



SOLARCHITECTURE
sun as a building material



Polis



Address

Via Vedreggio 6, 6963 Pregassona, Switzerland



Location

46°01'14.8" N | 8°58'14.7" E



Altitude

330 MAMSL

with the support of

SWISSOLAR 



SUPSI

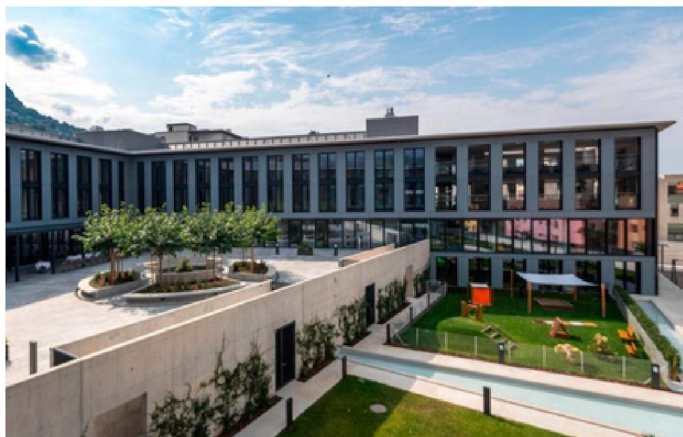
ETH zürich



The largest BIPV facade in Ticino





This project in Pregassona is a public building (status: January 2022) that has the largest facade-integrated photovoltaic system in Ticino and has an installed capacity of about 170 kWp, corresponding to a surface area of over 1600 square metres.

The Municipality of Lugano chose to change the planned facade concept from a classic fibre-cement sheet cladding to a fully photovoltaic ventilated facade without sacrificing the architectural language thanks to innovative coloured glass modules made by Sunage SA. This development was possible thanks to a synergistic collaboration between all parties involved in the project, who believed in the validity of a solar alternative that would make the building a self-producer of photovoltaic energy.



In addition to the home for the elderly, this multifunctional centre in Pregassona houses a kindergarten. Photo credits: Chiara Zocchetti - CdT

Energy

		
Active solar surface	603 m ²	1675 m ²
Active solar surface ratio	>25%	>75 %
Peak power	112 kWp	173 kWp
Building skin application	Flat roof	Cold facade
		

Monitoring

Monitoring of the installation was carried out by SUPSI as part of the VersoEST project supported by the FER (Renewable Energy Fund of the Canton of Ticino).

Energy production

79.000 kWh

Source: SUPSI
(PV facades only)

Self-consumption

 **57 %**



Building characteristics

Building typology

Residential

Construction typology

New

Year of construction

2017-2021

Energy reference surface

9623 m²

Energy Index

n/a kWh/m²yr (heating and electricity)

Energy labelling

-



View towards the garden. Photo credits: Chiara Zocchetti - CdT

BIPV module

Product

Suncol

Manufacturer

SUNAGE SA

Cell technology

Monocrystalline

Front glass type/customization

Front float satin 4mm glass

Front glass colour

Light grey

Dimensions

Custom-made, variable (height up to 2.90m)

Specific power

Abt. 100/140 Wp/m² (depends on colour/treatment)

Specific weight

About 24 kg/m²



Building skin

Roof

Application

Standard modules are laid on a metallic support system.

Description

Green flat roof insulated with mineral wool.

U value

0.09 W/m²K

Fastening system

Aluminium stands.

Other

-

Facade

Application

PV cladding integrated in a cold facade

Description

Concrete walls insulated with 24 cm of mineral wool.

U value

0.14 W/m²K

Fastening system

Steel grid structure. The type of fastening differs between horizontally and vertically oriented photovoltaic modules.

Other

-

Glass surface

Application

Windows

Description

Triple glazing with aluminium frame.

U value

0.89 – 0.92 W/m²K

g value

0.6

Other

-



The photovoltaic modules are installed, rotated on a vertical axis, between the full-height windows and doors.



Costs

Total cost of the building

BKP2 41,000,000 CHF
(VAT included)

Price per m³

BKP2 991 CHF/m³ (VAT
included)

Parties involved

Owner

Municipality of Lugano

Project manager

Architect Marco Mattei –
Real Estate Department
of Municipality of Lugano

Architect

Studio Mario Campi SA –
Architect Rosario Galgano

Research partner

SUPSI through the
VersoEST project
supported by the FER
(Renewable Energy Fund
of the Canton of Ticino)

Photovoltaic Installer

Alsolis SA

Photo

Alessandro Rabaglio –
Municipality of Lugano
and Chiara Zocchetti –
CdT

Awards & recognitions

Awards

-

Publications

Nuovo Centro
polifunzionale di
Pregassona, un progetto
solare pilota in Ticino
(only in IT)



Front view of the building. Photo credits: SUPSI.