



SOLARCHITECTURE
sun as a building material



PlusEnergy Building in Pedevilla



Address

Via Pedevilla 46, 6612 Giubiasco, Switzerland



Location

46°10'54.4" N | 9°01'27.6" E



Altitude

255 MAMSL

with the support of

SWISSOLAR 



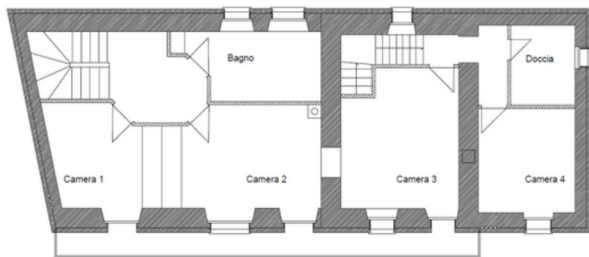
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Minergie-A-ECO retrofit

The intent of the owners was to achieve a synthesis between energy saving, renewable energy production, ecology and health. It was therefore decided to undertake renovation in accordance with the requirements of the Minergie-A-ECO energy standard. The most striking feature is an integrated photovoltaic system on the entire roof surface. This installation produces more than the energy the house needs for its annual energy balance. Therefore an energy community was created, along with their neighbours, with the aim of increasing self-consumption.



Architectural plan of the first floor.



The retrofit was intended not to alter the appearance of the building.

Energy

Active solar surface	129.6 m ²	-
Active solar surface ratio	100%	-
Peak power	26.3 kWp	-
Building skin application	Full roof solution	-
Storage	Via electric car charging station	77 kWh (battery VW ID Buzz)

Energy production

**21 425
kWh**

Source: annual production 2022

Self-consumption

Source: self consumption throughout 2022



19%



Building characteristics

Building typology

Residential

Energy reference surface

289 m²

Construction type

Retrofit

Energy Index

29.4 kWh/m²yr (heating and electricity)

Year of construction

1910, retrofit 2022

Energy labelling

Minergie-A-ECO



South view of the building. The old pitched roof was replaced with a new one completely covered with photovoltaic tiles.

BIPV module

Product

Arres 3.0 Premium Modul

Dimensions

1060x1691 mm

Manufacturer

Arres Solarmarkt GmbH

Nominal power

325 Wp

Cell technology

Mono-crystalline

Specific power

180 Wp/m²

Cell colour

Black

Weight

22.6 kg

Front glass type/customization

4 mm thermally tempered and profiled glass

Specific weight

12.6 kg/m²



Building skin

Roof

Application

PV cladding integrated in a pitched roof

Description

Pitched timber roof insulated with 24 cm of mineral wool

U value

0.18 W/m²K

Fastening system

Continuous fixing system (aluminium tracks)

Other

-

Facade

Application

Perimetral insulation, plastered

Description

Natural stone walls with an external layer of 14 cm of mineral wool

U value

0.19 W/m²K

Fastening system

-

Other

-

Glass surface

Application

Windows with shutters

Description

Triple glazing with aluminium-wooden frame

U value

0.88 W/m²K

g value

0.52

Other

-



The assembly solution applied is one that allows the integration of frameless photovoltaic modules into the roof pitch.



East facade.



Costs

Total cost of the building

437.000 CHF

Price per m³

470 CHF/m³



The building is located in the Pedevilla neighbourhood, one of the oldest in Bellinzona, and overlooks two of the three castles.

Parties involved

Owner

Alberto Conelli & Chiara Conelli Sini

Architect

Massimo Mobiglia

Photovoltaic Installer

IngEne Sagl

Photo

Massimo Mobiglia,
Gianpiero Pampuri

Awards & recognitions

Awards

-

Publications

- "Gebäudeprogramm"
Activity Report 2022

Media

- Falò RSI 01.12.2022, TV
report on energy crisis

"Quando l'ecologia si
coniuga con la tecnica",
post on the minergie
Website (only in IT)



West facade, photo: Massimo Mobiglia