Office for Micro
Climate Cultivation

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OMC°C brings fresh wind to urban greening: the innovative VERD°System provides shade and fresh air for overheating cities

Summers are getting hotter and hotter, and urban areas in particular suffer from heat build-ups. Efficient and sustainable relief now comes in the form of the new vertical greening system VERD°. The easy-to-install modules with their large plant sails provide shade, and cool down city squares, streets and courtyards or serve to green facades. VERD° has a positive impact on the microclimate while binding CO2 at the same time.

How does it work? Fast-growing climbing plants start growing upward in spring, supported by textile nets that stretch across a storm-proof modular lightweight construction. Over the summer they do their cooling job, and in the autumn, before the leaves wilt and fall off, the plants and nets are taken down and the biomass is converted e.g. into energy. The clever design solution for overheated cities and buildings was developed by the Frankfurt-based OFFICE FOR MICRO CLIMATE CULTIVATION, short OMC°C, in collaboration with designer Stefan Diez and numerous other partners. A major benefit of the system: it interferes only minimally with the existing infrastructure and can be placed flexibly.

Multiple benefits – for people and nature

The VERD° greening system is ecological end-to-end, and provides a practical, cost-effective solution for architects, landscape gardeners, urban planners, municipalities, and companies. VERD° enables an effective greening of urban spaces, including sites where the planting of trees is not possible due to high soil compaction. The vertical green creates pleasant shade – while at the same time cooling down the ambient temperature, reducing fine dust, lessening noise pollution, and storing CO2. In addition, VERD° contributes to biodiversity, as the plant selection contains many nectar plants, a food source for insects and thus indirectly also birds. As a modular series product, the system is scalable and can be adapted flexibly to different types of location and usage scenarios. In public squares or traffic routes, the modules can be used to create new spaces that invite people to linger and relax during the increasingly hot summer months. In this way, the quality of life can be increased in squares, streets or entire neighbourhoods, and nature finds its way back to inner-city spaces from which it had been banned due to construction and the sealing of surfaces.

Construction

The VERD° system by OMC°C is based on lightweight supporting structures made of wood and steel with a height of up to ten metres. These are fitted with custom textile nets made of flax yarn, a special development by OMC°C. The free-standing variation of the VERD° module has a concrete base as its foundation and can serve as a seating area. The module with the circular base will be the first to go into series production later this year. Great attention will be paid to short supply chains. The system is designed in a way that it can be disassembled into its constructive elements and re-assembled in another location with simple means. The modules can be positioned flexibly in urban environments – especially in locations where sealed surfaces and limited root space make it difficult to implement traditional greening solutions. A second variation of the VERD° module, destined for the greening of facades and the cooling of buildings, is currently under development. It can be placed in front of office buildings and industrial halls and is anchored in the ground by means of ground screws. Both variants are largely undemanding regarding their location and interfere only minimally, if at all, with the ground. Apart from the required water supply, they are largely self-sufficient. Another essential component of the system are the planters developed by Stefan Diez. Made of recycled plastic and manufactured via 3D printing, they can be installed at different heights. In inner-city situations, for example, the elongated, wave-shaped vessels, are placed at a height of three metres. Depending on the type and usage of the module, the planters can also be fixed at other heights.

Planting

In spring, the planters are filled with a peat-free substrate and Bioland-certified organic seeds and seedlings of the selected climbing plants. The planting as well as the installation and hoisting of the biodegradable flax nets are part of the annual VERD°Service offered by OMC°C. There is a wide choice of plant species, each with its specific characteristics: Some grow upwards extremely quickly, others develop voluminous greenery. Some please by their beautifully coloured blossoms, others by their fragrance or the iridescent green of their foliage. What they all have in common is their fast growth, so that the nets with their height of up to seven metres can be completely covered with greenery in the course of the summer. Depending on the location and usage scenario, a specific combination of plants can support additional goals beyond the creation of shade, such as aesthetic effects or a contribution to biodiversity. As another advantage, the diversity of plant species reduces susceptibility to diseases. The individual selection of the optimal plant combination is part of the planning process provided by OMC°C prior to the installation of the system.
The use of fast-growing climbing plants in combination with the seasonal cultivation model offers multiple advantages: the mostly annual plants require relatively little root space, and there is no lignification as with perennial plants. As the plants are "harvested" in autumn, there is no need for pruning and the disposal of foliage. In addition, the collected biomass re-enters the resource cycle as a new raw material. During the growth phase, the plants are provided with water via an automated irrigation system, which can, for example, be connected to the public water supply.

One idea – many minds

Not even two and a half years ago, the product designers Nicola Stattmann and Carlotta Ludig started their ambitious project. "Heat islands, climate resilience, shade, urban greenery, microclimate... these are the topics confronting us day for day in the summer. Topics of such social and ecological relevance that a solution absolutely has to be found. It was clear to us: somehow urban spaces need more cooling shade. That is when the research and analysis began. Little by little, everything fell into place, and we finally arrived at a consistent and quite radical solution with VERD°," Carlotta Ludig recalls. The two went on to found the Frankfurt-based OFFICE FOR MICRO CLIMATE CULTIVATION. "The overwhelmingly positive feedback we received once we started to share the idea, showed us that being bold was the right thing to do," says OMC°C

co-founder Nicola Stattmann. "The idea behind VERD° is simple and intuitive, but then the development process through to series production was quite a bit more complex than launching a new chair," adds Stattmann, who has been at home in the field of eco-design for 20 years and also runs a label for sustainable solid wood furniture. As a consequence, the two founders quickly brought in partners with strong expertise in relevant fields.

From the very beginning, Malte Just from Just Architekten was an important sparring partner for all questions around urban planning and architecture and played an active part in the construction of the first research sites. The challenging statical calculations for the supporting structure of the module were performed by the renowned engineering firm Bollinger+Grohmann from Frankfurt. Wurst Stahlbau GmbH, one of Germany's leading steel constructors, was a central production partner since day one. Dieter Gaißmayer, a passionate plant connoisseur and founder of a large Bioland nursery as well as the Stiftung Gartenkultur in Illertissen, contributed extensive research into suitable climbing plants, and cultivates the seedlings and seeds used. Designer Stefan Diez and his team from Diez Office in Munich assisted in developing the mechanical details of the modules. In early 2023, OMC°C has successfully set up the first VERT° prototypes in the backyard of the Senckenberg Museum in Frankfurt. The official market entry is planned for this autumn.

The project is accompanied scientifically by the Entomology III section of the Senckenberg Gesellschaft für Naturforschung (SGN) and the Deutscher Wetterdienst (DWD), Germany's national meteorological service. Senckenberg will monitor the visiting insects at the prototype modules in Frankfurt for the next three years in order to investigate the impact of the vertical greening system on the biodiversity in cities. The DWD has installed measuring stations to capture temperature, humidity, and wind force data at different heights to study the microclimate surrounding the modules.

The City of Frankfurt has been highly commited to the project, with particular support from the Department of Climate, Environment and Women (Dezernat für Klima, Umwelt und Frauen), and the Climate Office (Klimareferat). 50 % of the funding for the prototype in the museum's backyard was provided by the climate department's "Frankfurt frischt auf" programme.

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