Hot Ice Weiz, Austria

The project focuses on the use of latent heat with two ice storages and heat pumps in combination with unglazed solar collectors and a PV system. It is designed as a pilot project for local heat supply.

Key facts

Building

Location	*Weiz, Austria*
Construction	*2015*
Heat distribution	*underfloor heating*
Heated area	*957 m² living*
Level of insulation	*very good*

Heat pump and source

Number of	*2*
Installed power	*6 kW + 10 kW*
Operation mode	*monoenergetic*
Heat source	*ice storage + solar*

Heating system

Heat demand 2016/17	*29390 kWh/a (incl. losses)*
Heating temperature	*35 °C*

Domestic hot water

Type of system	*central*
Heat demand 2016/17	*26200 kWh/a (incl. losses)*
Max. temperature	*60 °C*
Circulation system	*yes*

Other information

Electric energy consumption 2016/17	*16850 kWh*
Investments costs	*unknown*
PV installation	*yes*

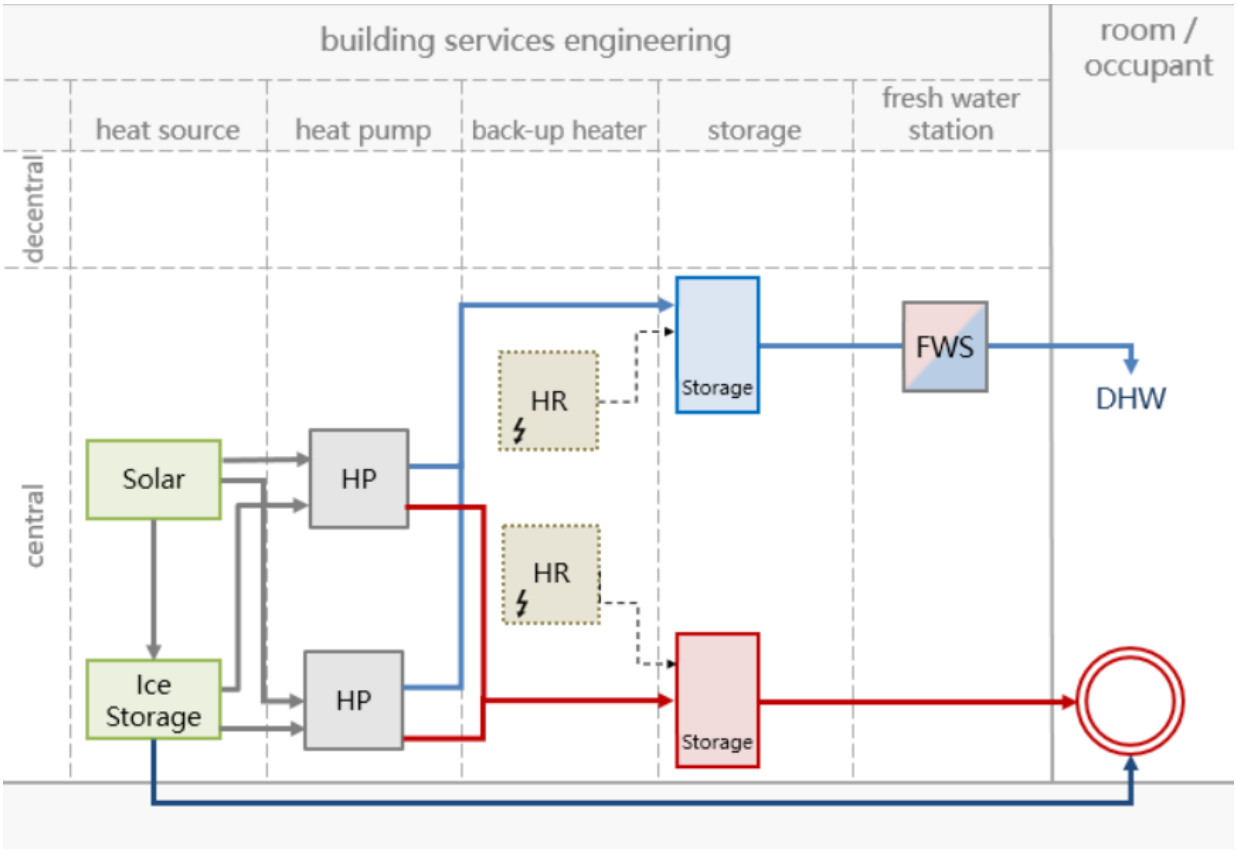
Lessons learned

- Use of innovative heat source - ice storage connected with solar thermal absorbers works very well for multi - family buildings with very low energy demand (passive house standard).
- Comprehensive concept including PV modules lets increase the energetic independence of the buildings.
- Quality of the system's control is crucial.
- Compared to design data increased heat demand due to increased room temperature & DHW consumption.

The construction of the MFH (multi-family building) which is located at Bärentalweg 6 in A-8160 Weiz was finished in April 2015. The building is a wood frame construction which accommodates ten different apartments on three floors. The total area adds up to 1477 m², whereof an area of 957m² is heated.

It fulfils the passive house standard and has a calculated heat demand of 9.91 kWh/(m²a).

Hot Ice Weiz, Austria, Technical details

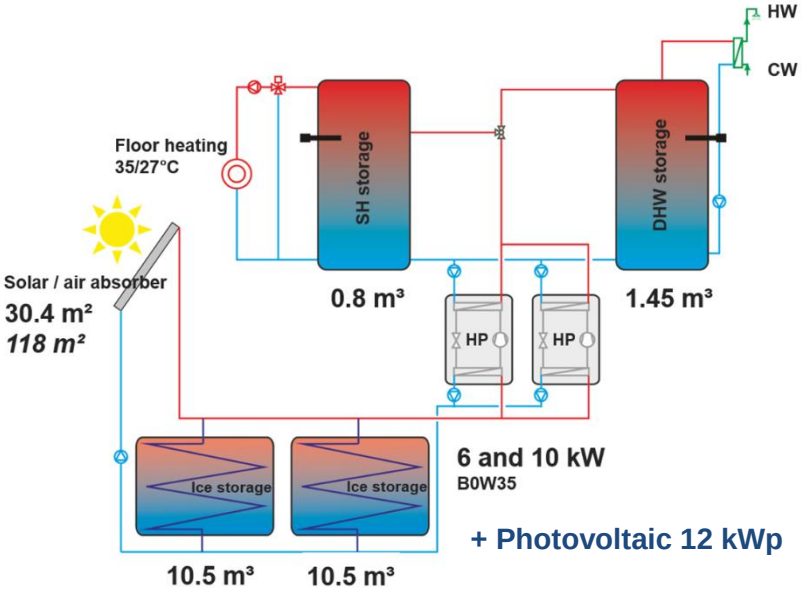


Description of the technical concept

The heat provided from the solar collector can either be delivered to the ice storage via a heat exchanger or to the heat pumps. The heat pumps lift the heat to the desired temperature level. (Remark: Up to now, it is not possible to use heat from the solar collector directly to heat the DHW or the SH storage.)

Depending on the current heating requirement, one or two heat pumps are in operation. They always work in one mode (DHW or SH storage, with priority on DHW) and ensure that the temperature in the storages remains within the desired range. If both heat sources (solar collector & ice storage) are not sufficient, it is possible to heat the two storages with auxiliary heaters (electrical heating rods).

During summer, this system can also be used for cooling. For this purpose, the ice storage is used directly as heat sink (“cold source") for “passive cooling”, so that no chiller (reversible heat pump) is needed.



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