

Klosterenga, Oslo, Norway



Picture source: Arkitektkontoret GASA AS

Architectural integration of solar thermal energy systems

Klosterenga Ecological Housing, Oslo, Norway

Multi-family house with solar collectors mounted on the roof

PROJECT

Klosterenga is an urban revitalisation project close to the city centre of Oslo. The 35 apartments were built with a focus on energy saving. The general ecological approach includes, among others, focus on building materials from an ecological point of view, indoor climate and of course, energy saving design and installations and use of both passive and active solar energy.

The building is oriented east-west for optimal solar radiation. The southern facade includes a double-glazed buffer zone for passive solar heat gain and for preheating of ventilation air. The rooftop solar hot water system provides energy required for space heating and for domestic hot water use.

The project is recorded as a Best Practice building in Caddet Technical Brochure no.170 (IEA/OECD), as an example of Ecodesign by the State Pollution Authority, and it received the NBO Nordic building award in 2000.



Picture source: Aventa AS

Key figures

Heated area :	2 900 m ² , each unit 75 m ²
Total heat demand:	300 000 kWh/year
Energy sources:	solar collectors, and electricity
Collector area :	170 m ² ,
Tilting angle:	37°
Heat store:	13 m ³ , water
Total building costs:	NOK 15.970/ m ² (2000)

Heating system

The active solar heating system is a combined solar system contributing to domestic hot water (DHW) and space heating. The solar loop is connected to two heat buffer stores with a total volume of 13,000 l. Electric heating is used as auxiliary heating source for the buffer store. The heat store delivers heat to the floor heating system of 2000 m² net floor area and pre-heats 6 immersed DHW-tanks à 200 l.

The total space heating demand for this project is ca. 300,000 kWh/a. The estimated solar gain from the active system is ca. 55 000 kWh/a.



Picture source: Arkitektkontoret GASA AS

The solar system was installed in 2011, replacing an older solar installation.

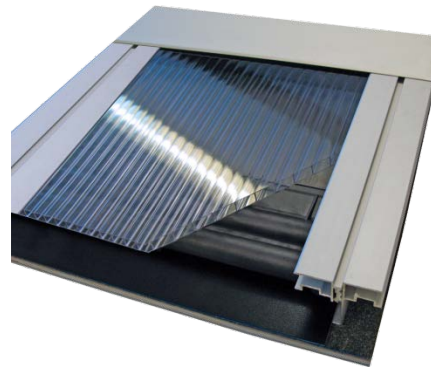
SOLAR COLLECTOR

Type:
Flat plate polymer collector
AventaSolar

The AventaSolar solar collector is especially designed for building integration as it is delivered as modular building elements, replacing regular roof- or façade covers.

Dimensions:

Width: 600 mm,
Length: various (up to 6m)
Weight: 7,7 kg/m²
Heat carrier: pure water



More info about the solar collector:

www.aventa.no/index.php?/eng/Solar-Energy/AventaSolar-solar-collector

Picture source: Aventa AS



GALLERY



PHOTOS;

Arkitektkontoret GASA A/S

- Built/Completion:
2000
- Arkitektkontoret GASA A/S,
Arkitektskap AS
- Engineers:
Ing. Seim & Hultgreen AS,
Ericksen & Horgen AS
- client:
Boligbyggelaget USBL
- Entrepreneurs:
Veidekke ASA
- Address:
Nonnegata 17-21
- Location:
Oslo, Norway
- Type of project:
Multi-family house



- Read more: <http://www.constructiondurable.com/docs/Klosterenga.pdf>
http://www.cmhc-schl.gc.ca/en/inpr/bude/himu/inbu/upload/66356_W.pdf