



**SOLARCHITECTURE**  
building solutions



# Apartament building in Zürich-Höngg



**Address**

Segantinistrasse 186, 8049 Zürich-Höngg, Switzerland



**Location**

47°24'31" N 8°29'28" E



**Altitude**

505 MAMSL

With the support of



SWISSOLAR 

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**ETH** zürich



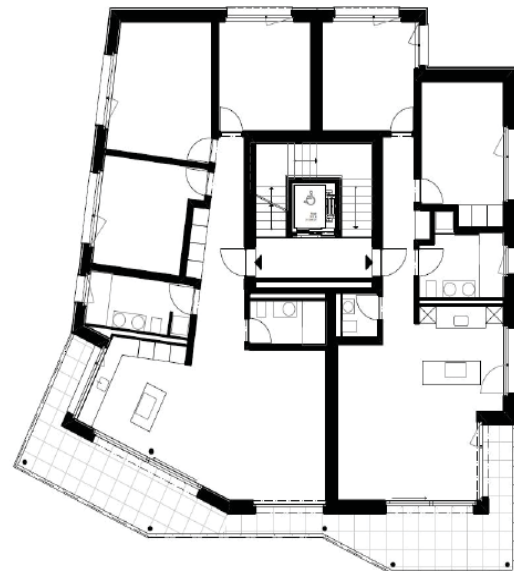
# The implementation of solar architecture

In Höngg, on the sunny slope side of Zurich, instead of a single-family house, there is now a residential building with six apartments, designed following the “Plus Energy Building (PEB)” concept. The new building has an area about two and a half times the size of the old construction, but uses only half as much energy.

The apartment building is designed as a solar power plant. The prefabricated timber construction is optimally insulated and at the same time, the generous windows passively use solar energy. The roof and the facades are both completely clad with photovoltaic modules that produce more electricity than the house and its occupants consume. The facade installation is made with photovoltaic modules characterized by a decorative ceramic-printed modules with check patterns to avoid a “technoid” expression.



Extensive windows allow to optimize solar gains.



Ground floor

## Energy

Active solar surface	141 m <sup>2</sup>	339 m <sup>2</sup>
Active solar surface ratio	<75%	<75%
Peak power	25.1 kWp	42.3 kWp
Building skin application	Flat roof	Cold facades
Storage	Electric battery	30 kWh

### Energy production

# 36,550

kWh

Source kämpfen für architektur AG

### Self-consumption

# 26%

Measurements in progress



# Building characteristics

**Building typology**

Residential

**Construction type**

New

**Year of construction**

April 2018 to February 2019

**Energy reference surface**

904m<sup>2</sup>

**Energy index**

36.7 kWh/m<sup>2</sup>a (heating and electricity)

**Energy labelling**

Minergie-P\_ZH-516-P



The building envelope is completely clad with BIPV modules.

## BIPV module

**Product**

ISSOL Sondermodule (data sheet n/a)

**Manufacturer**

ISSOL Switzerland SA

**Cell technology**

Mono-crystalline

**Power**

n/a

**Dimensions**

Custom made

**Front glass type/customization**

Module stratigraphy: 4 mm glass with ceramic screen printing – mono-crystalline PV cells – backsheet – 4 mm glass





# Building skin

## Roof

### Application

Standard modules are laid on a metallic support system

### Description

Flat wooden framed roof insulated with 41 cm of mineral wool

### U value

0.10 W/m<sup>2</sup>K

### Fastening system

Continuous fixing system (aluminum tracks)

### Other

–

## Facade

### Application

PV cladding integrated in a cold facade

### Description

Wooden framed walls insulated with 32 cm of mineral wool

### U value

0.14 W/m<sup>2</sup>K

### Fastening system

Substructure with aluminium black profiles

### Other

A total of 313 facade modules were installed in a PV area of about 340 m<sup>2</sup>. 24 different modules with PV cells and 8 different modules without PV cells were used.

## Glass surface

### Application

Windows

### Description

Triple glazing with wooden frame

### U value

0.60 W/m<sup>2</sup>K

### G value

n/a

### Other

–



Aesthetically, the photovoltaic modules are practically indistinguishable from a standard cladding.



Costs	Parties	Awards & recognitions
<b>Total cost of the building</b> 5,8 Mio. CHF (BKPO-9) 4,84 Mio. CHF (BKP2) <b>Price per m<sup>3</sup></b> 1,065 CHF/m <sup>3</sup> (BKP2)	<b>Owner</b> Private <b>Architect</b> kämpfen für architektur AG <b>Photovoltaic consultant</b> Sundesign GmbH <b>Photovoltaic installer</b> Planeco GmbH <b>Facade installer</b> GFT Fassaden AG <b>Photo</b> kämpfen für architektur AG	<b>Awards</b> Schweizer Solarpreis 2019 - Norman Foster Solar Award (Diploma) <hr/> <b>Publications</b> -



Details of the facade.

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