

Sculpturen, Netherlands

The project is focused 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	Breda, NL
Construction	2012
Heat distribution	underfloor heating
Heated area	957 m ² living
Level of insulation	very good

Heat pump and source

Number of	2
Installed power	6 kW + 10kW
Operation mode	monoenergetic
Heat source	outside air & ATES

Heating system

Heat demand	?
Heating temperature	35 °C

Domestic hot water

Type of system	central
Max. temperature	60 °C
Circulation system	yes

Other information

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

Lessons learned

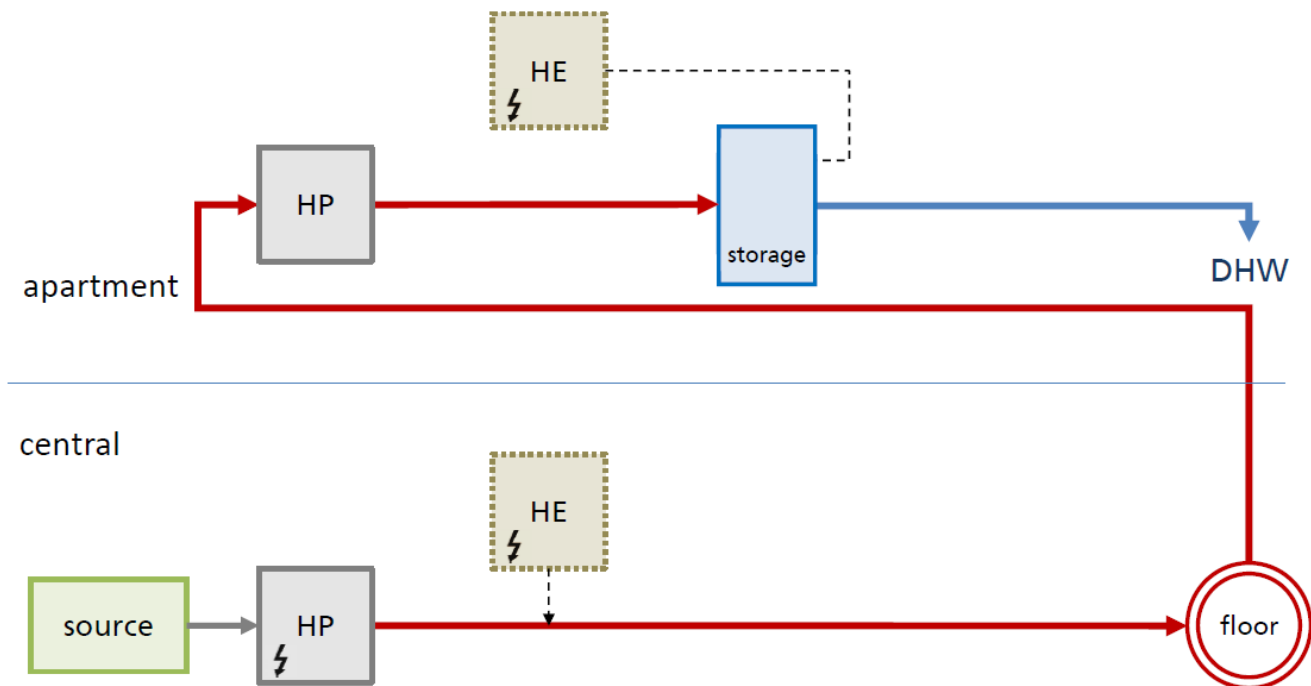
- Use of innovative heat source - ice storage connected with solar thermal absorbers works very well for multi family buildings with very low energy demand (passive house standard).
- Comprehensive concept including PV modules lets increase the energetic independent of the buildings.



The construction of the MFH (multi-family building) which is located at Bärentalweg 6 in 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).

Sculpturen, Netherlands, Technical details



Description of the technical concept

The heat provided from the solar collector can either be put into the ice storage by a heat exchanger or fed to the heat pumps. It is impossible to use heat from the solar collector directly to heat the DHW or the SH storage because the temperature is too low and must be brought to a higher level by the heat pumps before.

Depending on the current heating requirement, one or two heat pumps work. They always work in one mode (DHW or SH storage) and ensure that the temperature in the storages remains within the desired range. Instead of the solar collector, the heat pump can also be fed from the ice storage. If both heat sources are not sufficient, there is the further possibility to heat the two storages with an auxiliary heater.

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

