



SOLARCHITECTURE
sun as a building material



Amt für Umwelt und Energie



Address

Spiegelgasse 11/15, 4051 Basel, Switzerland



Location

47°33'36" N | 7°35'14" E



Altitude

253 MAMSL

with the support of

SWISSOLAR 



SUPSI

ETH zürich







A solar experiment

This new 8-storey building is housing the Office for the Environment and Energy of the Canton of Basel-Stadt. In keeping with the tasks of the office, the zero-energy office building was intended to become a beacon for resource-conserving, efficient construction and an inspiration for other building projects. At the heart of the new building is the overall energy concept: a highly thermally insulated building envelope, district heating, use of rainwater, photovoltaic facades on all sides to generate electricity, controlled ventilation with heat recovery, optimal use of daylight and efficient lighting. Furthermore, the highest attention is paid to building ecology through the use of pollutant-free natural building materials. The use of predominantly regional materials and recycled concrete has significantly reduced grey energy. In order to optimally integrate the building into the cityscape, a special glass was developed especially for this project, which shows a three-dimensional, irregular liveliness that changes in the light. Metallic colour dots integrated into the glass also break up the dark base colour of the PV cells and overlay it with warm tones. The appearance of the cladding changes depending on the viewpoint and on the incidence of light.



The new building is a modern, energetically optimised and sustainable building that fits perfectly into the listed context. Moreover this eight-storey building is the first office building in Basel to be certified with the Minergie-A-ECO label

Energy

| |  |  |
|----------------------------|---|--|
| Active solar surface | - | 1.132 m ² |
| Active solar surface ratio | - | > 75 % |
| Peak power | - | 163 kWp |
| Building skin application | Flat roof | Cold facade |
| |  |  |
| Storage | - | - |

Energy production

53.00 kWh

Source: BE Netz

Self-consumption

 n/a %



Building characteristics

Building typology

Administrative

Construction typology

New

Year of construction

2019-2021

Energy reference surface

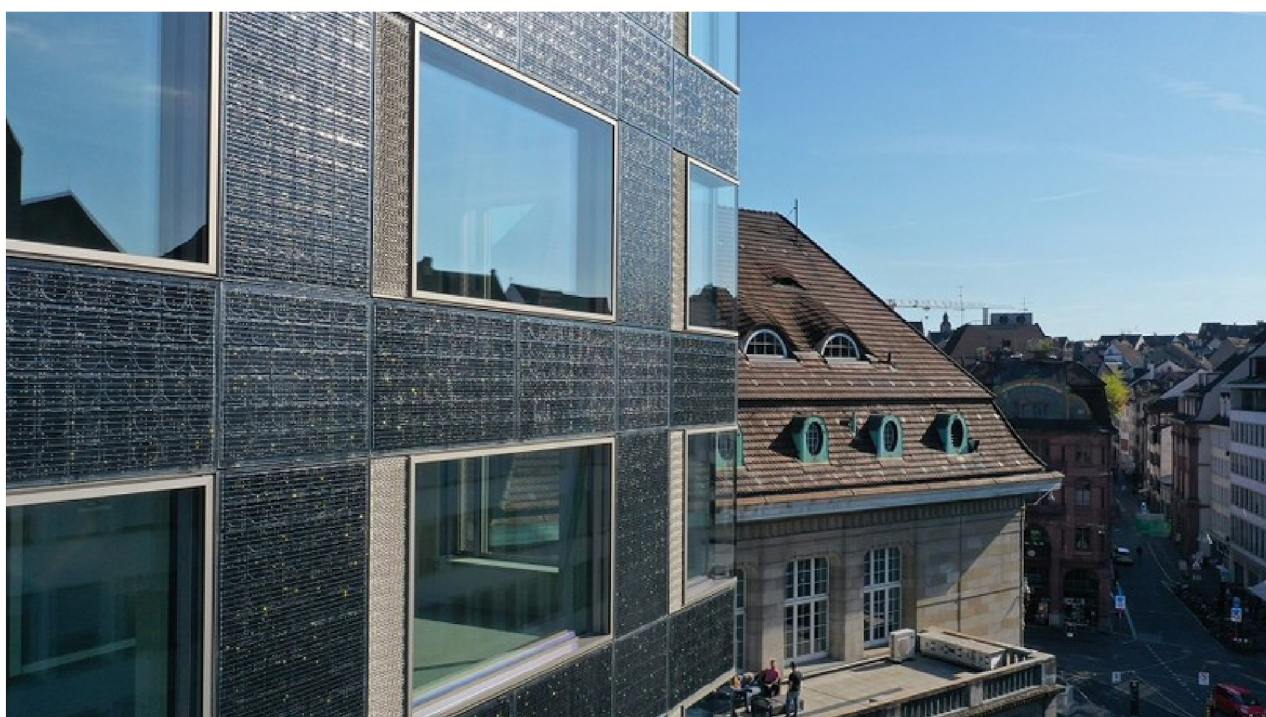
2.100 m²

Energy Index

n/a kWh/m²yr (heating and electricity)

Energy labelling

Minergie-A-ECO



The PV facades are expected to produce approximately 53 MWh of electricity per year, which corresponds to the annual demand of about 12 single-family homes.

BIPV module

Product

Megasol FAST

Manufacturer

Megasol Energie AG

Cell technology

Mono-crystalline PERC

Front glass type/customization

Custom-made structured glass from Crea-Glass GmbH assembled with SEEN elements (small metallic shiny dots with titanium nitride coating and larger red-yellow color-shifting dots).

Dimensions

Custom-made

Power

Abt. 144 Wp/m²

Specific power

Abt. 144 Wp/m²

Specific weight

n/a



Building skin

Roof

Application

None

Description

Composite wood-concrete flat roof with 25 cm of thermal insulation. Extensive roof greening

U value

n/a

Fastening system

-

Other

Recycled concrete was used for all components

Facade

Application

PV cladding integrated in a cold facade

Description

Concrete walls insulated with 20+19 cm of mineral wool.

U value

-

Fastening system

Continuous fixing system (aluminium tracks)

Other

The wooden rib elements are standardised and were delivered to the construction site in transportable sizes

Glass surface

Application

Windows

Description

Triple glazing with wooden frame

U value

n/a

g value

n/a

Other

-



One of the special features of the building is the skeleton construction in wood-concrete hybrid technology. Photo credits: Häring AG.



Costs

Total cost of the building

10.31 Mio CHF

Price per m³

n/a

Parties involved

Owner

Immobilien Basel-Stadt

Architect

Jessenvollenweider
Architektur GmbH

Construction management

b+p baurealisation AG

Photovoltaic consultant

Megasol Energie AG

Facade installer

GKP Fassadentechnik AG

Photovoltaic installer

BE Netz

Photo

Jessenvollenweider
Architektur GmbH

Awards & recognitions

Awards

-

Publications

Hochparterre Solaris#6 –
Das Diskurs-kraftwerk by
Palle Petersen – March
2022 (in DE, FR, IT)

Tec21 – Alles Gold, was
glänzt? – 25.2.2022 (DE)



The AUE project is characterized by PV facades made of monocrystalline cells that generate energy over all sides of the building, including the less sunny areas.