

Jadarhus ISOBO Aktiv, Sandnes, Norway



Picture source: Jadarhus AS

Architectural integration of solar thermal energy systems

## Jadarhus ISOBO Aktiv, active house, Sandnes, Norway

### Single-family house with roof integrated solar collectors

#### PROJECT

Jadarhus was among the first in Norway to develop and build low-energy houses, within this category, ISOBO, was established in 2003. The Isobo Aktiv is a new generation with new active design measures.

The house is constructed as a timber house with traditional rafter construction. The building is based on passive measures such as extra insulation, extra tight building envelope and good windows - energy rating A (A++). Apart from the passive measures, solar collectors, solar cells, heat pump air-liquid, balanced ventilating system with heat recovery connected to ground collector (ground heat) have been installed.

The solar collectors produces energy for hot water preparation and space heating.



Picture source: Jadarhus AS

## Key figures

Living area:	178 m <sup>2</sup> of floor space
Total heat demand:	44 kWh/m <sup>2</sup> per year
Energy sources:	solar collectors, solar cells, heat pump, ground collector
Collector area :	8 m <sup>2</sup>

## Heating system

The solar collectors contribute to hot water preparation and space heating. They make up an area of 8 m<sup>2</sup> and are nicely integrated in the roof surface.

Calculated energy need for the building is 7919 kWh per year. Together with an air-liquid heat pump the solar collectors manage to cover 95% of space heating demand and 90% of hot water demand.

In addition the house is equipped with 8 solar cell panels yielding 1230 kWh per year and a ground collector (for supply air to the ventilation system).

Heat is distributed with radiators and under-floor heating (bathroom).



## SOLAR COLLECTOR

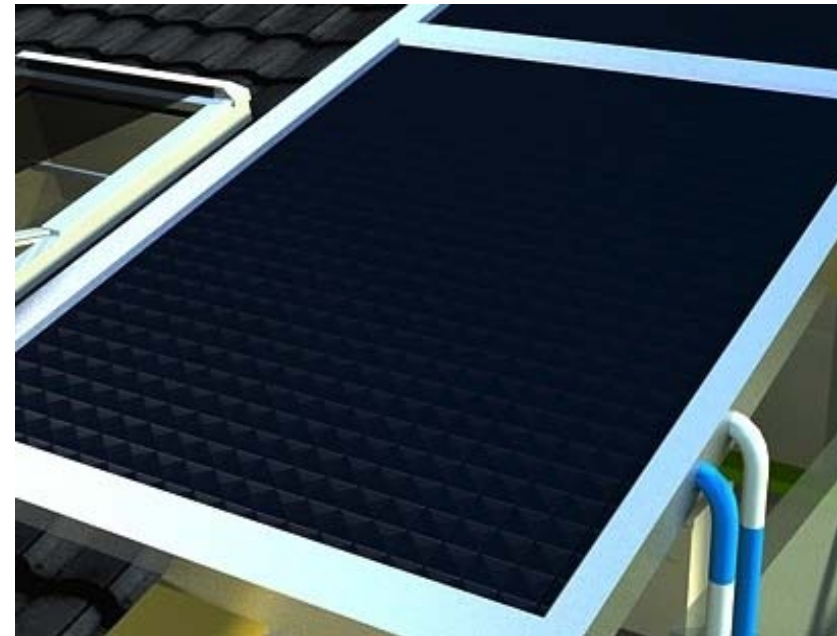
Type:

Flat plate solar collector, model CLI S06 4000, Velux

Dimensions; Width: 114 cm, Height: 118 cm

### Technical details:

VELUX solar collectors (variant 4000)					
		M08	S06	S08	U12
Weights	Gross Weight (kg)	29	36	41	64
	Net weight (kg)	26	33	38	59
Areas	Gross area (m <sup>2</sup> )	1,2	1,4	1,7	2,5
	Aperture area (m <sup>2</sup> )	0,9	1,2	1,4	2,2
	Absorber area (m <sup>2</sup> )	0,9	1,2	1,4	2,2
Litres		0,9	1,3	1,5	2,2
Max operation pressure (bar)		6	6	6	6
Test pressure (bar)		10			10
Heat capacity (kJ/(m <sup>2</sup> K))		8			7,4
Angle Factor (K 50°)		0,93			0,95
Stagnation temperature (°C)		185			190
Efficiency	eta (start efficiency)	0,797	0,79	0,79	0,79
	[W/(m <sup>2</sup> K)]	4,177	3,756	3,756	3,756
	[W/(m <sup>2</sup> K <sup>2</sup> )]	0,0039	0,0073	0,0073	0,0073



Picture source: Jadarhus AS

## GALLERY



### PHOTOS; Jadarhus AS

- Built: 2011
- Architect: SF AS ARKITEKTUR AND ARKITEKTKONTORET IHT AS
- Engineer: Jadarhus AS
- Developer: Jadarhus AS
- Consultants: Sintef
- Address: Tårnfalkveien 38
- Location: Sandnes, Norway
- Project period: 2010-2011
- Type of project: Single-family house
- Read more :[http://www.velux.com/sustainable\\_living/other\\_cases/ahouseforthefuture-jadarhusisoboaktiv](http://www.velux.com/sustainable_living/other_cases/ahouseforthefuture-jadarhusisoboaktiv)  
: <http://activehouse.info/cases/isobo-aktiv-house-future>  
: <http://www.jadarhus.no/index.php/om-oss/isobo-aktiv/isobo-aktiv-pa-sandved>

