



SOLARCHITECTURE
sun as a building material



Fehlmann housing development



Address

Palmstrasse 23/25, 8400 Winterthur, Switzerland



Location

47°30'00" N | 8°44'14" E



Altitude

450 MAMSL

with the support of

SWISSOLAR 



SUPSI

ETH zürich



The concept of urban planning

In 2010, BGP realised six residential buildings on the Fehlmann area in Winterthur. From August 2020, two new buildings complete the development of the area, tying in with the existing urban planning and design. From a distance they are undistinguishable from the existing buildings. However, depending on the incidence of sunlight, a closer look will show that instead of black enamelled glass panels, the facades are now cladded with photovoltaic modules. For the expansion of the site, the architects combined photovoltaic elements in the facade with a conventional PV roof system, as this has tripled energy production and significantly increased self-consumption.







Like the first-stage buildings, the new developments are based on a simple basic structural principle with a central staircase.



Contrast between the transparent elements and deep black PV glass modules.

Energy

		
Active solar surface	238m ²	590m ²
Active solar surface ratio	>50%	>50%
Peak power	46.9 kWp	81.9 kWp
Building skin application	Flat roof	Cold facade
Storage	 -	 -

Energy production

82700

kWh

Source: Solarville (roof 42.700 kWh/y), BGP (facades 40.000 kWh/y)

Self-consumption

30%





Building characteristics

Building typology

Residential

Construction type

New

Year of construction

2020

Energy reference surface

925 m² (unit 23) + 807 m² (25)

Energy Index

n/a

Energy labelling

Minergie-A

Acquisition

Competition by invitation, 1st prize 1999



Almost all of the 14 new rental apartments open onto the outside space on three sides and give the residents the feeling of living within a green space.

BIPV module

Product

VSG Laminated safety glass module

Manufacturer

Ertex solartechnik GmbH

Cell technology

Mono-crystalline

Front glass type/customization

Digital ceramic print on glass/glass BIPV modules

Dimensions

Various sizes, the largest module measures 2690x1430 mm.

Cell colour

Black

Specific power

n/a

Specific weight

n/a



Building skin

Roof

Application

Standard modules are laid on a metallic support system.

Description

Insulated concrete roof.

U value

n/a

Fastening system

Continuous fixing system (aluminium tracks)

Other

-

Facade

Application

PV cladding integrated in a cold facade

Description

Concrete walls with external insulation layer in mineral wool (18 cm)

U value

0.22 W/m²K

Fastening system

Continuous fixing system (aluminium tracks)

Other

-

Glass surface

Application

Windows

Description

Triple glazing with aluminium frame

U value

n/a

g value

n/a

Other

-



View of the roof with the photovoltaic installation.



View of the attic terrace.



Costs

Total cost of the building

4,700,000 CHF (BKP2)

Price per m³

n/a



Urban living in green areas.

Parties involved

Owner

AXA Investment –
Managers Schweiz AG

Architect

Bob Gysin and Partner AG

Civil engineer

Dr. J. Grob & Partner AG

Photovoltaic consultant

energiebüro ag

Photovoltaic installer

Planeco GmbH

Facade installer

K&K Fassaden AG

Photo

Roger Frei

Awards & recognitions

Awards

– Prime Property Award
2012 (for first phase)

Publications

–



Unit 23, part of the Fehlmann housing complex