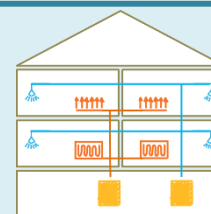


DE016 PVT-Heat-Pump-System for three MFBs, Germany

PVT collectors supply the heat pumps of these three building which in turn provide Space Heating (SH) and Domestic Hot Water (DHW).


A2

Key facts

Buildings

Location	<i>Altbach, DE</i>
Construction	<i>2021</i>
Project type	<i>newly done</i>
Heat distribution	<i>underfloor</i>
Heated space	<i>1753 m²</i>
No. of buildings	<i>3</i>
No. of apartments	<i>24 (8 each)</i>
Level of insulation	<i>good</i>

Heat pump and source

Number of	<i>6 (2 per building)</i>
Operation mode	<i>monovalent</i>
Heat source	<i>solar</i>
Model	<i>Waterkotte/ Consolar EcoTouch</i>

Heating system

Type of system	<i>central</i>
Heating temperature	<i>35°C</i>
Storage	<i>800l</i>

Domestic hot water

Type of system	<i>central</i>
Max. temperature	<i>>50°C</i>

Other information

Refrigerant	<i>R410A</i>
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Lessons learned

- Running DHW separate from SH allows for more efficiency since in the underfloor heaters, the SH water does not need to be heated to more than 35°C.

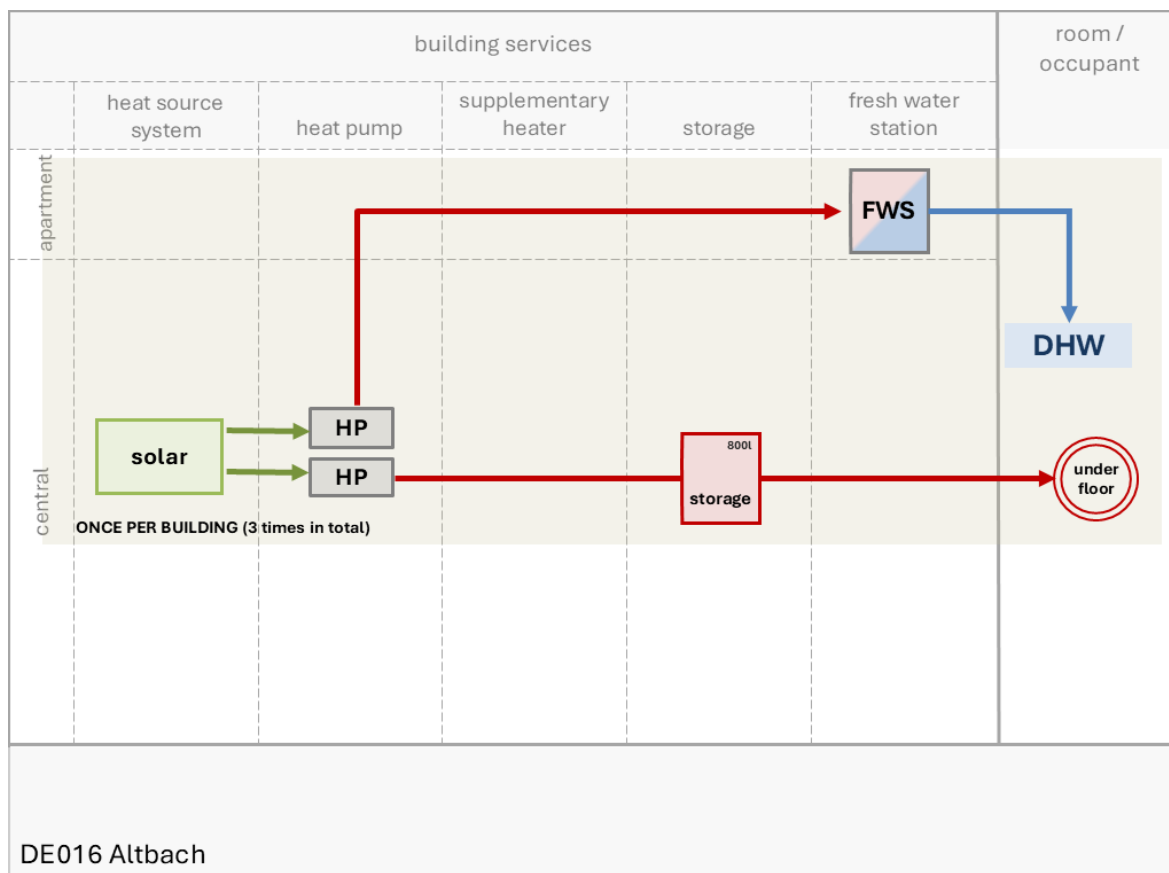


The project in Altbach (near Baden-Württemberg's capital of Stuttgart) was completed in 2021. The three multi-family buildings (MFBs) with eight dwellings each and a shared parking garage comprise a total living area of 1753 m² and were built to the KfW-55 standard.



Picture Credits: bwp Bundesverband Wärmepumpe

Two Different Buildings, Two Identical Systems, Technical details



Description of the technical concept

Every house has 36 photovoltaic-thermal (PVT) collectors on its roof which feed each building's two central heat pumps.

The hydraulic connection to the apartments happens via a four-wire system, meaning that there is separate piping for Space Heating (SH) and Domestic Hot Water.

This improves the total efficiency of the system as the heat pump for the underfloor SH can be run on low-temperature settings. It has a flow temperature of merely 35°C (max.) and it includes an 800l storage unit in each building.

Domestic Hot Water is provided by each MFB's other heat pump which heats water to a temperature above 50° and transfer the heat to the apartments' decentral Fresh Water Stations.