Pflanzenschuppen für Münster

Münster | Germany
Timo Jaeger & Jakob Kirchfeld
Student project

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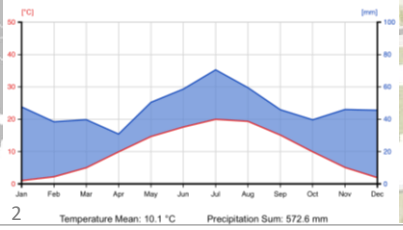

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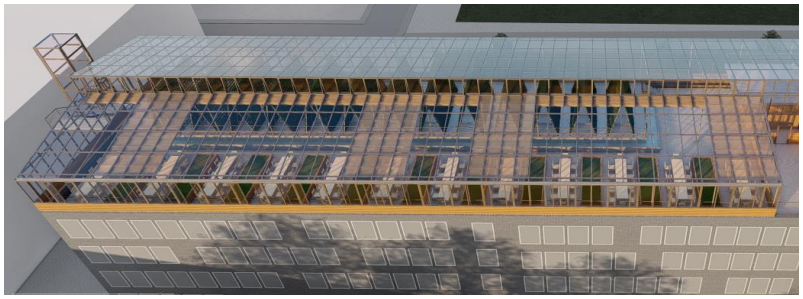
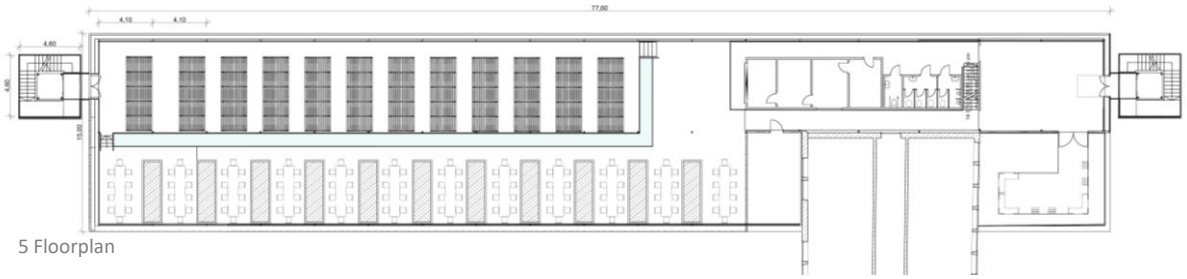
Pflanzenschuppen für Münster

Pflanzenschuppen for Münster is an innovative approach to reclaim unused roof areas and to combine the food industry and urban life. In this case, the selected roof area is on the district government building at Albrecht-Thaer-Straße 9. A simple greenhouse envelope encloses an aquaponic facility and a restaurant



4 Perspective



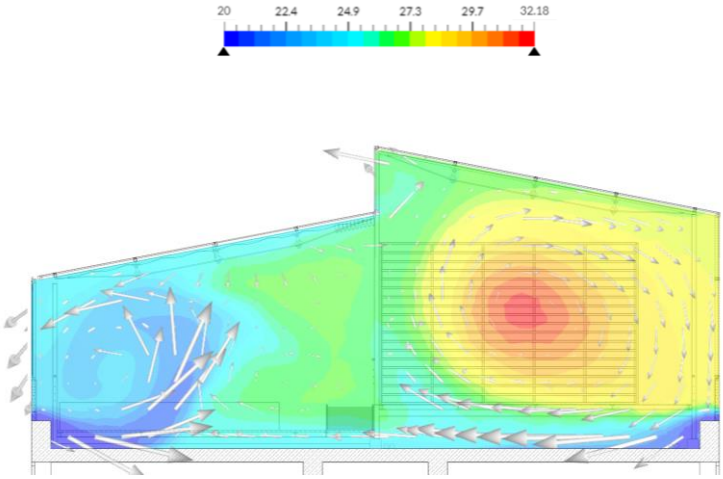
5 Floorplan

6 West

7 North

8 South

9 East



8 Section showing the two climate zones of the restaurant (left) and the plants (right)

9 Inner perspective

Geography | Topography | Vegetation
The building site is located in the temperate climate zone with a variation of mild and cold winters. Summers can as well be hot and dry but also cold and rainy.

Building volume | Zoning
The structure takes the existing building into consideration. A simple cubic structure evolves from the top, a gable roof sits on top.
Half of the area is put on a higher level to achieve two different climate zones, one for the restaurant the second one for the plants.
The fishtank divides the two areas.

Building shell | Shadow | Ventilation
The shell consists of a light facade connected to steel collumns as load bearing elements. A second ceiling carried by steel beams distributes the new weight evenly to the carrying walls underneath.
Vents underneath the facade provide fresh air, the step inside translates to the roof where windows are located for natural ventilation.
Visitors can open big windows to the south to increase the ventilation inside. The roof can be covered with textile sun shading.

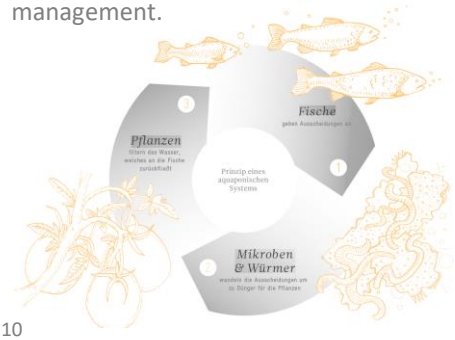
Material | Construction | Building techniques
A light steel construction reduces the incoming weight to a minimum while the beams across the ceiling disperse the load. The construction aims to reduce the construction time and also the need to alternate the existing building.

Sustainability | Energy | Ecology
The greenhouse is supposed to provide a well climatised room throughout the year supported by natural ventilation. The residual heat of the existing building can be used.
The project furthermore aims to present aquaponik systems as a part of the future. Circular economy and fish farming in urban areas can be valid ways to deal with the ongoing environmental crisis.

Utilities
The restaurants serves educational and recreational purposes. The fishtank as an attraction divides the public area from theplants.
Natural ventilation provides a good climate.
The aquaponik system does not require soil or fertilizer which has to be subsidised by fish feed.

Aquaponic system

Aquaponics is the symbiosis of fish and plant breeding. The excretions of the fish are used to fertilize the plants. These grow in a substrate layer. Additional fertilization is not necessary. Pflanzenschuppen for Münster is staging the system as a pilot project and, via an integrated restaurant, enables the conscious experience and understanding of this new approach to sustainable recycling management.



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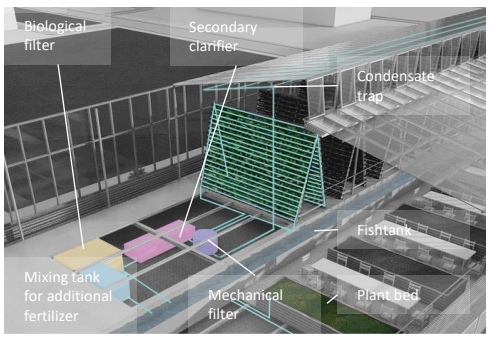

11 Aquaponic system: utilities are hidden underneath a second ceiling

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Bibliography

PDF:
(1) Gerhard Zechner, Dr. *Aquaponics*. [Online]. 2021. Available from: https://docplayer.org/41835239-Aquaponics-aquaponik.html [28.07.2021].

Picture Credits

(8) *Aquaponik und Gebäudetechnik.* [Online]. 2021. Available from: https://www.herbert.de/aquaponik-gewaechshaus-gebaeudetechnik [28.07.2021].