



Single family House - Bern, Switzerland

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Ventilation with heat recovery

HVAC

What is the solution?

A comfort ventilation system with heat recovery of the company Zehnder (<https://www.international.zehnder-systems.com/products-and-systems/comfosystems>) has been installed.

Why does the solution work?

On the top floor, the supply air is routed via the screed into the built-in cupboards: apart from the inconspicuous supply air grilles in the cupboard walls (usually behind furniture), no architectural intervention in the rooms (pipes) is necessary. This will avoid the visual impact of technical installations.

Description of the context:

The building is a detached single-family house, a two-floors neo-baroque construction with a mansard rooftop and is dated 1898. The general situation of degradation and the need to minimize energy demand collide with the important aspect of historic buildings preservation. The challenge is to achieve maximum results in both fields, opting for several high efficiency interventions, but at the same time with minimum aesthetic impact. As usual at road forks and corner houses in the Kirchenfeld district, according to the Kirchenfeld-Brunnadern building inventory, the house was designed with special care: the south-east corner of the house is characterized by a corner risalite, which is covered with the mansard roof. The house is listed in the cantonal building inventory and classified as worthy of protection (highest protection level). For this reason, any changes must obtain the approval of the Department of Historic Monuments.

Pros and cons of the solution:

In addition to the minimum architectural intervention, there are no audible ventilation noises. Controlled ventilation allows to achieve high energy efficiency. Since a tight building envelope prevents the gradual loss of warm air, ventilation systems compensate for this with a continuous, controlled exchange of air. The positive effect of controlled ventilation systems is that no moist air accumulates in the rooms; the risk of mold is eliminated. And because fresh air can flow in automatically from outside, the quality of the room air is permanently guaranteed. Furthermore, the heat contained in the exhaust air from a controlled living space ventilation system is systematically recycled improving energy efficiency. In contrast, there is no longer any need for manual and natural ventilation. Practice even shows that without a ventilation system, manual natural ventilation is usually too long, so that unwanted heat loss increases.

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

Winner of the swiss Solar Prize 2014, "B" category for building's retrofit.
INTERREG case study for cultural-protected building's retrofit.

[https://www.hiberatlas.com/smartedit/projects/174/Beschreibung des Gebäudes und der Solaranlagen_20161030.pdf](https://www.hiberatlas.com/smartedit/projects/174/Beschreibung_des_Geb%C3%A4udes_und_der_Solaranlagen_20161030.pdf)

Additional information about the solution:

https://www.hiberatlas.com/smartedit/projects/174/Beschreibung%20des%20Geb%C3%A4udes%20und%20der%20Solaranlagen_20161030.pdf

Article and video published in Hausinfo, a neutral online information platform on all topics relating to the house, published in German and French (Ed. GVB Services AG and the Home Owners Association Switzerland, HEV): "Architecture report: Energy-producing roof despite monument protection". The article contains information on the products and the technical plans used in the building refurbishment. Available at: <https://www.hausinfo.ch/de/home/gebäude/architekturreportagen/hutterli-bern.html> In 2014, the building owners received a Swiss solar award for their commitment to improving the energy balance of their building. Link: https://www.solaragentur.ch/sites/default/files/g-14-10-03_hutterli_roethlisberger_solpreiskatsan.pdf

Are there any related publications or pictures of the solution?



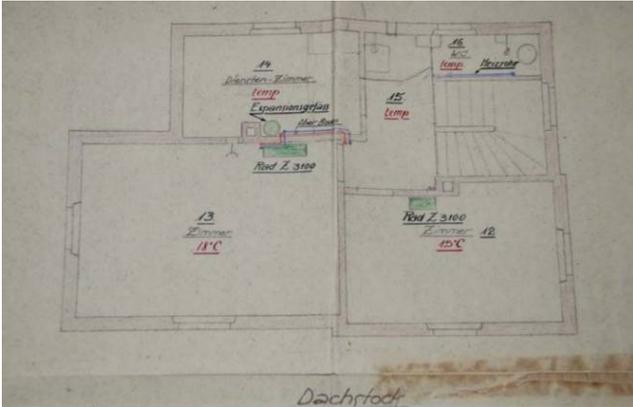
Services tubes © M. Hutterli



Services tubes © M. Hutterli



Indoor spaces after refurbishment © M. Hutterli



System distribution scheme (attic floor, attic) © M. Hutterli

https://www.hiberatlas.com/smartedit/projects/174/Beschreibung_des_Gebäudes_und_der_Solaranlagen_20161030.pdf

Swiss solar price 2014 (German)