

**GROOF**  
Greenhouses to Reduce CO<sub>2</sub> on roofS

**Interreg**   
North-West Europe  
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European Regional Development Fund



PART 2 –  
PREPARING THE  
SUPPORT  
BUILDING FOR  
THE ROOFTOP  
GREENHOUSE



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# INTRODUCTION



The construction of the rooftop greenhouse pilot in Germany has started early 2020 and we from ebf GmbH are sharing in a multiple part series in detail how the construction took place, which obstacles were met, how we overcame them and in general what solutions and measures were taken to achieve the proper construction of a rooftop greenhouse while minimizing the environmental impact.

This is the second part of this series and examines the installation of the greenhouse platform to prepare the support building for the rooftop greenhouse.

In the previous chapter it was explained how the old roof was removed. After the removal, the walls lay bare and needed to be treated further to give a fitting foundation.

The first problem was we encountered was the old asymmetric saddle roof, resulting in different heights of the walls which needed to be leveled out. The north wall came out nearly 50 cm higher than the south wall. Therefore a concrete ring beam was installed adjusted to the underlying structure.





Structurally, using reinforced concrete was an enormous advantage since we did not have to take any previous openings underneath into account. The reinforced concrete ring beam served therefore not only as a foundation for the greenhouse platform but also as a lintel over the windows and the large gates of the support building. If that would not have been the case, the load of the greenhouse could not have been transferred into the load bearing walls properly.



Additionally, the amount of concrete used lead us directly being able to determine the actual height of the final building plus greenhouse, which helped later on not only to stay below the height limits given by the development plan but also helped with the access to the roof.

For this part of the construction, we can show you a video: [VIDEO I](#)

The structure runs around the greenhouse save the northeast part, where the support building has a large hall, with no previous wall which could have been used as support. Here a traversing support on posts was needed. Due to the old roof beams being in good condition, they could be partly reused and installed instead of having to use completely new material.

All in all, most of the wood and the bricks from the old roof were reused in the construction of the walls and as a support for the platform or in other places in the nursery.

The work on the concrete ring beam was split in parts so that only few people needed to be on the construction site and no heavy machinery was needed. That helped a lot with abiding to the restrictions regarding the first COVID-19 wave which hit Germany at the same time the construction was underway.



The next step in the construction of the platform involved the placement of the large wooden support beams, which were laid out in a pattern so that the later installed greenhouse post could be placed exactly on top. This reduced the amount of total material necessary since the main load on the platform results from the greenhouse itself and not the growing systems or the live load.

The wooden beams were anchored into the concrete ring beam, despite them moving being unrealistic. The gaps between the beams needed to be filled up otherwise the platform which serves as roof for the support building would have been open to infiltration. The gaps were filled with hempcrete which not only closes the gaps but also serves as a nice insulation method.





For the platform itself we used standard OSB panels, which are strong enough due to the small gaps they need to traverse and comparatively cheaper than any other solution like multilayer boards. Since the material is not waterproof and is constantly under atmospheric influences, they needed to be sealed off properly. Here, bituminous sheeting was used which was welded in rolls onto the boards.

The construction steps from installing the wooden beams to the OSB boards and finally the roofing felts was done quickly in between rain to prevent any moisture from getting into the substructure of the platform trapping it there creating mould or other damage.

Finally, sheeting metals were installed all around the platform to prevent damage to the edges, finishing the platform itself.



Up to this point, the scaffolding, which was erected for the demolition of the roof, was still in place to give a safe work environment. After finishing the platform, fall protection in the form of railings were installed. The posts of the railings were already the final ones, so no waste material was produced.

Additionally, new stairs at back side of the platform and in front were created for an easy and quick access. With these last steps the basis for the next steps was laid out

In the next article we are going to talk about the construction of the greenhouse structure which will be released two weeks from now.



# PARTNERS



Do not hesitate to visit GROOF website : [www.groof.eu](http://www.groof.eu)

Discover GROOF Guidelines : <https://www.urbanfarming-greenhouse.eu/>  
This is a summary of GROOF's experience in designing and building an energy efficient rooftop greenhouse.

