


CO2 neutral buildings in CH-Männedorf - fully self sufficient

by [Sebastien Eberhard](#) / 2021-03-30 10:54:27 / International / 5574 / EN

New Construction



Primary energy need :
40.07 kWhpe/m².year
(Calculation method : Other)

ENERGY CONSUMPTION

Consumption Range (kWh/m ² .year)	Grade
< 50	A
51 à 90	B
91 à 150	C
151 à 230	D
231 à 330	E
331 à 450	F
> 450	G

Economical building (A-C) | *Energy-intensive building* (D-G)

Building Type : Collective housing < 50m
Construction Year : 2019
Delivery year : 2020
Address 1 - street : Saurenbachstrasse 8707 MÄNNEDOERF, Switzerland
Climate zone : [Dwa] Humid Continental Hot Summer, severe, dry winter

Net Floor Area : 1 884 m² SHON
Construction/refurbishment cost : 7 200 000 €
Number of Dwelling : 16 Dwelling
Cost/m2 : 3821.66 €/m²

Certifications :

MINERGIE-P®

Proposed by :

SOLAXESS
WHITE & COLOR SOLAR TECHNOLOGY

General information

This building received a mention at the national and international levels for the Energy & Temperate Climates Prize of the Green Solutions Awards 2020-21.

The latest lighthouse project of Umwelt Arena Schweiz in cooperation with exhibition partners and the HSR Hochschule für Technik Rapperswil is the first residential building in the world with an intelligent and consistent combination of photovoltaics, battery storage, synthetic e-gas/biogas and intelligent energy management (hybrid box). All this at amortizable costs for the building owner and the residents receive heat and electricity at zero cost.

A self-sufficient building with high-tech-eco-systems and products :

- A beautiful project realized by the owner of the Umweltarena in CH-Spreitenbach and designed by René Schmid Architekten AG in CH-Zurich.
- The buildings produce 105'900 kWh per year by BIPV-elements, PV-rooftop-installations, wind-turbine and other sources. The unused energy (summer) is transferred and turned into synthetic methane (which is CO² neutral) and can be re-electrified in winter. So the buildings produce more than consume.

- What is available as production and storage of renewable energies has been implemented.
- The tenants do not have to pay for electricity and heating.
- Some of the BIPV-elements are white - which is unique and gives new architectural possibilities.

Photo credit

Solaxess

Stakeholders

Contractor

Name : René Schmid AG, CH-Zurich // Solaxess SA CH-Marin

Contact : Mr. René Schmid // Peter Röthlisberger

<http://www.reneschmid.ch>

Construction Manager

Name : Umweltarena

Contact : Mr. Robert Grill

<http://www.umweltarena.ch>

Stakeholders

Function : Others

Umweltarena, CH-Spreitenbach

Mr. Robert Grill

www.umweltarena.ch

Type of market

Realization

If you had to do it again?

Always with pleasure - with even more and newer technologies.

Building users opinion

Facinated.

Energy

Energy consumption

Primary energy need : 40,07 kWhpe/m².year

Primary energy need for standard building : 75 502,00 kWhpe/m².year

Calculation method : Other

CEEB : 0.0105

Breakdown for energy consumption : Houshold: 43'357, Hotwater 15'849, Heating 16'296

More information

This buildings produce more than they consume.

Real final energy consumption

Renewables & systems

Systems

Heating system :

- Geothermal heat pump
- Combined Heat and Power

Hot water system :

- Heat pump

Cooling system :

- Water chiller

Ventilation system :

- Natural ventilation

Renewable systems :

- Solar photovoltaic
- Heat pump (geothermal)
- Micro wind
- Biogas boiler
- Energy recovery from waste
- Other, specify

Renewable energy production : 100,00 %

Photovoltaic system:

A ventilated photovoltaic façade envelops the entire building. The building material (facade panels) was replaced with active photovoltaic elements. The photovoltaic panels are directly screwed to the substructure in wood. In order to make this simple installation possible, the photovoltaic modules have been specially prefabricated with mounting holes.

White and dark, colored and textured photovoltaic facades like the ones we use in Männedorf serve as weather protection and energy generation at the same time.

Synthetic Methane:

Some of the excess solar power generated by the Männedorf superstructure in summer is sent to the power-to-methane pilot plant at the University of Applied Sciences in Rapperswil, where it is used to produce synthetic methane. This gas is CO₂-neutral and is temporarily stored in the gas network, from where it is made available again to the residential complex in Männedorf in winter. There, the so-called Hybridbox® is used as the most important link, which, as an intelligent energy system, produces electricity and heat from the CO₂-neutral "synthetic gas / biogas" as required.

Environment

Urban environment

Land plot area : 2 879,00 m²

Built-up area : 2,00 %

Products

Product

Beautiful white solar modules

Solaxess SA

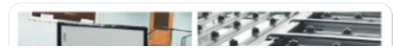
Peter Röthlisberger

<http://www.solaxess.ch>

Product category : Gros œuvre / Structure, maçonnerie, façade

With the unique color-giving technology of Solaxess PV-Modules are transferred into a construction material. Also in white and bright colors. No solar-cells are visible - even not from close.

Loved by architects and construction companies.



Costs

Construction and exploitation costs

Total cost of the building : 9 000 000 €


Carbon

GHG emissions

Building lifetime : 40,00 year(s)

Contest

Building candidate in the category



Energy & Temperate Climates



GREEN SOLUTIONS AWARDS
POWERED BY Construction2log

