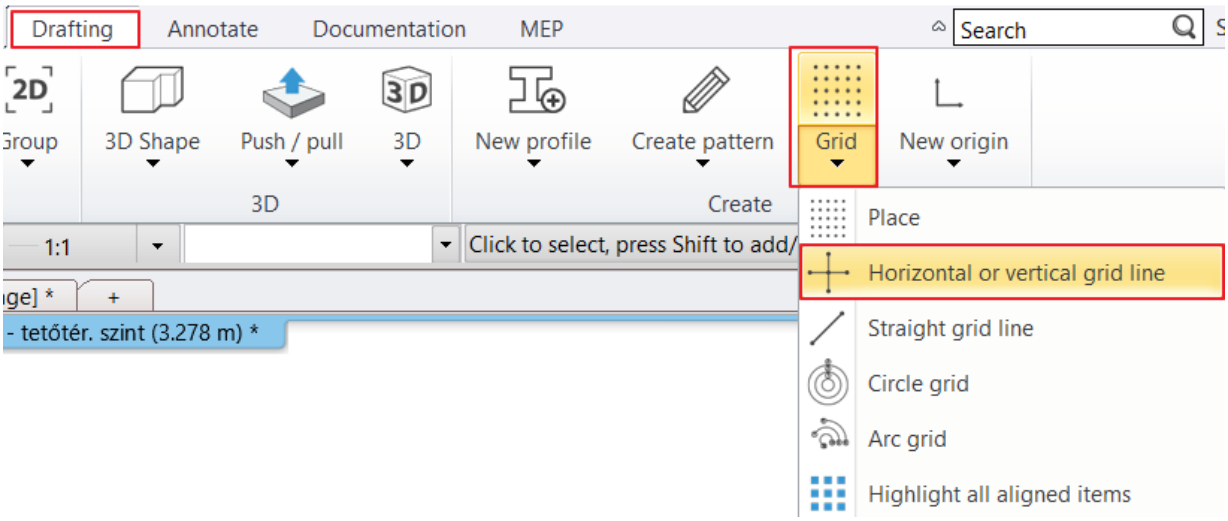
It is also possible to place a circular mesh, and the lines of the mesh can be defined with arcs. To do this, set the Type to "Radial Grid" in the properties window.



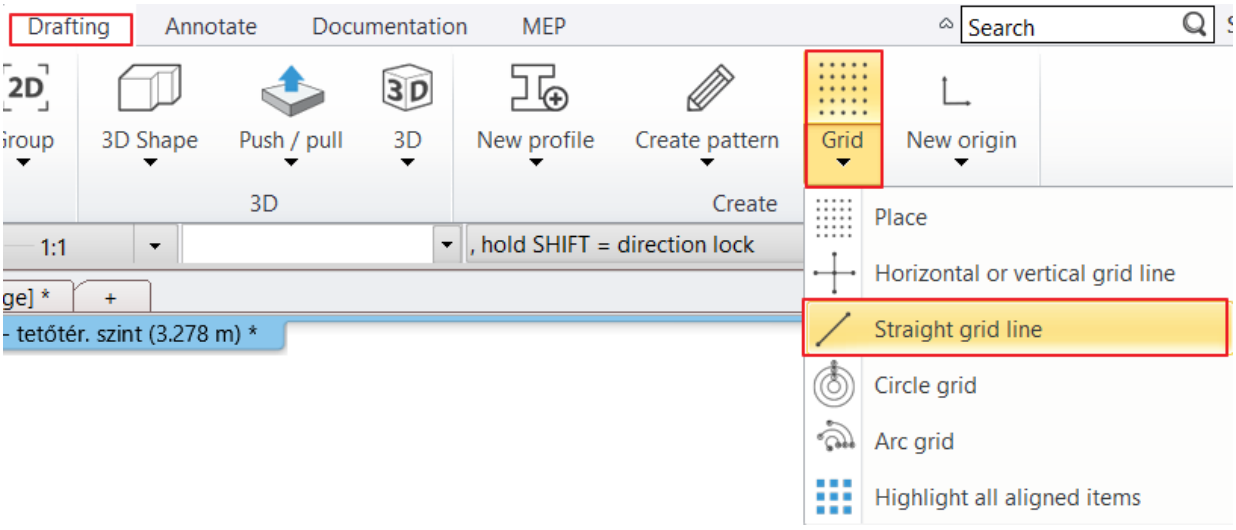
6.2.3. Expanding the grid lines

The placed grid lines appear on the floor plan according to the parameters set in its properties, but it can also be modified in all directions afterwards. The program will then automatically continue the line with the set symbols.

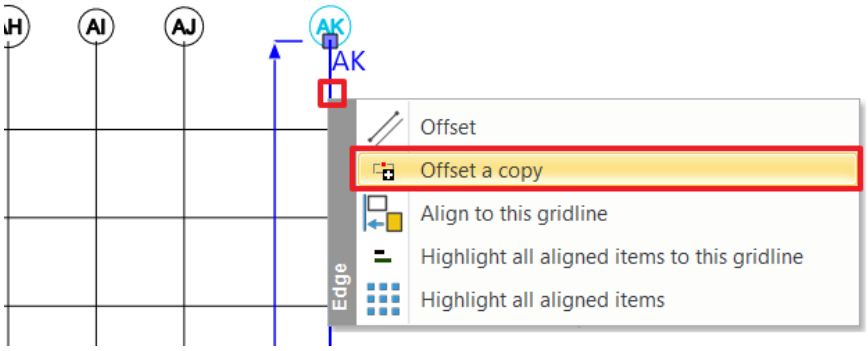
- With **Drafting / Grid / Horizontal or vertical grid line,** you can expand the mesh with both vertical and horizontal lines.



- With the **Straight grid line** option, you can place a line that complements the placed grid lines or is located in a different direction from the existing lines.

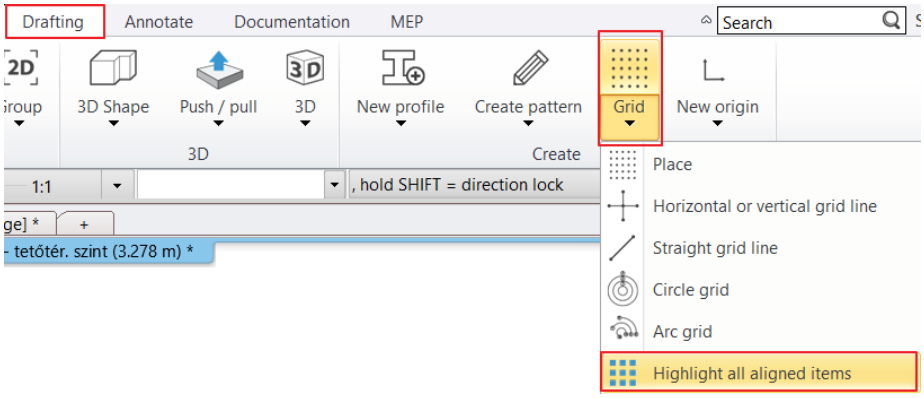


❖ You can also expand the grid lines with the "Offset a Copy" function in the menu of the line.

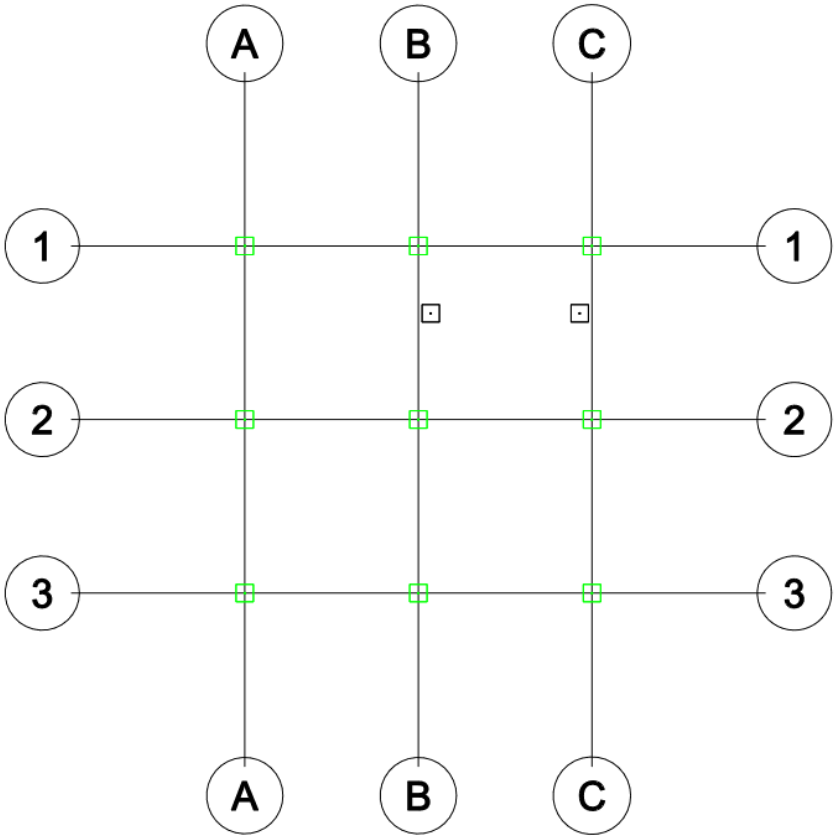


6.2.4. Checking the connected objects to the grid lines

Use **Drafting / Grid / Highlight all aligned items** to see which elements in the drawing are connected to the grid lines and which are not.



In the example below you can see that the program indicates the connected elements with green color.



Workshop 7: Teamwork

7. Workshop: Teamwork

The Teamwork tools allow working on the same project with your colleagues together simultaneously.
Every part of your project updates automatically, so that the plan and the documentation are one coherent unit through the lifecycle of it.

Teamwork works over a local area network or using a file server when all connecting users have access to the same physical teamwork file over the network.

Cloud-based file sharing services are NOT recommended as those services do not grant access to the same physical file but only a local copy of it. This way it is not guaranteed that all users work on the same state of the teamwork which may lead to synchronization / permission issues and information loss.

7.1. Basic concepts

Working area

Working area organizes all items that a team member may make changes to under a logical unit. New items are automatically placed on the active layout owned by the team member.

Master working area

The master working area collects all the common part of the team work such as drawings, building parts, floors, layers, views and geolocation. Because of its special role during the team workflow, it is password protected. A team member who enters the mater working area also has administrative rights for the time being.

Team member

A user identity consisting of a name and a (n optional) password, granting access to the teamwork project to make modifications on the works space that is owned by the team member.

Administrator

A team member who owns the master working area. The administrator can modify the common parts of the team project and also has the right to create new working areas and add / remove team members.

Central model / Central project

The central model is the result of the work of the team members, automatically merged into a central project file. It continuously evolves as team members publish changes. All team members working online can see and work on the latest status when they open the project file or when they refresh the project.

Local version

All local changes created on the base of the central model. When saving the project all local changes are automatically published to the central model.

Main principles

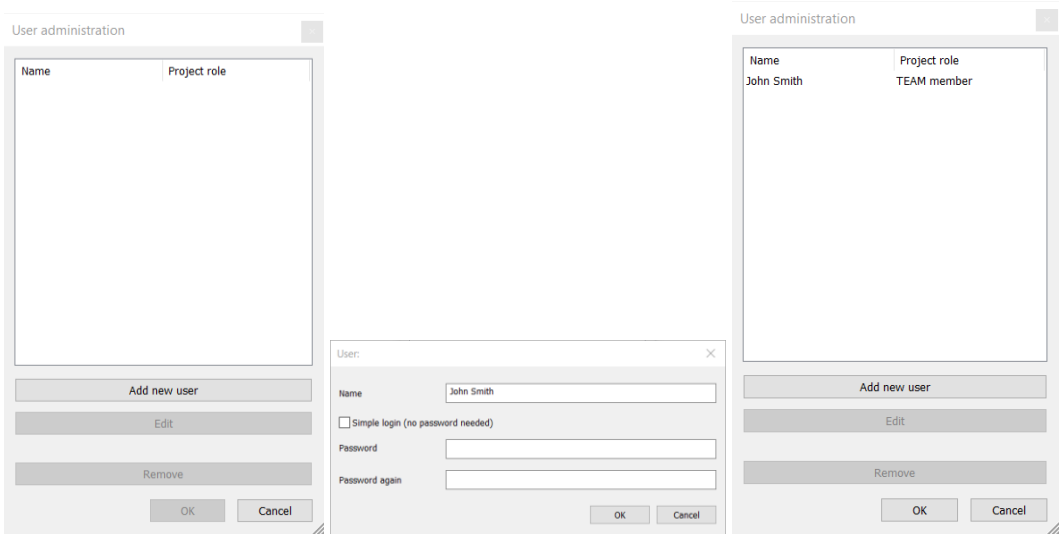
- Teamwork allows simultaneous access to a shared work through the use of a central model.
- The central model has to be saved on a network drive to which all team members have access.
- Master working area is privileged to define team project fundamentals (Story structure, layers, geo-location and initial state of the project).
- Team members may create or own many working areas. One team member can edit only one active working area and may have multiple other available as editable. An ownership over a working area automatically terminates when the team project is closed by the team member.
- All users work locally on different working areas. Every user can manage one working area in active state to which new elements are added. All other working areas are there for reference purposes.
- An ownership of a working area can be terminated by the team member at any time. If an item belonging to another working are must be edited, the user needs to ask from the owner to grant access to the working area by releasing it. After released the working area may be owned by any other team member.
- Only a team member with administrative privileges can take working areas from other team members and erase or merge working areas.
- Graphic Override enabled to provide different output of the view (color, line types, line weight, half-tone, and hatch pattern).
- Saving the project also means synchronization with the central model, publishing changes and making it available to all other team members.
- If a team member would like to go on-site or by any other means wishes to leave and take the current status of the changes the team member may turn the project to offline mode on that computer. When going back to online mode all changes are automatically published.

- Reaching specific mile-stones or wanting to create an archive copy the team project can be converted into a single user (regular) project. The conversion creates a copy of the content and the single user copy of the project is no longer connected to the teamwork.

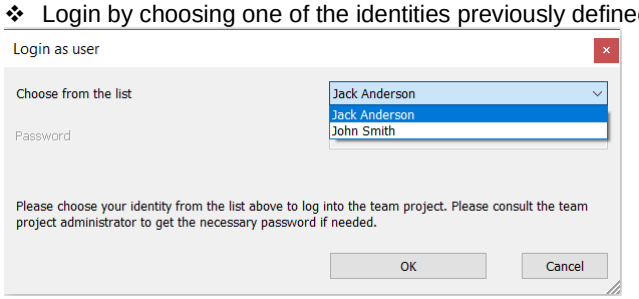
7.2. Setting up a team project

You can convert any regular project into a team project by following these steps:

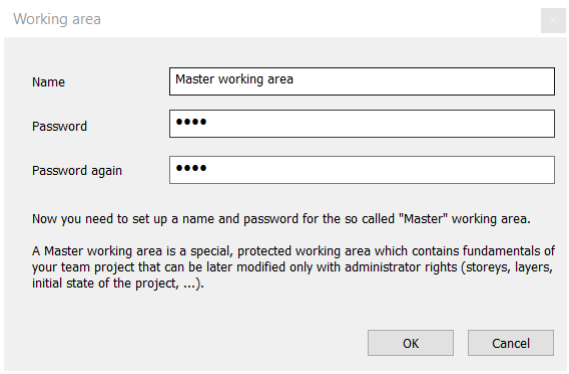
- Open an existing project.
- Convert the project into a team project using the “File / Teamwork / New project” command. Specify a file name and location for the central model on a network drive to which all team members (users) have access.
- Add new team members by defining the name and an optional password for login.
  The following image shows the User administration dialog, adding users.



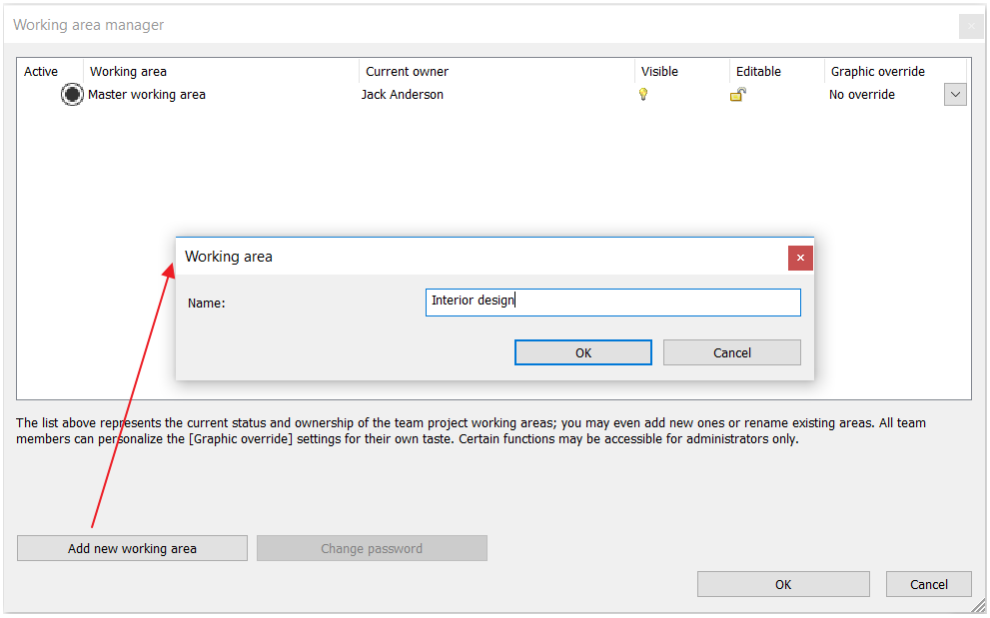
- Login by choosing one of the identities previously defined.



- Create the Master working area. Master working area is the only working area where password is required to enter. This is the common part of the team project which can only be modified later by a team member who knows the password to it.



- Create additional working areas. These provide simultaneous access to the shared model for the other users. Work spaces can be named after work types, identities or other ideas. One working area can be owned later only by one team member this protects the integrity of the team member’s work.



- Save the project.
- Close the project. Closing the project releases all working areas for other users. Team members can login choosing one of the identities previously defined and begin to work on Team projects.

7.3. Working in a team

You can work in a team following these steps:

- Open the central team project file.
- Login with a name (and optional password).
- Choose one or more working areas and designate the active one.
- Create new items and/or modify and remove existing ones on the working areas currently owned.
- Save the project to publish all local changes to the team.
- Exit teamwork by closing the team project.

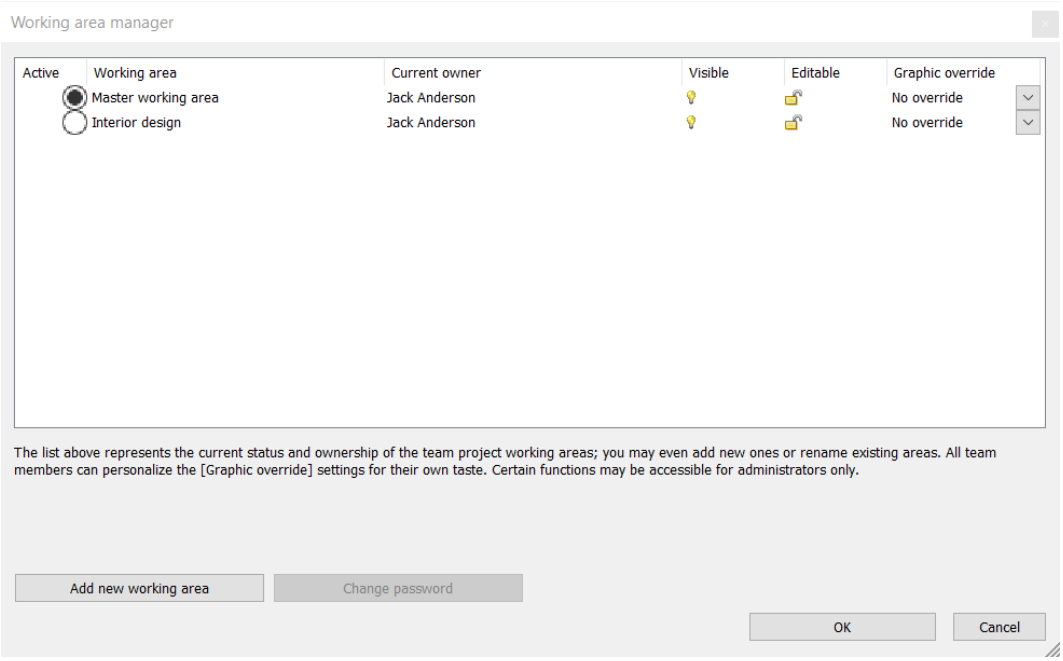
7.4. Refreshing the team project

The team project is automatically refreshed when the central project is opened or on-demand using the “Refresh project” command.
Turning the local project to offline mode the team project cannot be refreshed until the project is set back to online mode again.

7.5. Working area administration – managing working areas

The working area is a collection of elements handled by a team member, e.g., walls, windows, doors, stairs, etc.
Only one user can edit one working area at a given time. All users can view the working areas owned by other users, but they cannot make changes on it.

The Working area manager provides functionality to create or change working areas.

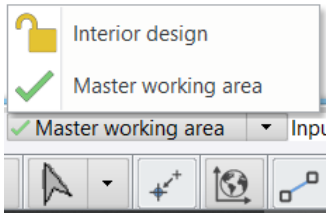


The Working area manager dialog provides the following information:

Active	Designates the working area to which new elements are added. You can relocate the indicator when multiple working areas are owned.
Working Area	Indicates the name of the working area. Click inside the name field to rename it.
Current owner	Indicates the current owner of the working area.
Visible	You can enable or disable the visibility of a working area. You can hide unwanted working areas to increase efficiency for your work.
Editable	By default, all working areas are locked for editing. Choose one or more working areas you want to edit. When you take over more than one working area you can activate one working area to which new elements are added. Working areas currently owned by other team members cannot be taken over for editing but they are still visible as reference drawings by default. Should all the working areas be occupied by other team members already you can still login as a passive visitor in READ-ONLY mode.
Graphic Override	Use the Graphic override option when you would like to color-code representation of different working areas for better understanding. You can define color, half-tone, line type, line weight and hatch pattern for override.

7.6. Change active working area on the View Control Bar

The View Control Bar always displays the active working area. To change the active working area, click on the drop-down list and select another one. You can only choose working areas currently owned and editable.



The active working area drop-down provides the same functionality as the “File / Teamwork / Working Area Administration” dialog.

7.7. Reassign elements to a different working area

A team member can reassign elements on one working area to another working area by using the „Reassign elements to a different working area” command and selecting the items.

At specific administrative steps (such as deleting a working area) it is also possible to reassign items belonging to a working area.

7.8. Work offsite or offline

Changing to OFFLINE mode is useful when you are not connected to the network to save your changes.

Working in OFFLINE mode you can work on the project and make changes on your editable working areas far from the team, with no network connection.
Project changes are saved on your hard drive each time you modify and resave the project.
To share changes with the team members, switch back to ONLINE mode when you can do that and save the project file.

Use the “File / Teamwork / Creating a Local Copy for OFFLINE mode” command to go offline.

Note: all changes made on this project are not available for other team members until you switch back to ONLINE mode and save the project again.

7.9. Convert Team project into single-user project

Reaching specific mile-stones or wanting to create an archive copy the team project can be converted into a single user (regular) project. The conversion creates a copy of the content and the single user copy of the project is no longer connected to the teamwork.

- Use the “File / Teamwork / Administrative tools / Convert Team project to single-user project” command.
- Save the project.
- Close the project.
- Open the project again. From now on you can work in single user mode.