



SOLARCHITECTURE
building solutions



MFH in Schwamendingen



Address

Stettbachstrasse 43, 8051 Zürich, Switzerland



Location

47°24'13" N | 8°34'23"



Altitude

435 MAMSL

With the support of



SWISSOLAR 

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ETH zürich

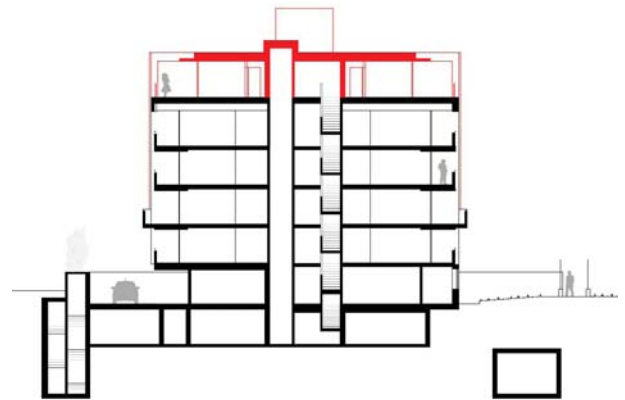


An energy makeover

“The apartment building, hosting 48 flats, was built in 1970 as a modest, practically non-insulated, concrete structure. A change in the apartment sizes was therefore impossible for cost reasons. Consequently the structure has been maintained with small apartments, even though it was possible to add a top storey with larger apartments. The house now comprises 50 apartments with 1 to 3 rooms. About 60 people live in the house with a total space requirement of only 35 m² per person. The demand for hot water is correspondingly high. The large closed facade areas and the removal of an exhaust air duct of the underground car park led to a new energy concept: 180 m² of thermal solar collectors integrated in the facades and a 19 meter high water storage tank in the former exhaust duct. A heat pump with four geothermal probes and 150 m² photovoltaic on the roof complete the energy system. The energy colander of the past is now fully equipped for the demands of our times. The vertical solar collectors stretch the building upwards and are covered with a glass that changes its appearance from bronze to silver (Kromatix). In addition, hop plants are a guarding part of the facades, making a contribution to urban ecology.”



View of the building before the retrofit.



In this section is indicated the added top storey.

Energy

Active solar surface	230 m ²	181 m ²
Active solar surface ratio	<75 %	>25 %
Peak power	36 kWp	n/a
Building skin application	Added installation	Cold facade
Storage	Water tank, Storage battery	1900 liters; 20 kWh

Energy production

34,000

kWh (photovoltaic)

Source: kämpfen für architektur

36,000

kWh (solar thermal)

Source: kämpfen für architektur

Self - consumption

50% Photovoltaic

47% Solar Thermal



Building characteristics

Building typology

Residential

Construction type

Retrofit

Year of construction

1970, retrofit 2017

Energy reference surface

2,132 m²

Energy index

19.4 kWh/m²a (heating and electricity)

Energy labelling

Minergie-A ZH-045-A



Interior view of the top storey.

Solar Thermal Collector

Product

DOMA Flex with a top layer of Kromatix glass

Manufacturer

DOMA Solartechnik GmbH & SwissINSO

Cell technology

Flat plate collectors with aluminum absorber and highly selective Miro-Therm coating

Front glass type/customization

Kromatix Solar Glass. Multilayered coating deposited on the inner glass surface, treatment of the outer glass surface for diffused reflection.

Dimensions

Custom made (var. approx. 1120x3080mm)

Specific power:

n/a



Building skin

Roof

Application

Photovoltaic modules added on a flat roof.

Description

Flat wooden framed roof insulated with 34-46 cm of mineral wool.

U value

0.14 W/m²K

Fastening system

Continuous fixing system (aluminium tracks)

Other

On the roof there is a PV surface of 230 m² (35.7 kWp).

Facade

Application

Solar thermal collectors integrated in three facades

Description

Concrete walls insulated with 22-34 cm of mineral wool.

U value

0.12/ 0.15 W/m²K

Fastening system

Continuous fixing system (aluminium tracks)

Other

–

Glass surface

Application

Windows

Description

Triple glazing with wood/ aluminium frame

U value

0.70 W/m²K

g value

0.50



The existing windows have been all replaced.



Costs	Parties involved	Awards & recognitions
Costs of the building 6,500,000 CHF Price per m³ 850 CHF/m ³	Owner David & Ana Dubois Architect Kämpfen für Architektur AG Energy specialist Edelmann Energie und Nachhaltigkeit am Bau Engineer HVAC Naef Energietechnik Solar thermal installer Ernst Schweizer AG as well as other participants Photo Kämpfen für architektur AG	Awards Schweizer Solarpreis 2017 – Plus Energy Building Publications Vom Vielfrass zum Energieproduzenten In: db-Metamorphose / deutsche bauzeitung 3.2019



Hops is covering part of the facades, contributing to urban ecology.

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