



## Case Study Building - Haus M



Photography courtesy of Ursula Meisser

### DESCRIPTION

Building Location	Zurich, Switzerland
Owner	"Mehr Als Wohnen" Baugenossenschaft (Housing Coop)
Architect	Duplex Architekten AG
Engineers	Müller.Bucher AG
Building Type	Residential
Certifications	2000-W Society Cert
Date Completed	Summer 2015

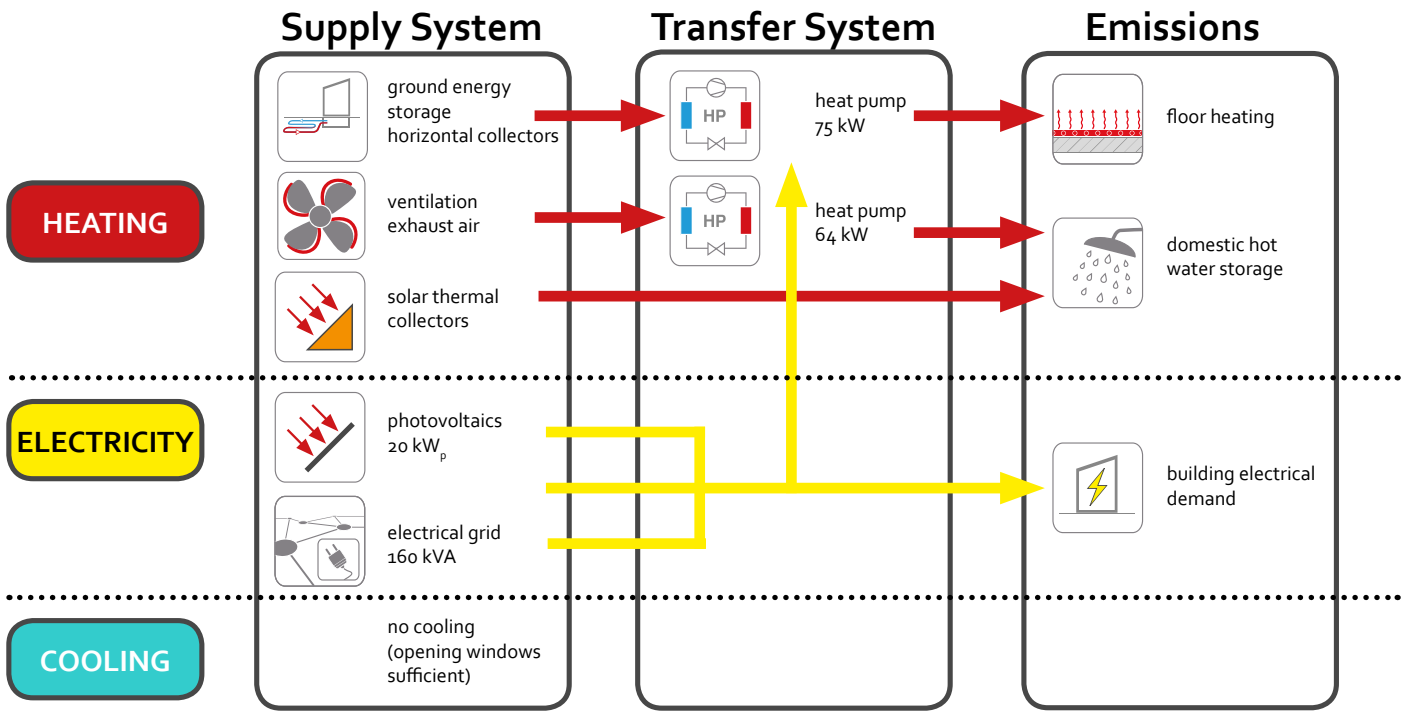
Haus M is a 5,400 m<sup>2</sup> residential apartment building in Zurich, Switzerland. It consists of 29 apartments over five floors, and a 950 m<sup>2</sup> day care centre. A combination of ground buried horizontal collectors, solar thermal collectors and waste heat from ventilation extract are used as low temperature energy sources for the heat pumps to produce domestic hot water and space heating, which is delivered via a low temperature underfloor heating system, cooling is not required. It is triple glazed.

Since the project began, the "Mehr Als Wohnen" Baugenossenschaft has engaged in several research projects all funded by SFOE (Swiss Federal Office of Energy) where most of the buildings are used as a "living lab" for various HVAC, building physics and energy studies in general.

### GENERAL BUILDING DATA

Number of spaces	1 kindergarten (ground floor) & 29 apartments (1st-5th floor)
Number of occupants (design)	97 (dwellings), 70 (kindergarten)
Gross floor area	5,400 m <sup>2</sup>
Conditioned floor area (area that is heated)	6350 m <sup>2</sup> (5,400 m <sup>2</sup> above ground, plus 950 m <sup>2</sup> basement)
Type of ground source	Ground source Heat pump (horizontal collectors)
Total annual thermal energy use	[40-60] kWh/(m <sup>2</sup> ·annum)
Heating	Underfloor heating (Supply 30 °C / Return 24 °C)
Ventilation	Mechanical exhaust, heat recovery
Ventilation characteristics	Extraction fixed flow rate, decentral
Net volume	Total 13,800 m <sup>3</sup>
Building envelope:floor area ratio	0.86 (compact building)





(Symbols copyright REHVA-GEOTABS guidebook No.20)

**HAUS M ENERGY EMISSION SYSTEMS**

Heating	Low temperature underfloor heating
Cooling	None required

**BUILDING FEATURES**

Building construction type	Heavyweight
Average U-value for opaque elements (roof, walls, floors)	0.12 - 0.135 W/m <sup>2</sup> ·K
U-value of glazing	0.7 – 1.1 W/m <sup>2</sup> ·K
G-value of glazing	0.4 – 0.6
Glazing area (% of facade or roof)	Facades: 32 % Roof skylight: 8.5 %
Air tightness level / n50 air change rates	0.6 – 1 ach/h
Orientation of main facade	South
Type of shading (e.g. manual)	100 % Manual
Net space heating demand (kWh/(m <sup>2</sup> -annum))	45 kWh/(m <sup>2</sup> -annum)
Net space cooling demand (kWh/(m <sup>2</sup> -annum))	no cooling

**PARTNERS**

GEOTABS<sup>hybrid</sup> brings together a transdisciplinary team of SMEs, large industry and research institutes, experienced in research and application of design and control systems in the combined building and energy world.

Email: [hybridgeotabs@ugent.be](mailto:hybridgeotabs@ugent.be)  
[www.hybridgeotabs.eu](http://www.hybridgeotabs.eu)

[linkedin.com/groups/13510727](https://www.linkedin.com/groups/13510727)  
[facebook.com/hybridGEOTABS](https://www.facebook.com/hybridGEOTABS)  
[@hybridGEOTABS](https://twitter.com/hybridGEOTABS)