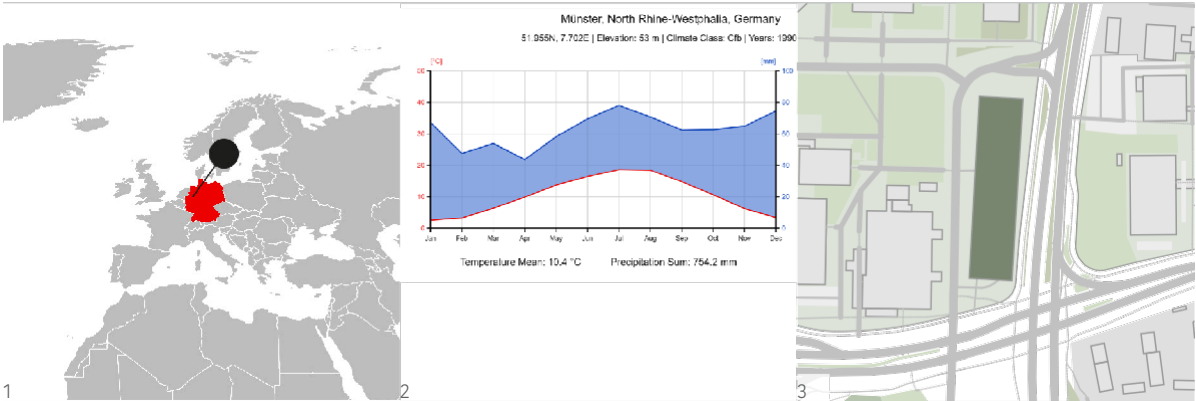
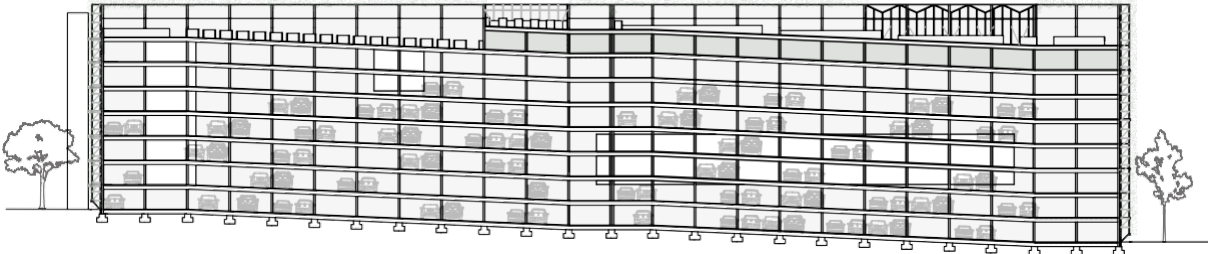


Stadtluftfilter - der grüne Pelz

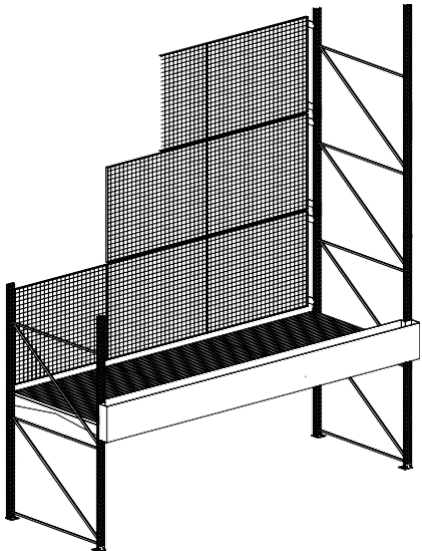
Münster | Germany
Eva Bielefeld | Antonia Wittausch
Student projekt



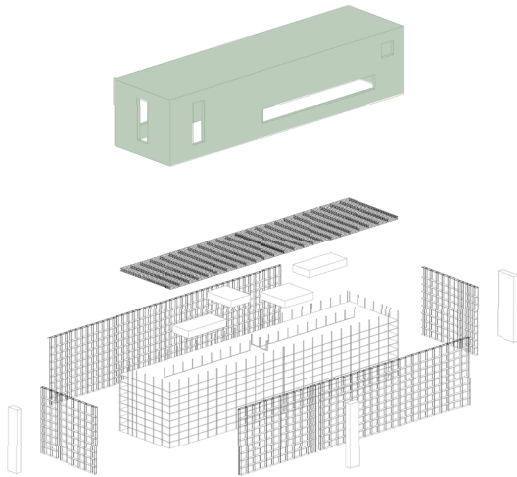
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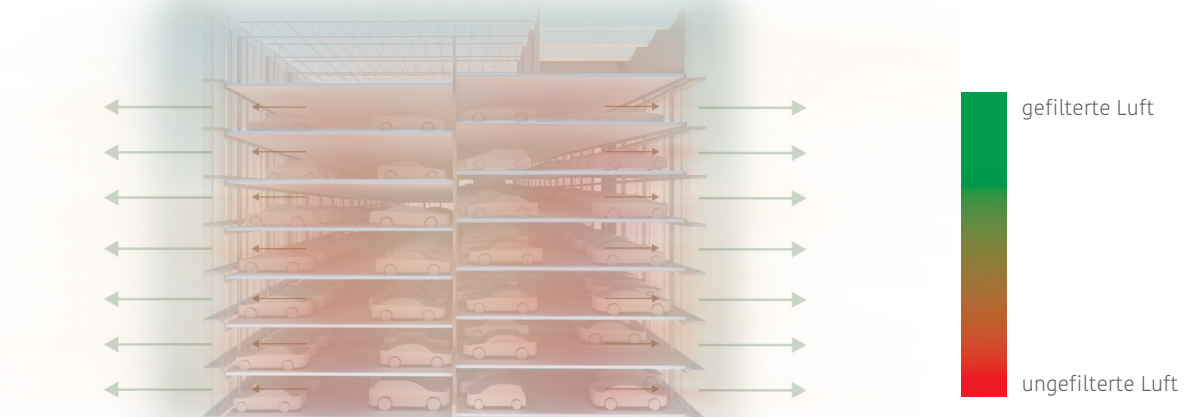
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Aspects geography | Topography | Vegetation

The existing building is an eight-storey car park at Coesfelder Kreuz in Münster. The basic construction of the building consists of steel columns and composite ceilings that connect the floors with each other through their inclination. The building is surrounded by streets at different levels and slopes.

Building volume | Zoning

The construction is placed around and over the building like a mantle. This will be completely greened with plants to filter the air of the exhaust gases. The shelving construction creates a corridor that can be greened from both sides. Also the roof construction is greened in its complete thickness.

Building shell | Shadow | Ventilation

The shelving construction is closed with grids that serve as fall protection and as a climbing aid. By greening the construction, the exhaust air from the car park is filtered directly of pollutants. Since there is no closed structure, the air can circulate easily. The plants also contribute to the cooling of the environment.

Material | Construction | Building techniques

The front construction consists of a simple storage rack system made of galvanised steel. Above the car park, this is continued by steel trusses resting on the existing columns. In the levels of the envelopes, the floor consists of gratings with sheet metal troughs for rainwater.

Sustainability | Energy | Ecology

The watering of the facade and the beds on the top floor of the car park is achieved by collecting the water and directing it to the plants through the slope of the levels and the envelope. The greenery provides natural cooling.

Utilities

Flower beds are attached to the structure of the envelope on every second storey so that the plants can grow evenly upwards. The plants of the roof construction climb up the construction from beds on the upper floor of the car park.

The construction of the envelope can be easily adapted to the size of the car park due to its simple structure and plug-in system, as well as easily dismantled.

The car park and also the envelope can be accessed through three stair towers, which stand at some distance in front of the building and are connected to it by concrete bridges.

By forming a corridor in the construction of the envelope, there is the possibility of greening it from both sides. On the inner side of the building there is a moss filter which filters 82% of fine dust from the air and on the outer side there is a plant layer which also filters pollutants from the air. There are only individual openings in the envelope, through which one can see the car park.

Also the top floor of the parking garage is to be planted with greenery and contribute to filtering the air. Fruit and vegetables are to be grown there in beds and greenhouses, creating a place with a quality of atmosphere.

The polluted air of the car park passes through the envelope filtered and without pollutants into the environment. This system can be applied to diverse buildings due to their modularity and can therefore be easily expanded.

Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt

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(1) Available from: <https://freevectormaps.com/world-maps?ref=top-nav> [08.08.20]

(2) Available from: <https://climatecharts.net> [08.08.21]

(3) *Site plan*. Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt

(4) *Elevation west*. Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt

(4) *Section*. Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt

(6) *Detail model*. Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt

(7) *Explosion model*. Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt

(8) *Air condition illustration*. Eva Bielefeld, Antonia Wittausch, 07/2021, Münster School of Architecture, ba.m3.4 Baukonstruktion Hülle, Prof. Dipl.-Ing. Jürgen Reichardt