SOLARCHITECTURE
sun as a building material

Project by Viridén + Partner AG in Seewadelstrasse

Address
Seewadelstrasse 9, 8910 Affoltern am Albis, Switzerland

Location
47°16'47" N | 8°26'55" E

Altitude
495 MAMSL

with the support of

SWISSOLAR swissenergy SUPSI ETH zürich

Active glass facade

The new replacement building, centrally located in Affoltern am Albis, is a compact three-storey residential building with a top floor that recedes on three sides. By building according to the Minergie-P-Eco standard, the residents of the fourteen flats benefit from a building that was realised with ecological, sustainable materials and features low-radiation interiors. The innovative solar power-producing glass facade and the PV installation on the roof make the building a plus-energy house. In addition, there are connections for electric cars and the installation of a storage battery has already been planned.

First and second storey floor plan with two 2-room apartments and two 4.5-room apartments. Source: Viridén + Partner AG.

The balconies on the south-east facade are also equipped with PV modules and are intended to be perceived as part of the overall volume.

Energy

Active solar surface	153m²	688m²
Active solar surface ratio	>75%	72%
Peak power	31 kWp	85 kWp
Building skin application	Flat roof	Cold facade
Storage	Under consideration	-

Energy production

61000

kWh

Source: Viridén + Partner AG

Self-consumption

Not available %

Building characteristics

Building typology
Residential

Energy reference surface
1395 m²

Construction type
New

Energy Index
14.5 kWh/m²yr (heating and electricity)

Year of construction
From May 2018 to September 2019

Energy labelling
Minergie-P-ECO

Changing colour at the building corner, there is no indication that this facade also produces electricity.

BIPV module

Product
Custom made

Cell colour
Black

Manufacturer
KIOTO Photovoltaics GmbH

Dimensions
Custom made

Cell technology
Mono-crystalline

Specific power
n/a

Front glass type/customization
4mm TVG front glass textured
(Rosa504clear) with digital ceramic print

Building skin

Roof

Application
Standard modules are laid on a metallic support system.

Description
Flat roof insulated with mineral wool.

U value
0.08 W/m²K

Fastening system
-

Other
-

Facade

Application
PV cladding integrated in a cold facade

Description
Light-weight timber frame insulated with glass wool.

U value
0.10 W/m²K

Fastening system
Continuous fixing system (EcoLite substructure)

Other
The Swiss Federal Office of Energy supported this new type of installation (pre-fabrication) through a pilot and demonstration project.

Glass surface

Application
Windows

Description
Triple glazing with wooden frame

U value
0.80 W/m²K

Other
-

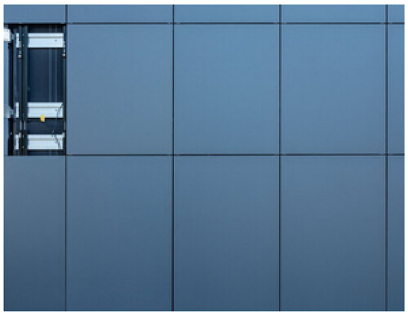
On the flat roof was installed an applied photovoltaic system.

All building facades including balcony parapets are to be clad with PV modules.

Costs

Total cost of the building
n/a

Price per m³
Approx. 1520 CHF/m² (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.



The PV facade was designed by Ernst Schweizer AG.

Parties involved

Owner
Private owner

Architect
Viridén + Partner AG

Substructure system
Ecolite AG

Photovoltaic Installer
Ernst Schweizer AG

Photo
Peter Schäublin, ©Ernst Schweizer AG.

Awards & recognitions

Awards
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Publications
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Other
The Federal Office of Energy (SFOE) has financially supported this project (P+D).

Aerial view of the building