

MF Dämmplan

The first steps

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version: Juni 2024

Intro

This manual is based on the Knowledge of the „DachDesigner - first steps“ manual. If you have not done so, please read the DachDesigner manual first.

After you have drawn the roof plan in the DachDesigner you can hand over the information to the plugin „Gefälledämmung“ (sloped insulation). To build the sloped insulation a first calculation will be done by the program automatically. Afterwards we have to edit the plan to make it more practicable.

Please note, that all plugins are connected by the DachDesigner. If you make a new a calculation another calculation can be affected by that. Eventually you have to redo the older calculation to adjust it. Therefore, you delete the calculation first and then do it again.

Please note

You must update the master data on a regularly basis via the menu „extras“ > „actualize data by internet“.

Basics

Roof model

We would like to start with a simple model roof.

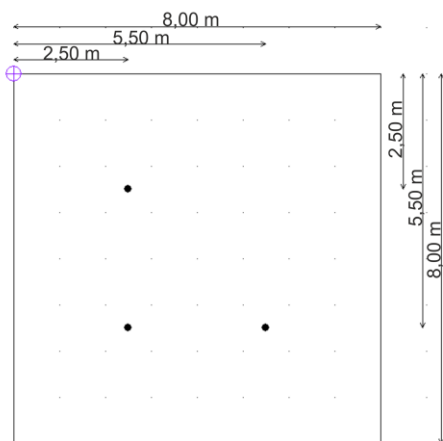



Image 1: model roof


Start the program MF DachDesigner and draw a roof with a dimension of 8 x 8 m.
Reminder: Always stick to a clockwise working method. Start at the top (noon) by clicking the area tool  and choose in the structure tree on the right (afternoon):

Gefälledämmung (sloped insulation)
 └ Flächelemente (area elements)
 └ Gefälledämmung_Fläche (area)

Draw the outline with the line menu at the bottom (evening).



Image 2: Line menu

We insert gullies with the point tool , the branch „Gefälledämmung_Gully“ and the point menu.

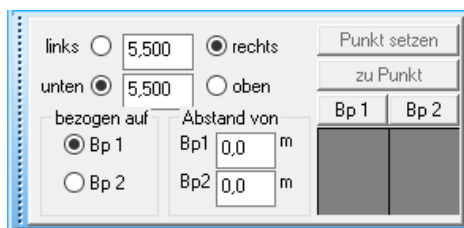


Image 3: point menu

Switch to the plugin “sloped insulation”

We can now transfer the model to our plugin „sloped insulation“. We go to the menu „plugins“ and choose „sloped insulation“ > „edit“ and after confirming the dialogue we see the automatically created insulation plan.

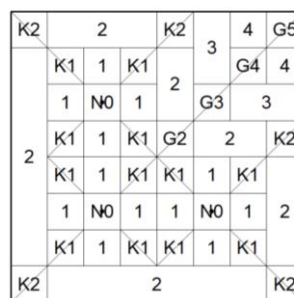




Image 4: sloped insulation plan with gullies „automatically“

With the help of the tool  we can edit and optimize the plan.

Change the start of the installation

As a first step of optimization, we want to transfer the start of the installation to an optimal point on the roof. With „new“  you can change the start to another point or a line. You can also enter the coordinates of a certain point.

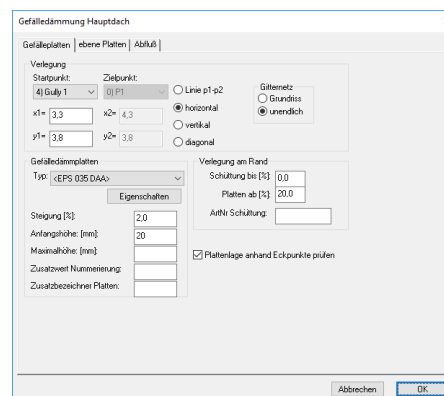


Image 5: Dialogue "New"

Hint: Display the start of the installation by choosing „display starting point“ and „labelling“ in the menu VIEW → DRAWING OPTIONS.

The net

The calculation of the sloped insulation plan is done by the help of a net. This net consists of yarns and knots. These meshes will be placed on the roof.

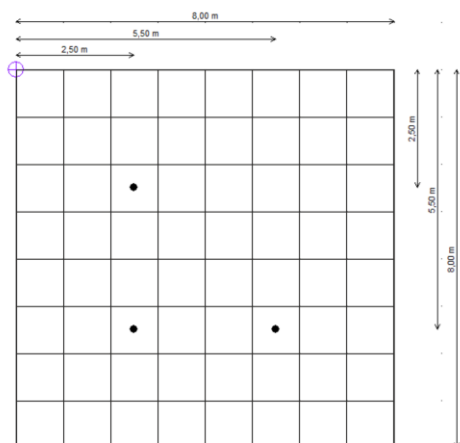


Image 6: roof model with the net

Now the program searches for meshes with drainage elements in them and inserts height values into the surrounding knots. The drainage elements are always the lowest points on the roof. Normally they receive the height value „0“. The program distributes increasing numbers towards the outside always added a value of „1“ for the knots.

Here you can see the height values for our roof with **blue numbers** (Image 7).

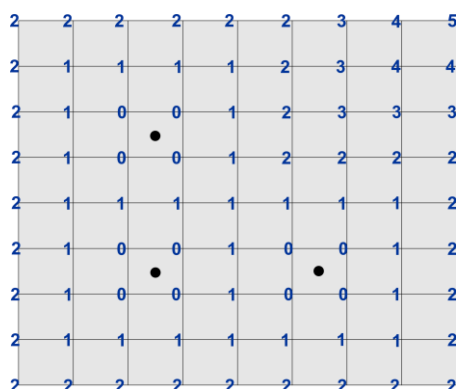


Image 7: net scheme

Tip: With the height of the board names you can easily find out the real measurements of the board. The maximum thickness of the board will be calculated by the formula:

initial thickness + (board name x height difference of each board).

example:

initial thickness = 100 mm

height difference of each board = 20 mm

maximum thickness of the board with the number 4: $100 + (4 \times 20) = 180$ mm

Exit the plugin and the DachDesigner project with “close”. We want to draw a new roof in the next section.

Placement of gullies

Again, we draw a roof with 8 x 8 m dimension like we did in the first project. But now we want to place the three gullies the following way:

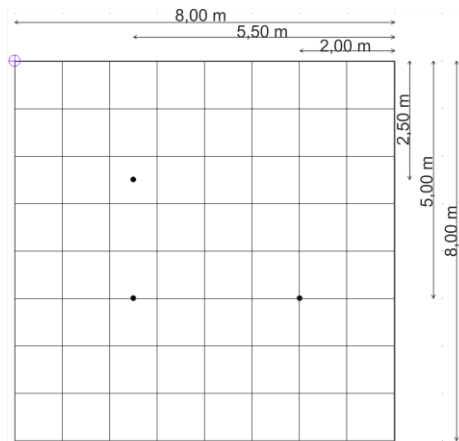



Image 8: Musterdach mit Gitternetz

After we have set the gullies we change to the plugin. But now we want to make a change in the dialogue box that pops up after the have selected "edit". We choose the tab "drain" and click the button "automatically".

Note: You can always reopen the box with , in the toolbar.

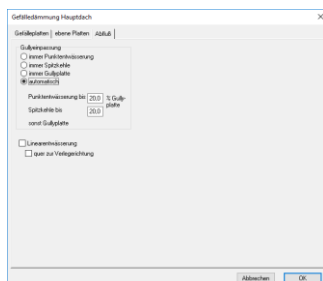


Image 9: Dialogue "new"

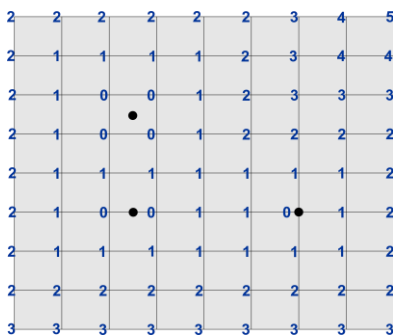


Image 10: net scheme with height values

With the automatic placement of the gullies the program creates the following plan:

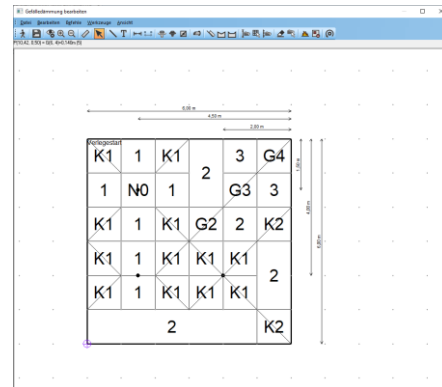


Image 11: „automatically“ drain mode

There are three options for the placement of gullies within the net:



Option 1 – Gully in the middle

All surrounding knots will receive the height value null.



Option 2 – Gully at the edge


The knots at the end and beginning of the edge receive the height value null.



Option 3 – Gully on the crossing

The knot receives the height value null.

„Always gully board“ mode

To force the program to produce a plan that ensures an easy installation, we click the button „new“ , and choose the “always gully board” mode in the tab „drain“. As soon as we hit the OK button, the following plan will be displayed:

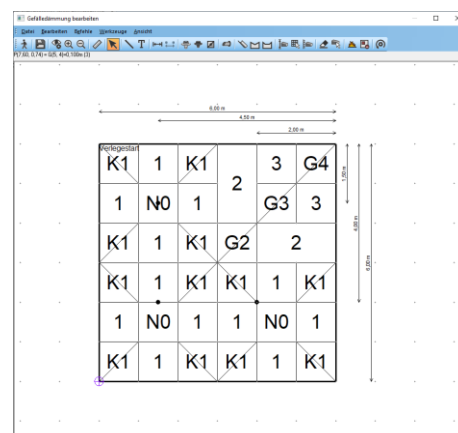
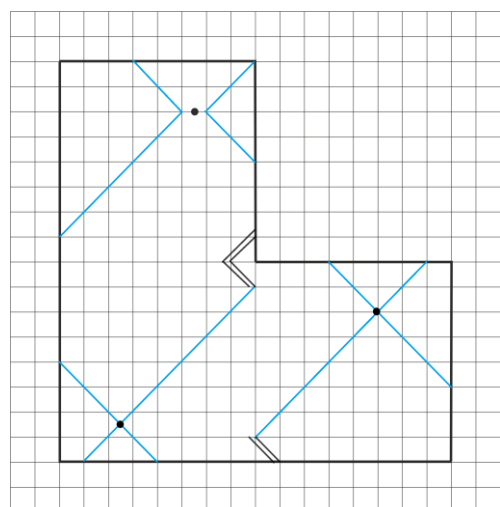
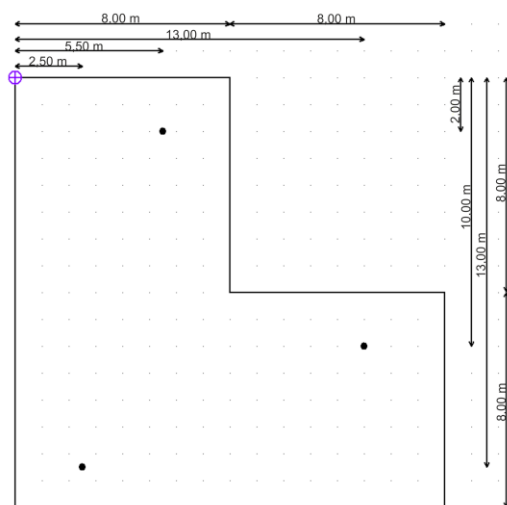
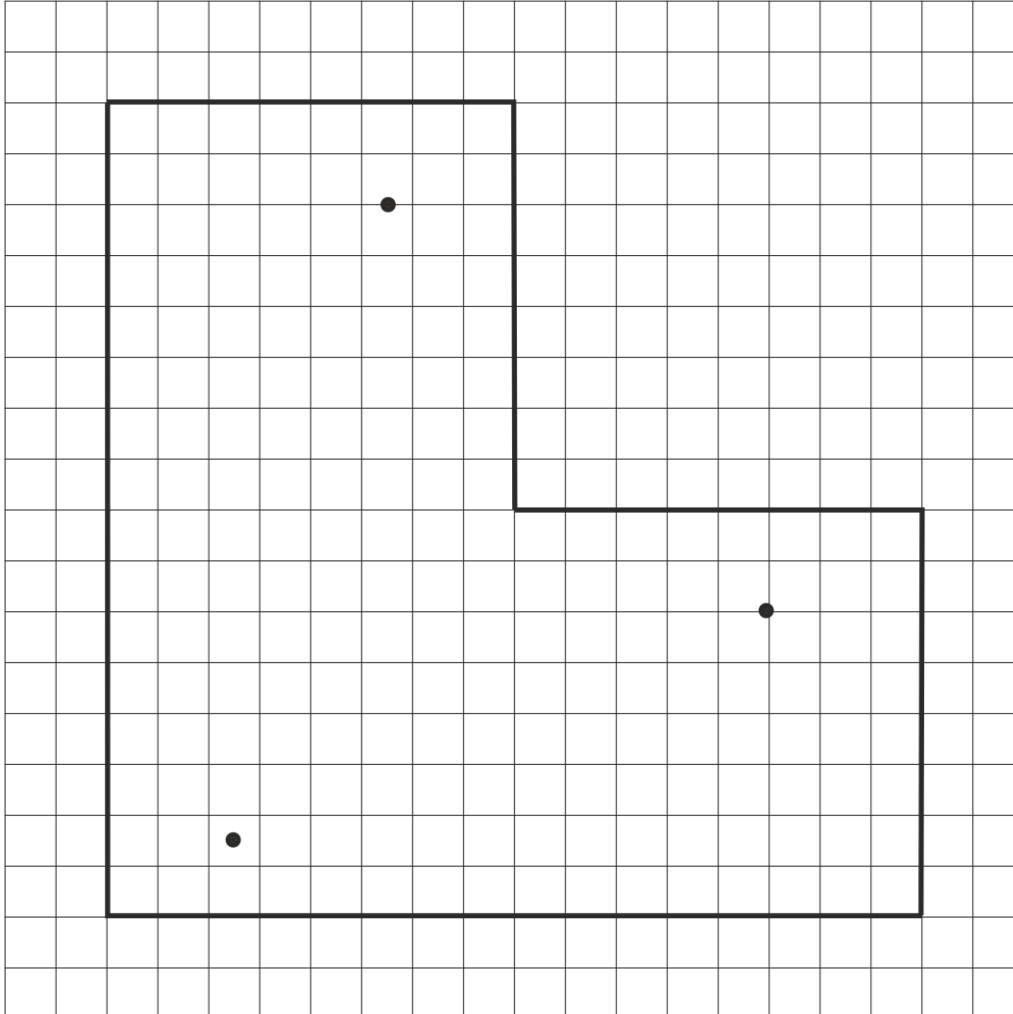


Image 12: „Always gully board“

Exercise „Net algorithm“

Insert the height values into the graphic. Take the position of the gullies into account. Start with the null at the gullies and go on with 1, 2, ... and so on. Check your results with the output of the program.



Measurements of the roof and assistance for the solution (image shows valleys (blue line) and ridges (double line) of the roof).

Horizontal Valleys

After we have seen the changes we can make with the “new” mode, we want to „work“ on the roof to change it to adapt it to our needs. Here, we would like to draw a valley between the two gullies.

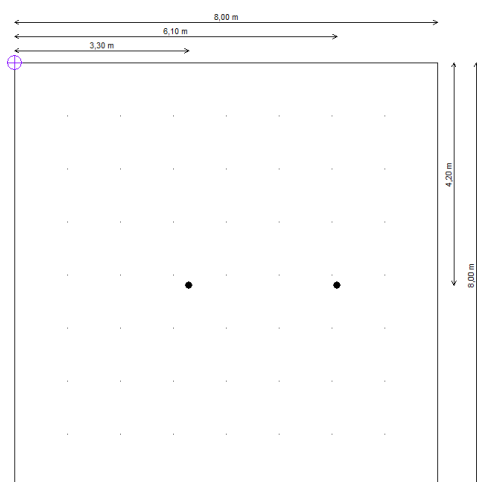



Image 13: roof model

Start a new project and draw the roof displayed above. Now switch to the plugin and choose the drain option “always gully board”.

To start our „work“ on the roof, we click the  in the toolbar to change our sloped insulation plan.

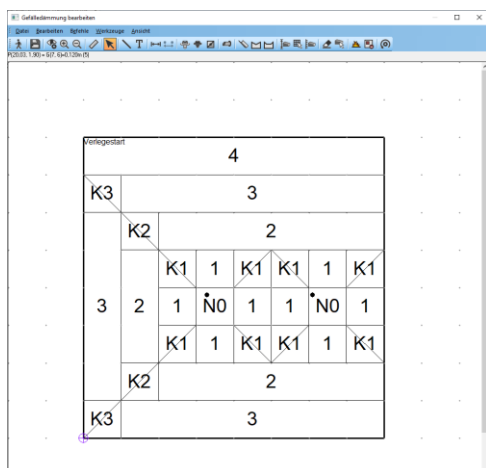




Image 14: sloped insulation plan

To draw a valley, we select the valley tool  in the toolbar. Afterwards we click on the first gully and again on the second one. With „new“ we change our drain mode to „automatically“. We have to refresh the plan as demonstrated with the orange triangle at the top .

If we want to change the length of the valley, we click the line with the right mouse and choose “edit line...”. Change the length to 3,50 m.

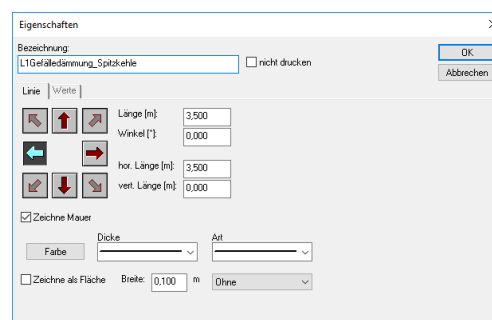


Image 15: Dialoguebox line characteristics

The plan is now much easier.

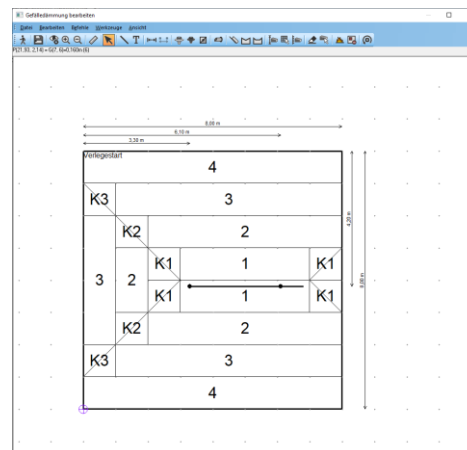



Image 16: roof model with valley

As we can see, the valley does not lie directly between the two boards with the name “1”. To change this situation, we can adjust the starting point of the installation.

With „new“  we make the gully 1 to our starting point.

Hint: Display the start of the installation by choosing „display starting point“ and „labelling“ in the menu VIEW → DRAWING OPTIONS.

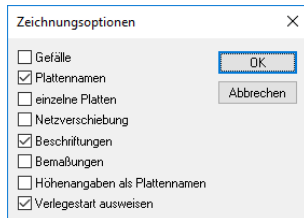


Image 17: Dialogue box drawing options

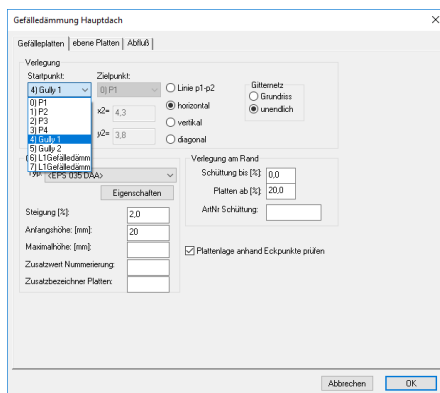



Image 18: Dialogue box „new“

After we have refreshed the plan , we get the following output:

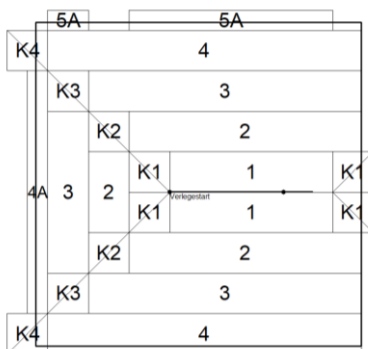


Image 19: starting point of installation at gully 1

Here, we see that the change of the starting point led to more waste at the roof edges.

„From the outside to the inside“

In the former example we have laid boards from the inside to the outside of the roof. As we have seen, this leads to more waste at the outsides, where the thicker (more expensive) boards are installed. This is why we want to show the installation from the outside to the gullies.

As always, we start our project with drawing the roof with the MF DachDesigner with the following measurements:

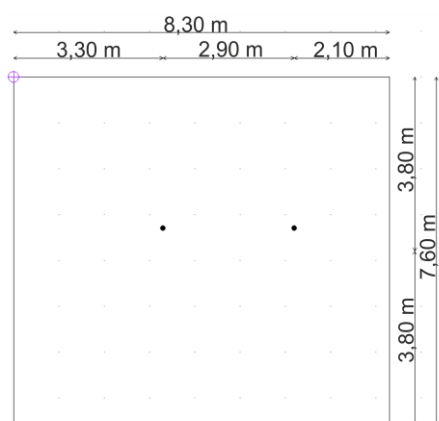


Image 20: roof model

After we have switched to the plugin, we get our first solution for the sloped insulation.

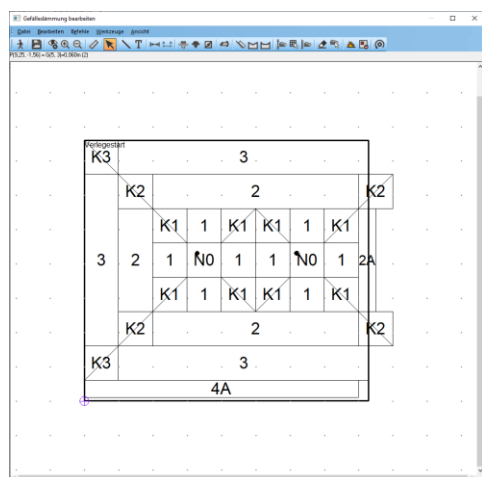




Image 21: First sloped insulation plan

Instead of the valley we choose the flat valley  in the toolbar and draw a line between the gullies. After „update“  the plan shows flat boards within the roof.

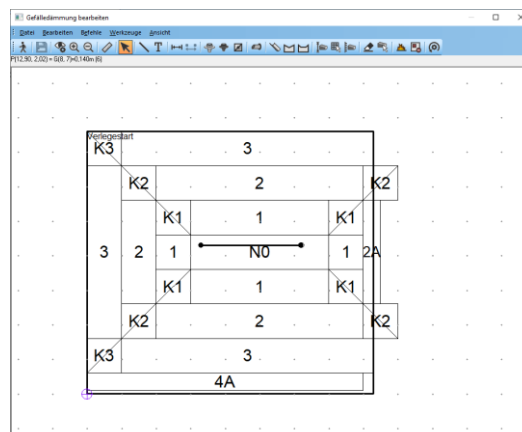



Image 22: flat valley

Now we want to get rid of the boards that exceed the outline of the roof, we want to change the net. We can avoid the waste with the help of the „net displacement“ . With this tool we can compress the net by 300 mm to the right. To do so we „spread out“ a net as shown as in Image 23 from the upper right to the lower left:

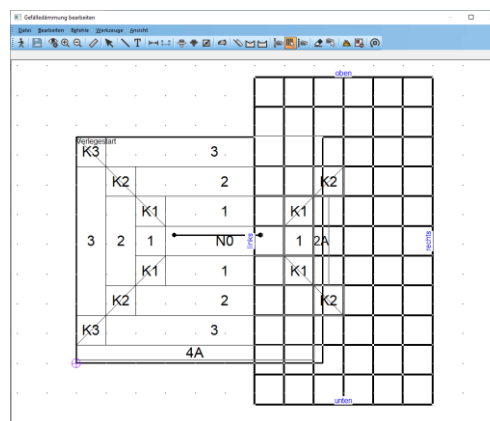


Image 23: net displacement

Be aware that only normal sloped boards are allowed in the last column (here, the left column). This is due to the fact that we cannot stretch or compress ridge- or valley boards because of the determined slope. As soon as we let go the mouse the dialogue box „net displacement“ opens, and we can enter 300 mm in the field behind „left“.

This displacement does not only compress the first column from the left, but it also stretches the last column to the right by 300 mm. As long as the last column lies outside the roof, we will not see any changes.

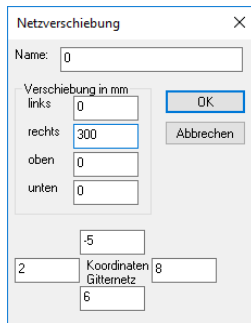


Image 24: Dialogue box net displacement

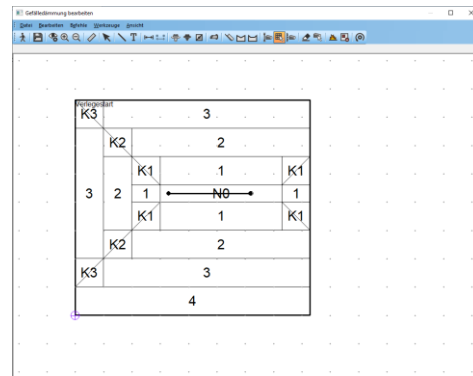


Image 27: result of the second net displacement

Tip: You can edit or undo the net displacements in the menu „commands“ > „net displacements...“.

Note: You can only stretch/compress the width of the boards in the direction of the slope of the boards. Otherwise you would change the slope!

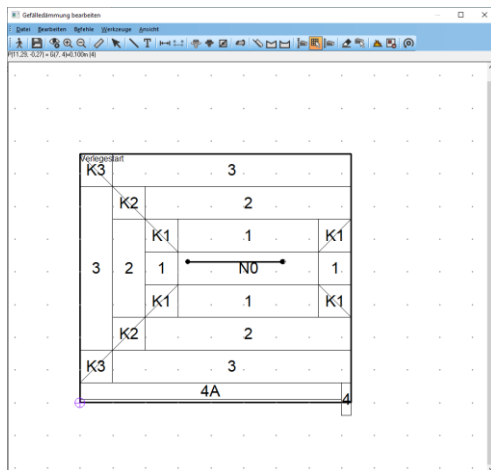



Image 25: result of the net displacement

Finally, we compress the flat valley vertically to reduce the waste at the lower edge. Again, we select the net displacement tool  and stretch out a net from the lower right to the upper left and thereby we ensure that the first row includes the flat valley. Then we enter 400 mm at the “top” field.

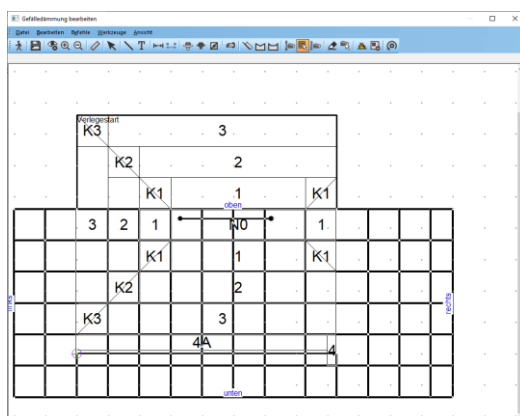


Image 26: net displacement to the top

Drain strategy

To avoid a draining situation where water will float „over the edges“, we can change the net algorithm from „infinite“ to a situation, where the program will consider the outline of the roof.

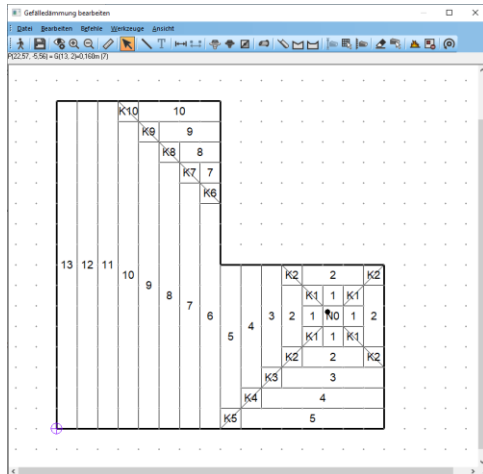


Image 28: „automatic“ mode

As we can see in Image 28 the valley starting at the top runs through the inner edge to the gully.

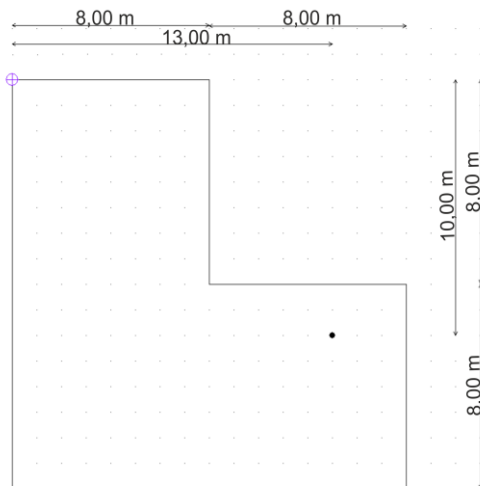


Image 29: roof plan

To change this situation we choose „roof plan“ instead of „infinite“ in the register „cut-to-fall boards“ after we hit the „new“ button.

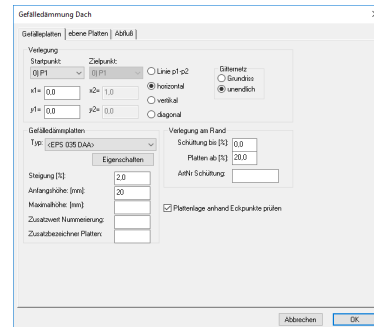


Image 30: Dialogbox "Neu berechnen"

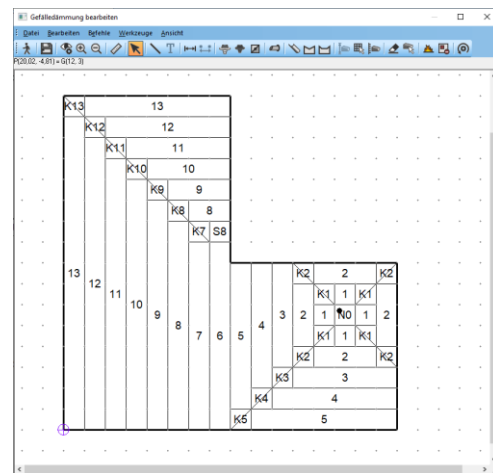


Image 31: Gefälledämmplan "Grundriss"

But now we have a special plate „S8“ next to the corner. With the tool „net heights“ we can change the plate. Spread a net over the plate „S8“ by clicking one edge of the plate and pulling the mouse diagonal over to the other edge. Change the values for this plate so that a normal board 7 will be displayed (Image 33).

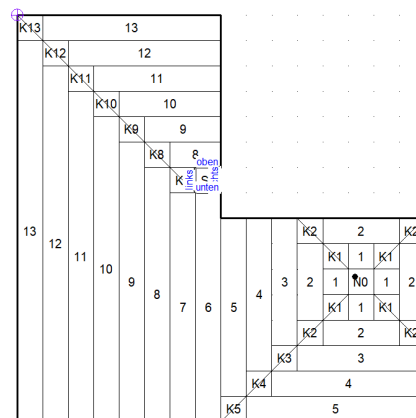


Image 32: net heights tool

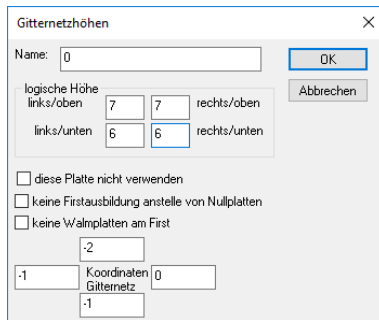


Image 33: Dialogue box net heights

Hint:

- Normal boards have two equal adjacent high values and two equal adjacent low height values
- Valley boards have three high and one low height values
- Ridge boards have two high and one low height values
- All the others are special boards

With this knowledge, change the board at the inner edge to a valley board (Image 35).

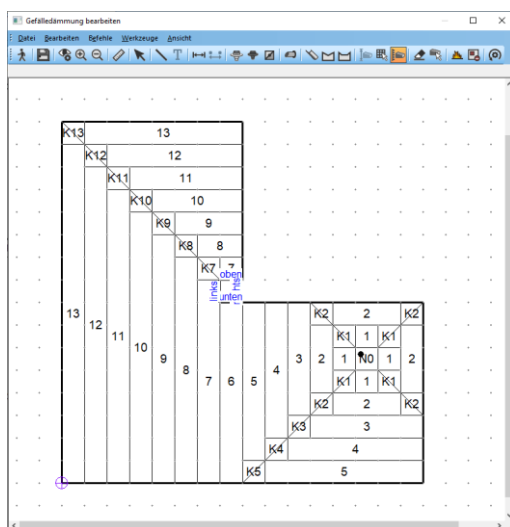


Image 34: change the heights

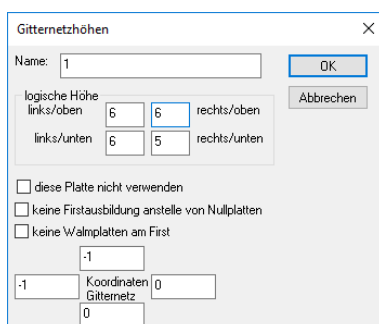



Image 35: dialogue box board heights

In the end we have to „update“  to get our solution displayed.

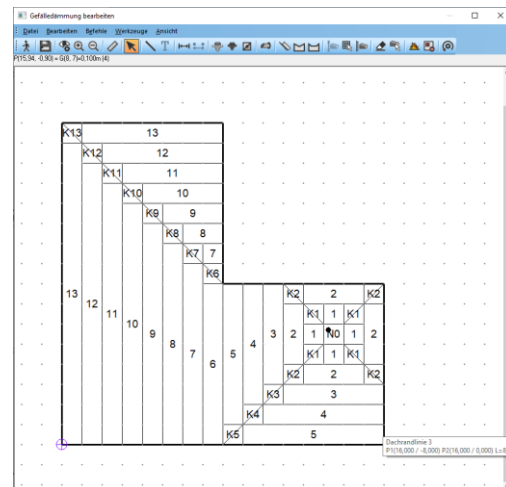


Image 36: changed roof plan

If you do not want to have the water led directly to the edge, go to the next chapter!

Hint: If areas are displayed with a red grid, the program shows, that changes have been made to the plan, but the plan needs to be refreshed to show the results.

External drainage

Gutters often follow offsets of the facade. In the program these offsets lead to undesirable ridge-valley-patterns.

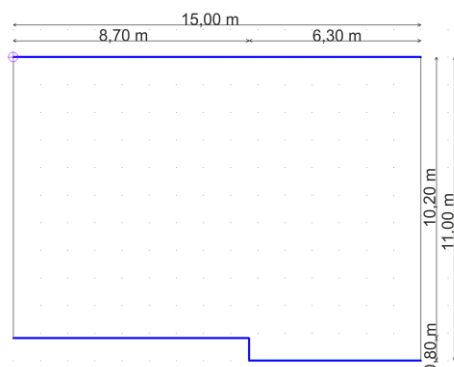


Image 37: roof with gutters

You will receive them no matter which net mode you have chosen.

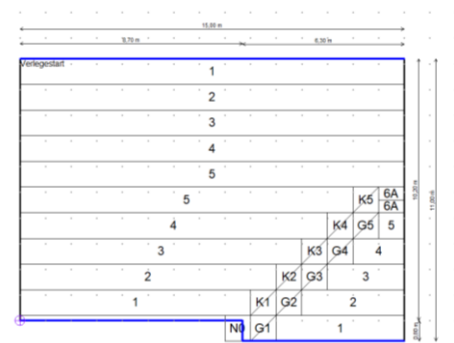


Image 38: automatic sloped insulation plan

This happens due to the height difference between the gutters. To get rid of the pattern, we have to change the height of the right gutter and to disable the vertical gutter. Therefore, right click the vertical gutter and choose "deactivate gutter". Now you right click the left gutter and choose „gutter height" to enter "1".

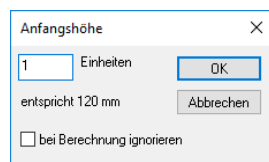


Image 39: Dialogue box gutter height

After we have updated the plan, we see two boards at the offset.

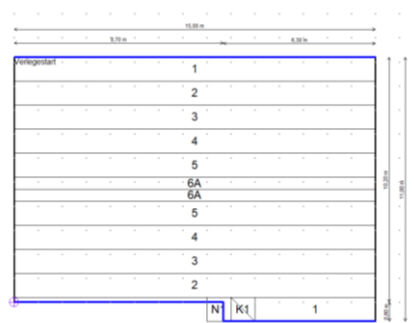



Image 40: plan after the height of the gutter changed

Change the boards to normal sloped boards with „net heights" .

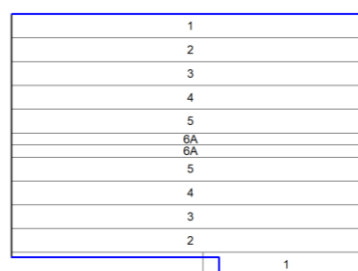


Image 41: solution

Tip: If you would like to avoid half boards at the roof ridge, you can increase the gutter height by one. The downside of this: the eaves have not the same height anymore.

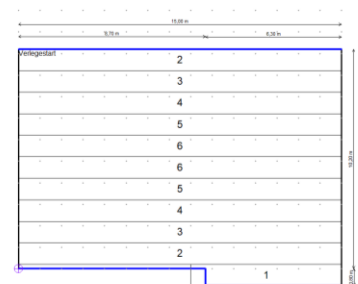


Image 42: final solution without half boards

Shift gutters

At the end we want to look at rounded gutters. To do so, that we draw the roof displayed below.

If needed, read the chapter “roundings” in the manual “MF DachDesigner - first steps”.

With the help of the characteristic „Gefälledämmung > Linienelemente > Gefälledämmung_Rinne“ we assign a gutter to the line on the bottom of the roof.

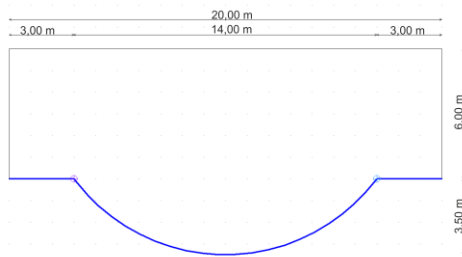


Image 43: roof plan

If we open the plugin, we see the following plan:

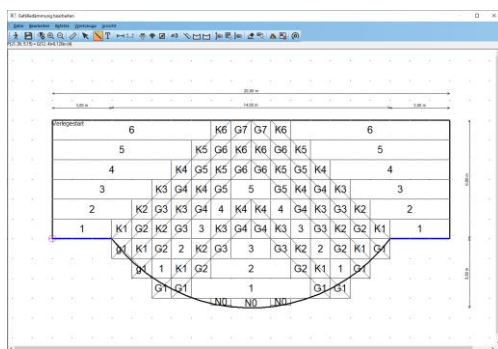


Image 44: sloped insulation plan

Again, we would like to make this roof simpler. To do this we deactivate the three gutters. We click each of them with the right mouse and choose „deactivate gutter“ or „deactivate arc“.

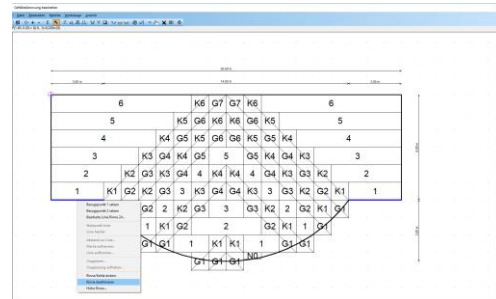


Image 45: deactivate gutter

Now we draw a new gutter below the roof with the gutter tool in the same width as the roof.

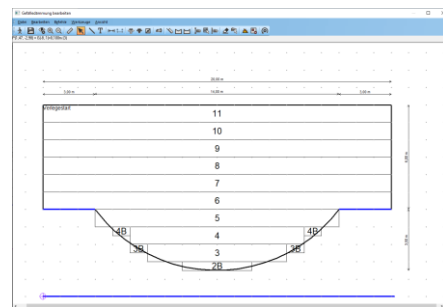


Image 46: draw new gutter

Click the selection mode and drag the gutter towards the vertex of the arc. After we have updated our plan, we get the desired plan.

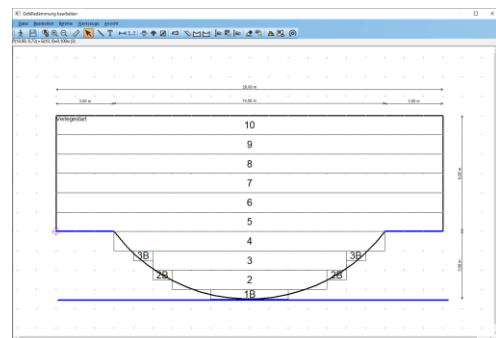


Image 47: Bearbeiteter Gefälledämmplan

Tip: If you do not want the new gutter to be printed on your plan, right click the gutter, choose „edit“ and check the box “do not print”.