

“Home for life” concept house, Aarhus, Denmark



Picture source: VKR Holding A/S

Architectural integration of solar thermal energy systems

“Home for life” concept house, Aarhus, Denmark

Single-family house with roof integrated solar collectors

PROJECT

The principal architectural idea in Home for Life is to unite single-family house requirements and experience, functionality and energy consumption in an integrated design.

VKR Holding, which is the mother company of VELUX and VELFAC, has initiated the construction of eight demonstration houses in a number of European countries following the active house principle. The houses produce energy themselves and are built as examples of intelligent buildings with low energy use, a good indoor climate and an exciting architecture. Home-for-life was built in Aarhus/Denmark in 2008 as the first active house in the world.



Picture source: VKR Holding A/S

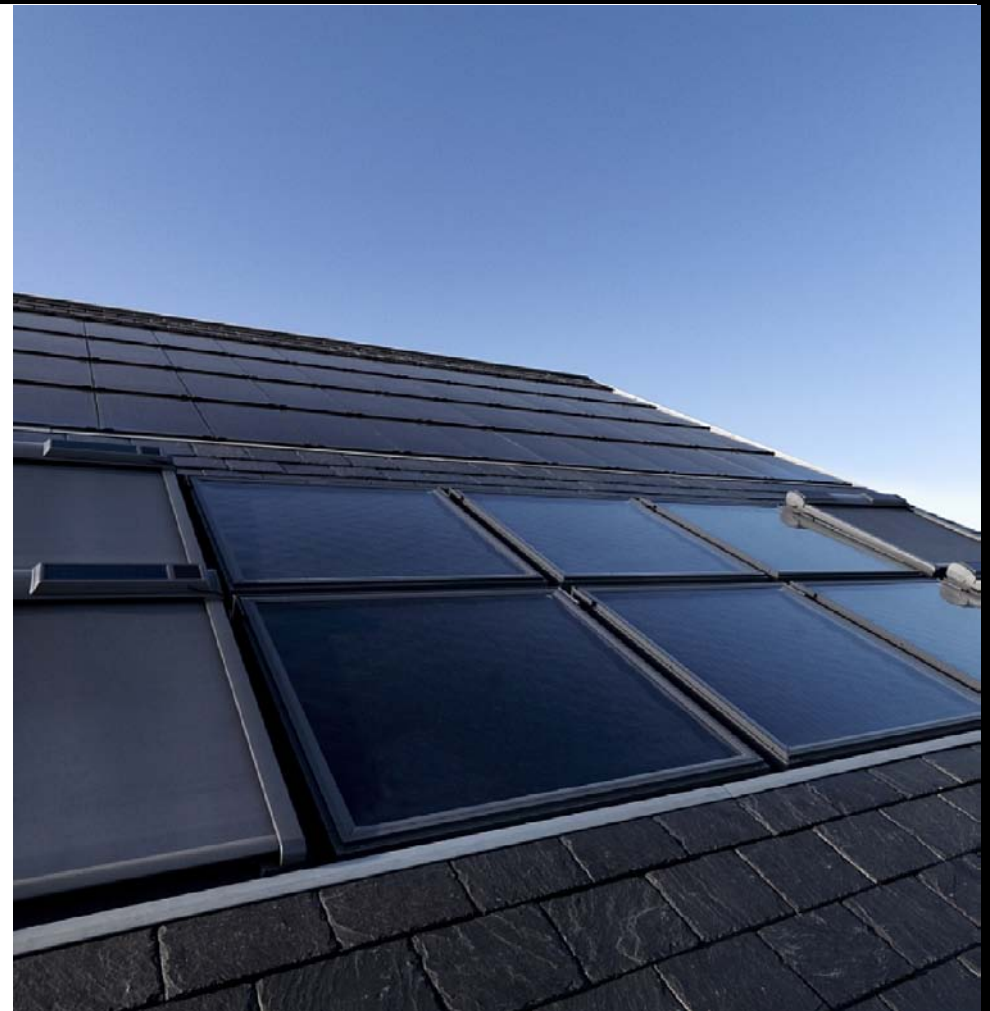
Key figures

Living area:	190 m ² of floor space, distributed over 1 1/2 storeys
Total heat demand:	53 kWh/m ² BTA per year
Energy sources:	solar collectors, solar cells, heat pump
Collector area :	6,7 m ²

Heating system

The solar collectors covers 50-60% of the yearly household hot water heating demand. They are also used as a supplement for room heating. Solar collectors make up an area of 6.7 m² and are integrated in the lowest part of the roof surface. The heat pump construction supplements the remaining parts. The heat pump functions by absorbing energy directly from the surrounding air by an air module that is placed outside the house.

About 50% of the room heating needs are covered by the passive solar heating. The rest is coming from a combination of floor heating and radiator heating. Floor heating is used in all common rooms and radiator heating in the bedrooms.



Picture source: VKR Holding A/S

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 ²)	1,2	1,4	1,7	2,5
	Aperture area (m ²)	0,9	1,2	1,4	2,2
	Absorber area (m ²)	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 ² 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 ² K)]	4,177	3,756	3,756	3,756
	[W/(m ² K ²)]	0,0039	0,0073	0,0073	0,0073



Picture source: VKR Holding A/S

GALLERY



PHOTOS; VKR Holding A/S

- Built:
2008
- Architect/Landscape Architect:
aart a/s
- Consultants:
Esbensen Rågivende Ingeniører
- Project management:
VELFAC A/S, VELUX A/S
- Entrepreneurs:
KFS-Boligbyg
- Address:
Lystrup
- Location:
Aarhus, Denmark
- Project period:
2007-2008
- Type of project:
Single-family house
- Read more: <http://www.activehouse.info/>

