

Current Project for Building-Integrated PV

“BALDACHIN” - Development of an Innovative Solar Roof Element - Cost-effective, Attractive and Easy to Install

Together with our partners we develop an innovative solar roof element for building-integrated photovoltaics. In shape and color, the roof module will resemble classic roof tiles, whereby the solar cells should not be visible.

- easy assembly through plug-in connection
- cost-effective product
- easy integration into classic roof coverings
- high efficiency
- high durability and yield

Further Information



Project website “BALDACHIN”



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Integrated Photovoltaics

Solar Roofing Modules Replace Roof Tiles

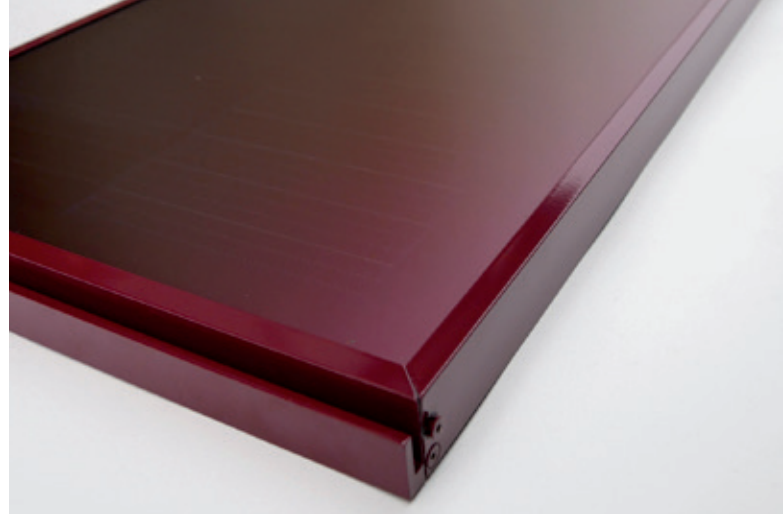
Large Market Potential for Integrated Roofing Modules

According to a study by Fraunhofer ISE, photovoltaic systems on Germany's roofs have a technical potential of approx. 560 GWp. So far, rooftop systems have mostly been installed on house roofs. However, with a widespread expansion of rooftop solar installations, there is a risk that the public's acceptance of photovoltaic systems could decline. One solution is to use integrated solar modules instead of roofing tiles, which are visually hardly distinguishable from conventional roofing tiles and produce solar power at the same time.

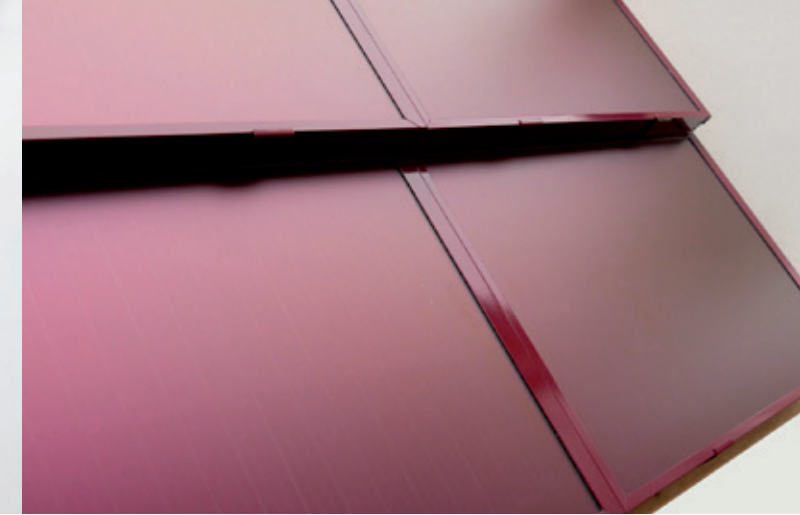
Until now, integrated solar tiles or solar roofing modules have been a special solution, which usually have to be produced at high cost or installed with great effort. At Fraunhofer ISE, a solar roofing module has now been developed for integration into conventional roof coverings, which corresponds to the classic roof tiles. The solar cells are almost invisible due to a Morpho-Color® coating.

Our Services for Module Manufacturers, Roof System Manufacturer and Architects

- PV technology consulting and cost optimization
- development of solar roofing modules and blind modules
- module reliability testing
- development of system integrations
- determination of solar energy yield
- coordination and management of R&D projects with industry partners



Solar roofing modules can be connected by means of a raintight plug-in connection and mounted with roof hooks.



Solar roofing modules with Morpho-Color® color coating in a classic roof covering.

Solutions for Solar Roofing Modules

- plug-in connections enable reliable mechanical and electrical connection
- usage of low-cost cell and interconnection technologies, replacement of the conventional roof tile
- integration into conventional roofing through a compatible design
- high yield even with partial shading
- long service life due to a durable module design

High Aesthetics Due to Color Coating

The solar roofing modules should be as visually indistinguishable as possible from normal roof coverings. We have developed the Morpho-Color® coating at Fraunhofer ISE, which conceals the underlying solar cells of our solar roofing module. This also makes the solar roofing modules fundamentally suitable for listed buildings. Like the blind roofing modules without solar cells, the solar roofing modules can be coated with any color with high saturation. The color coating allows over 90 % of the solar radiation to pass through compared to uncoated modules.

Effective and Economical

- framing of the modules replaces the roof tile, the solar roof tile is installed directly on the purlins or rafters
- raintight roof element connection due to framing design
- direct rear ventilation of the modules through the frame elements
- large-area elements reduce the cost and effort of production and installation
- use of low-cost commercial PERC solar cells in the efficient shingle interconnection

Making Integrated Solar Systems Ready for the Market

Our decades of experience at Fraunhofer ISE in module technology and system interfacing enable us to support the selection of suitable industrial components for cost-effective and long-lasting production. In addition to module technology, we develop simplified assembly solutions, offer colorful design and put your products on the road to market.