

FACTSHEET

PHOTOVOLTAIK-Dachgarten

PV roof garden - an innovative way to integrate photovoltaics

At a time when renewable energy is becoming increasingly important, **building-integrated photovoltaics (BIPV)** play a key role in modern architecture. The PV roof garden is a fascinating example of how sustainable technology and innovative design can go hand in hand. This system combines an impressive variety of benefits: Not only does it produce clean energy, but it also compensates for the increasing sealing of surfaces, improves the microclimate, reduces CO₂ emissions, stores rainwater and extends the life of the roof.



Fig.1: Semi-transparent or opaque (light-impermeable) PV cells

Green energy and urban living space combined

- Multiple use of the same "m²" for plants, people and energy production.
- Creation of additional green habitat in the urban area to compensate for the sealing of green spaces by new construction projects.
- Improvement of the urban microclimate and binding of pollutants in the plants, as well as more comfort through misting systems to prevent overheating in summer.
- Solar power through integrated photovoltaics and improved site conditions through partial shade for suitable plant families.
- Own energy consumption rate of up to 100% and thus relief for the public grids.
- Relief for wastewater systems thanks to rainwater retention of 90% during heavy rainfall.

Building requirements & design options

The PV roof garden is characterized by a modular design using materials such as wood, steel and aluminium. The system does not require roof penetration as it is stabilized by the substrate as a gravity system. The system is flexible and, depending on the structural requirements, can be used in both new and old buildings, where it serves as a counterweight. With a clear height of 2.6 meters, for example, the space below can be used in a variety of ways. The design offers a residual light capability of 30% through overhead glazing, which enables a bright environment under the modules. An area of around 50 m² and a PV output of around 5 kWp can be realized per module, making the PV roof garden versatile for use in urban areas.



Fig. 2: Habitat with bifacial PV, wooden substructure and plants, realization ATB Becker GmbH



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