

Franciscan Monastery, Graz, Austria



Picture source: AEE INTEC

Architectural integration of solar thermal energy systems

Franciscan Monastery, Graz, Austria

Renovation towards "Zero Emission Monastery"- solar collectors integrated in the roof and in the façade

PROJECT

When renovating the historic building complex of the Franciscan monastery in Graz, the vision of the Franciscans played a major role: "The *integrity of creation* also means to preserve the natural resources and to utilize the sun as main energy source"

Based on a renovation concept which has been embedded in a master plan including all built parts of the complex, a unique solar system was mounted onto the roof and façade of the southern wing of the monastery.

The solar collectors on the south facing roof and façade were constructed in such a way that the historical features of the roof and the historical sundial on the façade have been preserved. By installing a low-energy heating system which is integrated in the walls and floors, the corner stone for a "nil emission" monastery has been laid. Dormer windows were built in the roof to provide natural light for the top floor and together with the solar collectors they have been integrated to provide a uniform appearance.



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Architectural integration of solar thermal energy systems

Key figures

Energy sources/technology: solar collectors, solar cells, heat pump

Heating demand: 183 kWh/a before renovation, 85 kWh/a after

Solar collector area : 390 m²

Heat store: 15 000 litre (3 storages)

Features: Energy concept of "4 steps"

1. Step: **Energy efficiency measures**

Desiccation of the walls, Insulation where possible, Rooms used as buffers, Renovation of box-type windows

Savings after the first step up to 25%!

2. Step: **Solar thermal energy use**

For hot water and low temperature space heating, Component heating (to dry and pre-temperate the walls), Supply of adjacent buildings

Savings after the second step up to 50%!

3. Step: **Heating system, heat pump**

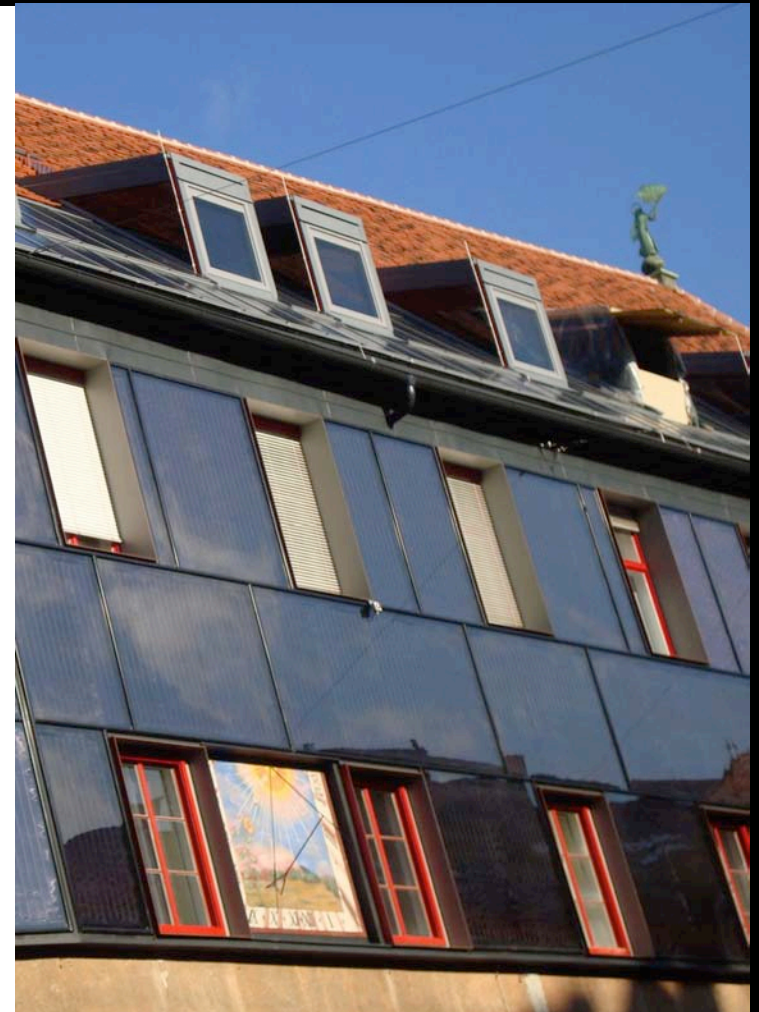
Solar- and water-coupled heat pump, 3 storage tanks (total 15 m³), Central heating of rooms *inside* the building, Three decentralized tiled stoves

Savings after the third step up to 92%!

4. Step: **Power generation**

Solar cells (at buildings), or Green power investments, or green power (wind, PV) purchase

Rest: Around 8% of the original consumption!

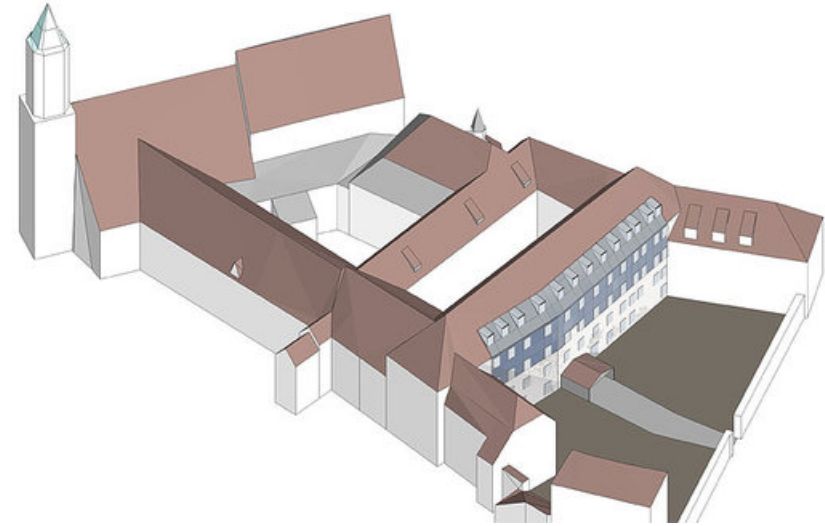


Picture source: AEE INTEC

SOLAR COLLECTOR

Type:

Glazed flat plate water collector



Picture source: AEE INTEC

GALLERY



PHOTOS; AEE INTEC

- Architecture:
HoG architektur ZT GmbH
- Client:
Franziskaner Graz
- Technical Planning:
TB Köstenbauer & Sixl GmbH
- Project Consultants:
Güssing Energy Technologies
(GET), AEE INTEC
- Location:
Graz, Austria
- Project period:
2008-2015
- Type of project:
Residential and partly
commercial building complex
- Read more :
[http://architizer.com/projects/
franciscan-monastery-graz/](http://architizer.com/projects/franciscan-monastery-graz/)



- YouTube: https://www.youtube.com/watch?feature=player_detailpage&v=LIRZ_nJFQY