

Vertical greening in urban areas

Flexible system with flexible design

With the increasing challenges of climate change, cities are looking for suitable solutions to position themselves for the future. One way to do this is through vertical greening systems, which can be a building block in climate adaptation measures.

Flexible systems for use in vertical applications

How can cities get a grip on growing noise and air pollution and at the same time adapt to the consequences of climate change? Researchers at Fraunhofer UMSICHT have been working on this question since 2013. Together with their partner companies, the researchers have developed planting stones in recent years, which they use for the construction of ground-independent green walls. In this way, they offer private individuals as well as cities and municipalities the possibility to flexibly design facades or walls, e.g. garages or partition walls, in a climate-friendly manner.

Advantages of vertical greening

The flexible systems can contribute to climate adaptation, which climate change makes necessary. On the one hand, the cityscape is improved by more »green«. Furthermore, the green walls have a positive influence on the microclimate, promote biodiversity, reduce noise, have the potential to bind fine dust and increase the quality of stay.

Planting stones for ground-independent green walls.

Keywords

- Vertical greening
- Sound insulation
- Air pollution control
- Microclimate

Industries

- Construction
- Architecture
- Infrastructure
- Gardening and landscaping



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Technological specifications

The plant elements used consist of a plant channel and an integrated irrigation channel and are installed to form a modular system. The channels are filled with plant substrates and can then be sown or planted. The plants grow out of the elements towards the front and gradually cover the vertical surface.

Modular system for flexible greening

- free scalability
- suitable for cities and municipalities as well as private individuals (e.g. garages, bus stops, property boundaries, terraces)
- simple construction
- contribution to sound insulation (sound insulation values up to 56 dB)
- positive influence on microclimate
- flexible and space-saving design for numerous applications
- wide range of plants possible (flowers, grasses, strawberries, herbs, etc.)

From prototype to market launch

The idea for vertical greening systems has existed since the first cooperation between Fraunhofer UMSICHT and Berthold Adler, founder of the start-up Biolit Green Systems GmbH, in 2013. The first two prototypes followed in 2014 in Spain and Castrop-Rauxel. At Fraunhofer UMSICHT, the project partners have also been researching their own wall since 2015. In the meantime, the system has been transferred to the market. Since October 2021, Biolit Green Systems GmbH has been selling the components for the vertical greening system and offering implementation services.

Our service

Fraunhofer UMSICHT accompanies the further research during this process. The researchers are currently looking in particular at the positive influence of vertical greening on the microclimate and the interaction with the environment and are also linking to the results of various student projects. For example, the researchers are drawing on the results of a master's thesis on a sensor-controlled irrigation technology using an app and a bachelor's thesis on plant selection.

In addition to grasses and flowers, tomatoes, strawberry plants or herbs can be used.

Contact

Dr. Holger Wack
Deputy Head of Product
Development Department
Phone +49 208 8598-1121
holger.wack@
umsicht.fraunhofer.de

Fraunhofer Institute for
Environmental, Safety and
Energy Technology UMSICHT
Osterfelder Strasse 3
46047 Oberhausen, Germany
www.umsicht.fraunhofer.de