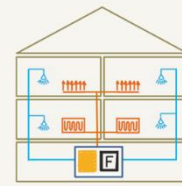


## Hot Ice Weiz, Austria

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.



F1.5

### Key facts

#### Buildings

Location	Weiz, Austria
Construction	2015
Heat distribution	underfloor heating
Heated space	957 m <sup>2</sup> living
Level of insulation	very good

#### Heat pump and source

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

#### Heating system

Heat demand 16/17	29390 kWh/a (incl. losses)
Heating temperature	35°C

#### Domestic hot water

Type of system	central
Heat demand 16/17	26200 kWh/a (incl. losses)
Max. temperature	60 °C
Circulation system	Yes

#### Other information

Electric energy consumption 16/17	16850 kWh
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

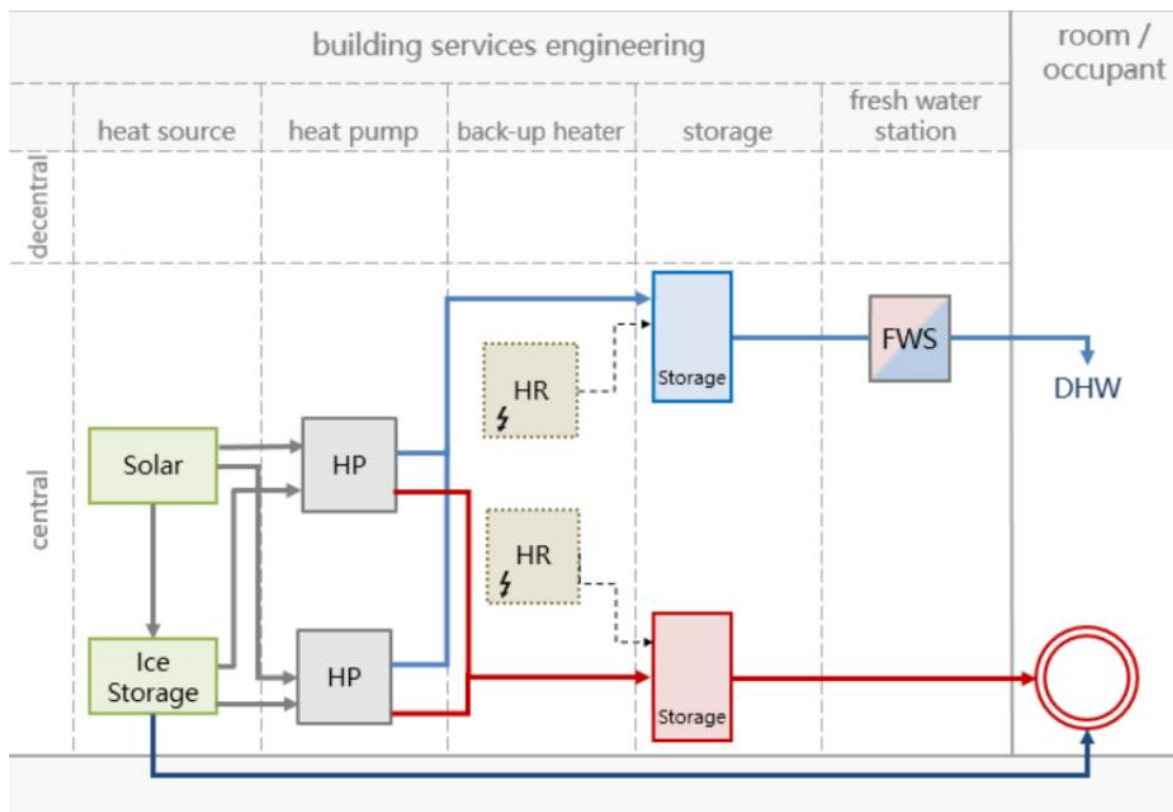


The construction of the MFH (multi-family building) which is located at Bärenalweg 6 in A-8160 Weiz was finished in April 2015. The building is a wood frame construction which accommodates ten different apartments on three floors. The total area adds up to 1477 m<sup>2</sup>, whereof an area of 957m<sup>2</sup> is heated.

It fulfils the passive house standard and has a calculated heat demand of 9.91 kWh/(m<sup>2</sup>a).



## Hot Ice Weiz, Austria

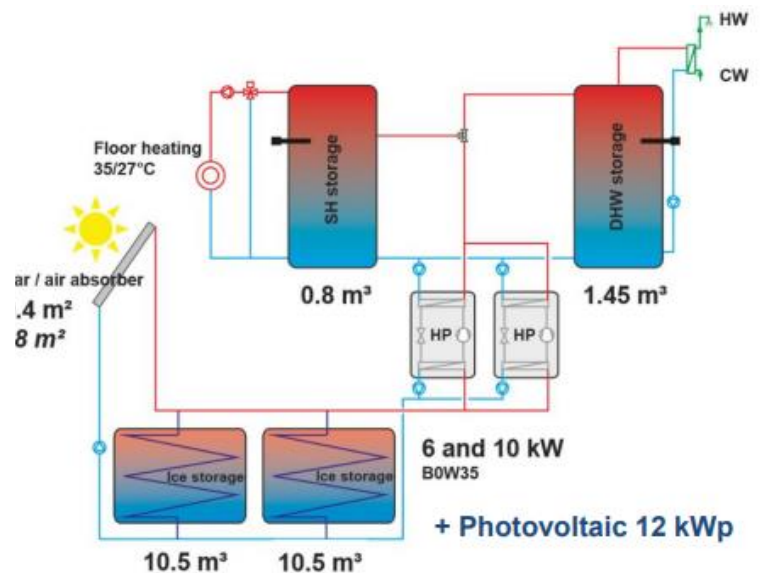


### Description of the technical concept

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.



The project „HotIceWeiz“ is a cooperation between



and is financially supported by Das Land Steiermark.

The work on "IEA HPT Annex 50" is financially supported within the framework of the "IEA Research Cooperation" on behalf of the "Austrian Federal Ministry for Transport, Innovation and Technology".

