



SOLARCHITECTURE
building solutions



Residential Building Renovation



Address

Hofwiesenstrasse 22, 8004 Zurich, Switzerland



Location

47°23'30" N | 8°32'00" E



Altitude

466 MAMSL

With the support of



SWISSOLAR 

SUPSI

ETH zürich

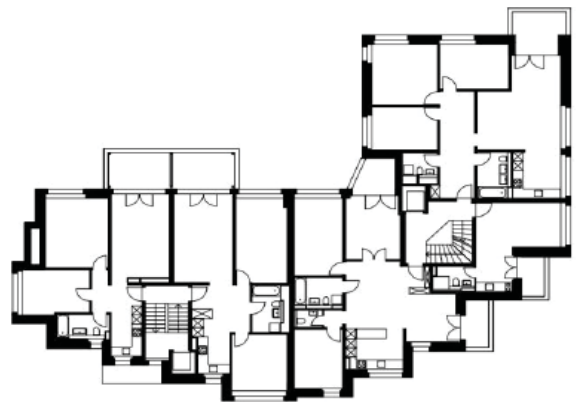


PV camouflage

This multi-family building, built in 1982, is the result of a retrofit intervention, with a fourth-floor extension, which is characterized by the change in its appearance thanks to the use of coloured photovoltaic modules which allow the facade to assume an homogeneous appearance as the “active” parts are not immediately recognizable. The PV modules have a matte surface and this causes a reduction of the solar power output by about 39% as the green/grey colour is given by the front glass.



View of the building before the retrofit.



Floor plan.

Energy

Active solar surface	165 m ²	1586 m ²
Active solar surface ratio	n/a	>75%
Peak power	20 kWp	159 kWp
Building skin application	Flat roof	Cold facade
Storage	n/a	n/a

Energy production

82,000

kWh

Source: Viridén + Partner AG

Self-consumption

98%



Building characteristics

Building typology

Residential

Construction type

Retrofit

Year of construction

1982; retrofit July 2015 August 2016

Energy reference surface

2,870 m²

Energy index

33.7 kWh/m²a (heating and electricity)

Energy labelling

–



Dummy modules were used on 2% of the total surface area of the facade.

BIPV module

Product

Laminated safety glass module

Manufacturer

PVP photovoltaik GmbH

Cell technology

Mono-crystalline

Power

28-170 Wp

Front glass type/customization

Digital ceramic print on glass/glass
BIPV modules

Dimensions

Custom made

Specific power

110 Wp/m²



Building skin

Roof

Application

Standard modules are laid on a metallic support system..

Description

Flat roof insulated with 34 cm of insulation..

U value

0.09 W/m²K

Fastening system

–

Other

–

Facade

Application

PV cladding integrated in a cold facade.

Description

Taylor-made modules in 13 different BIPV modules sizes + 5 different dummies. Brick walls insulated with 34 cm of insulation..

U value

0.10 W/m²K

Fastening system

Continuous fixing system (aluminium tracks)

Other

The structural glazing sealant on the back-rails allows better absorption of the horizontal load in comparison with fixed point connections

Glass surface

Application

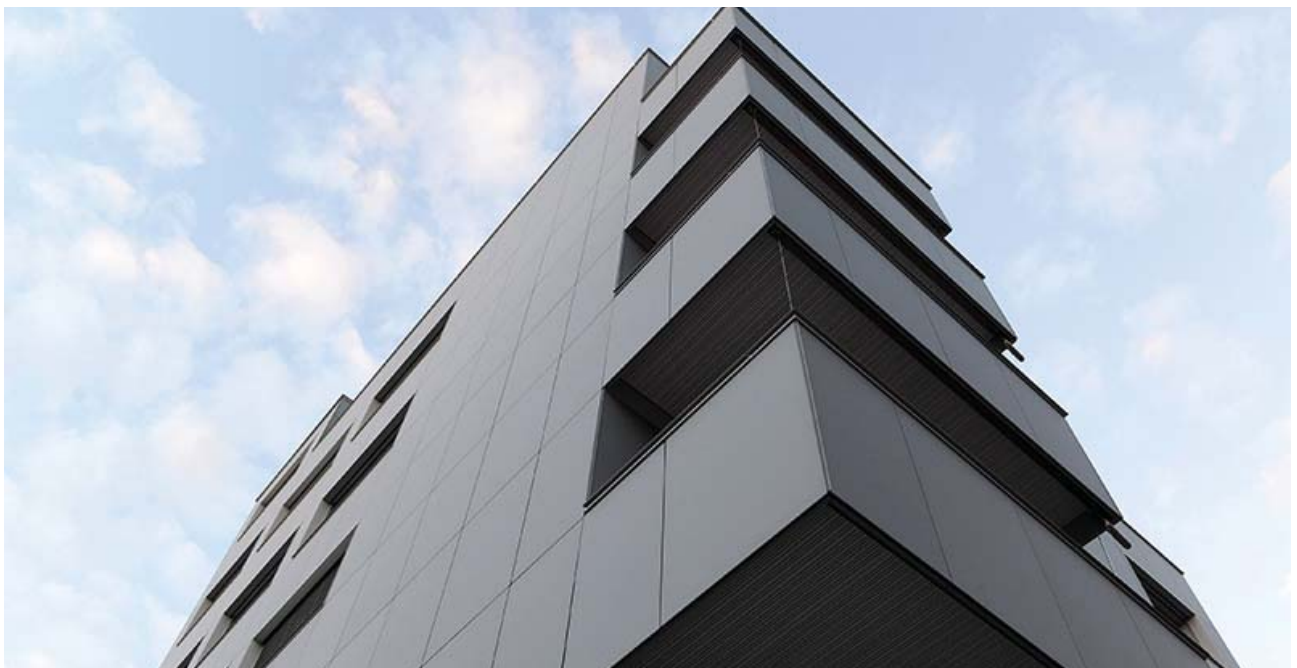
Windows

Description

Triple glazing with wooden frame

U value

0.80 W/m²K



The new cladding is made of “invisible” PV modules with a matte surface.



Costs	Parties involved	Awards & recognitions
<p>Costs of the building n/a</p> <p>Price per m³ 1,050/m³ CHF (facade cost considering materials and electrical components) The cost of the facade is not representative of the current BIPV market as it is a constructive element which was developed specifically within the “Pilot, demonstration and flagship project” of the Swiss Federal Office of Energy.</p>	<p>Owner Private owner</p> <p>Architect Viridén + Partner AG + EcoRenova AG</p> <p>Photovoltaic Installer Diethelm Fassadenbau AG</p> <p>Photovoltaic consultant Diethelm Fassadenbau AG</p> <p>Facade installer GFT Fassaden AG</p> <p>Photo Viridén + Partner AG</p>	<p>Awards Schweizer Solarpreis 2017</p> <hr/> <p>Prixforix 2018, Award for the most attractive facade in Switzerland, Audience Award</p> <hr/> <p>Publications –</p>



The realization of a BIPV facade requires the involvement of several actors at the same time.

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