



Single Family House - Gstaad, Switzerland

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Roof-integrated PV system

Solar

What is the solution?

On the half-hipped roof is a full-surface homogeneous 32 kW strong PV system integrated in an exemplary manner. It produces over 27,000 kWh CO₂-free solar power annually. So, it covers the total energy demand of the single-family house (EFH) of 17,600 kWh/a at 154%. With the solar power surplus of 9,500 kWh/a, six electric vehicles could each emit more than 12,000 km of CO₂ per year. free ride. The energy index is marked with 84 kWh/m²a relatively high, which indicates suboptimal insulation values. Meanwhile, it corresponded to an all-round balancing of interests, the original walls not be covered by external thermal insulation. This allowed the original character of the building to be maintained.

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

The building in Alpine Gstaad, which was originally used for agricultural purposes but later abandoned, was comprehensively renovated in 2018. The total energy requirement of the now spacious detached house (EFH) is 17,600 kWh/a. The exemplary integrated 32 kW PV system generates around 27,000 kWh of CO₂-free solar electricity annually. The resulting homogeneous roof surface corresponds to the simple external appearance of the building. This PlusEnergieBau renovation shows how tradition and integrated photovoltaics can be combined aesthetically very well. Overall, the EFH has an energy supply of 154%. A 13 kWh battery storage increases the own consumption.

Description of the context:

Every year in Switzerland more than 2,000 agricultural holdings are abandoned. The buildings often remain unused (CVP-Mo 11.3285). A redevelopment or conversion of older buildings into a residential building is due to the federal legal restrictions on the preservation of cultural landscapes not always possible. Every year in Switzerland more than 2,000 agricultural holdings are abandoned. The buildings often remain unused (CVP-Mo 11.3285). A redevelopment or conversion of older buildings into a residential building, due to the federal legal restrictions on the preservation of cultural landscapes, is not always possible. These traditional buildings can be well equipped with the latest technology and come back to life, and Gabriela Matti has tried with the conversion of the unused Mayensäss in Gstaad. The building was in a state of abandonment. The exterior appearance has been preserved in the best possible way to maintain the original character of the building and not to spoil the appearance of the area. A comprehensive renovation transformed the unused and unheated wooden house into a modern PlusEnergyBuilding, that hasn't lost its "old charm."

Pros and cons of the solution:

It was decided to install the PV system on the roof to take advantage of its favourable position and avoid damaging the green landscape with a ground system. Placing it on the roof takes advantage of an existing element in the panorama. The PlusEnergie-EFH Matti shows in an exemplary way how traditional but unused agricultural buildings can be put to sensible use in order to comply with the Paris Climate Convention without disfiguring the townscape. This intervention is included in the Swiss Solar Prize 2019.

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

Solaragentur Swiss Solar Prize 2019: 154%-PlusEnergie-EFH Matti, 3780 Gstaad/BE. Link (German and French):
https://www.solaragentur.ch/sites/default/files/g-19-10-02_solarpreispub19_fueradag_v2.p081.pdf Orientation NE, SE, NO, SO; Tilt angle 44TH NE, 134TH SE; Superficie PV 178 m²; Rated power 31.7 kWp; Energy production 27'035 kWh/a; Cell color black;

Are there any related publications or pictures of the solution?



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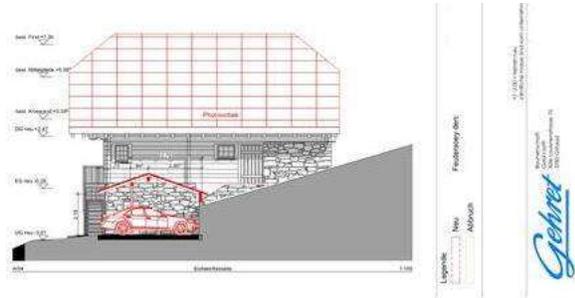
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