



**SOLARCHITECTURE**  
sun as a building material



## New Campus Franklin University Switzerland



### Address

Via Ponte Tresa 29, 6924 Sorengo, Switzerland



### Location

45°59'52.062" N | 8°56'19.864" E



### Altitude

364 MAMSL

with the support of

SWISSOLAR 



**SUPSI**

**ETH** zürich

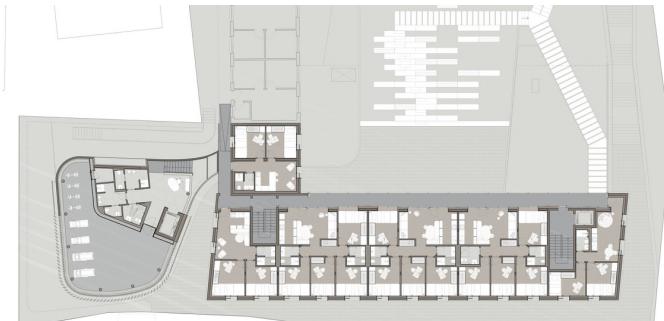


# A dynamic photovoltaic skin

The new campus of Franklin University is characterized by two distinct architectonic blocks, with one being a communal and educational space and one designed for university accommodation. The architecture intended for the public spaces is highly innovative. It is clad with a dynamic system of white photovoltaic louvres and it features one of Europe's first vertical photovoltaic louvres that follow the sun's orientation. This mechanism makes the building more sustainable from an environmental point of view and simultaneously guarantees energy generation and shading within the spaces for greater thermal and visual comfort.







The highly innovative facade is based on the requirement to shade the glass volume in summer (to guarantee low energy consumption and prevent the building overheating) and on the other hand to allow the sun to warm the building in winter.



Architectural plan - first floor. Source: Flaviano Capriotti Architetti.

## Energy

		
Active solar surface	-	183 m <sup>2</sup>
Active solar surface ratio	-	-
Peak power	-	18 kWp
Building skin application	-	Accessories
Storage	 None	 -

### Energy production

**18700**

kWh

Source: energy production simulation

### Self-consumption

under monitoring

**0%**



## Building characteristics

<b>Building typology</b> Educational	<b>Energy reference surface</b> 3'388 m <sup>2</sup>
<b>Construction type</b> New	<b>Energy Index</b> 27.5 kWh/m <sup>2</sup> a (heating)
<b>Year of construction</b> 2023	<b>Energy labelling</b> None



The external louvres allow optimal management of the natural lighting of the interior spaces.

## BIPV module

<b>Product</b> Custom Made	<b>Dimensions</b> Module size: first floor: 2310x350mm <sup>2</sup> ; second floor: 1830x350mm <sup>2</sup>
<b>Manufacturer</b> SUNAGE SA	<b>Nominal power</b> First floor: 81.44 Wp per module; second floor: 64 Wp per module
<b>Cell technology</b> Mono-crystalline	<b>Specific power</b> 100 Wp/m <sup>2</sup>
<b>Cell colour</b> Black (it is the glass that is colored)	<b>Weight</b> First floor: 19.2kg (only PV module) + 12.6kg (with metal extrusion); second floor: 15.2kg + 10kg
<b>Front glass type/customization</b> Float satin glass thickness 4mm uniform Suncol colour "Bianco Traffico", back float glass 4mm	<b>Specific weight</b> 23.75 kg/m <sup>2</sup> (only PV module) + 5.5 kg/m <sup>2</sup> (with metal extrusion)



# Building skin

Roof
<p><b>Application</b> Standard modules are laid on a metallic support system.</p>
<p><b>Description</b> Sloped concrete roof insulated with 18 cm of mineral wool.</p>
<p><b>U value</b> 0.11 W/m<sup>2</sup>K</p>
<p><b>Fastening system</b> Aluminium stands.</p>
<p><b>Other</b> -</p>

Facade
<p><b>Application</b> Accessories (vertical dynamic shading louvre)</p>
<p><b>Description</b> Vertical PV louvre. The louvre is a multifunctional kit including PV modules and a loadbearing metal extrusion; each PV louvre is bonded with two PV modules</p>
<p><b>U value</b> External system, no relevant U value</p>
<p><b>Fastening system</b> Metal struts on which is included a motor and a reducer</p>
<p><b>Other</b> -</p>

Glass surface
<p><b>Application</b> Windows</p>
<p><b>Description</b> Triple glazing with aluminium frame</p>
<p><b>U value</b> 0.79 – 1.13 W/m<sup>2</sup>K, glass facade abt. 0.9 W/m<sup>2</sup>K</p>
<p><b>g value</b> ≥ 0.50, glass facade ≥ 0.16</p>
<p><b>Other</b> -</p>



The BIPV system is installed on the new auditorium's facade on the complex's west side.



Close-up of the PV facade.



## Costs

### Total cost of the building

n/a

### Price per m<sup>3</sup>

n/a



Rear facade adjacent to the new exterior spaces.

## Parties involved

### Owner

Franklin University  
Switzerland

### Architect

Flavio Capriotti Architetti

### Research partner

SUPSI supported by the  
Swiss Federal Office of  
Energy (SFOE)

### Photovoltaic Installer

Aziende Industriali  
Lugano (AIL SA)

### Facade Installer

Kummler + Mater SA

### Photo

Franklin University  
Switzerland and Leo Torri

## Awards & recognitions

### Awards

-

### Publications

BIPVdShading Interim  
Report. Publisher: Swiss  
Federal Office of Energy  
SFOE



Outdoor amphitheatre. Photo: Leo Torri