MFH Stadler-Luzern, Switzerland

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Roof-integrated PV System

Solar

What is the solution?

The first fully integrated PV system in the city of Lucerne presented the client with several challenges, because the building is located in a protected area. In order to meet the high requirements of the monument protection for the Lucerne cityscape, 22 special modules and 36 dummy modules had to be manufactured individually and integrated into the angled roof surface with 26 skylights.

Why does the solution work in terms of compatibility with conservation and technical aspects?

Architect Alois Stalder realized his exemplary integrated 34 kW PV system in the middle of the protected area B of the city of Lucerne. Stalder used the 200 m2 roof cladding of the newly extended attic to capture the free shining sun rays from all four cardinal points and thus generate 23,100 kWh/year of electricity. The perfectly flush-roof integrated Special modules form a uniform and harmonious roof surface with the filigree roof windows. The sophisticated architecture fulfils the high requirements of the protection of historical monuments and enhances the cityscape. The solar power covers 8% of the total energy demand of 286,800 kWh/a.

Description of the context:

On the five-storey apartment building (Multi Family House) in the angular style of the 70s, a wooden extension was built in a very short time. It replaces the existing flat roof with a battlement roof, which is widespread in the neighbourhood. The 34 kW PV system, perfectly integrated on the 200 m2 roof

surface, produces 23,100 kWh of electricity per year. It thus covers around 8% of the total energy requirement of 286,800 kWh/a of the More Familiy House.

Pros and cons of the solution:

The conversion of the flat roof into an extended attic not only allows for a perfectly integrated solar system, which not only significantly enhances Lucerne's cityscape, but also allows greater use of solar energy. This is why it deserved the Swiss Solar Prize Diploma 2015.

Type of data available (level of information, simulation):

Winner of the Swiss Solar Prize 2015 "C" category for energie plants. Link (German and French): https://www.solaragentur.ch/sites/default/files/g-15-09-02_solardach_in_ortsbild-schutzzone_luzern.pdf Information PV Modules: Orientation: South, East; Tilt angle: 48°; PV surface area: 200 m2; Rated power: 34 Wp; Energy production: 23,085 kwh/a; Final yield: 679.411 KWh/Wp; Active solar ratio: >75% (roof); Manufacturer: BE Netz AG; Module technology: monocrystalline; Cell color: Black.

Are there any related publications or pictures of the solution?

Credits: Caspar Martig Fotograf GmbH

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https://www.hiberatlas.com/smartedit/projects/177/g-15-09-02_solardach_in_ortsbild-schutzzone_luzern.pdf

Solaragentur Swiss Solar Prize 2015 Diplom