

Solar Collector Factsheet

Sigurd HelioSelec 234



Model	HelioSelec 234
Type	Flat plate collector
Manufacturer	Sigurd Technologie, S.L.
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Test date	11.2009

- Performance test EN12975:2006
- Quality test EN12975:2006



Dimensions

Total length	2.150 m
Total width	1.091 m
Gross area	2.346 m ²
Aperture area	2.143 m ²
Absorber area	2.136 m ²
Weight empty	45 kg

Technical data

Minimum flowrate	80 l/h
Nominal flowrate	120 l/h
Maximum flowrate	280 l/h
Fluid content	1.6 l
Maximum operating pressure	10 bar
Stagnation temperature	199 °C

Types of mounting

- Construction for sloping roof
- Integration into sloping roof
- On flat roof with stand
- Facade

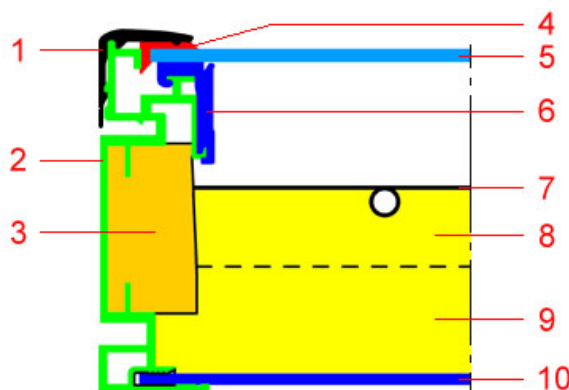
Further information

- Units in different sizes available
- Glazing replaceable

Hydraulic connection

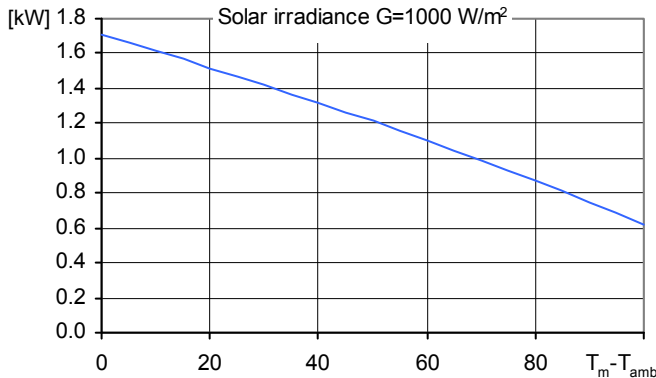
Copper pipe, nominal diameter 22 mm

Construction



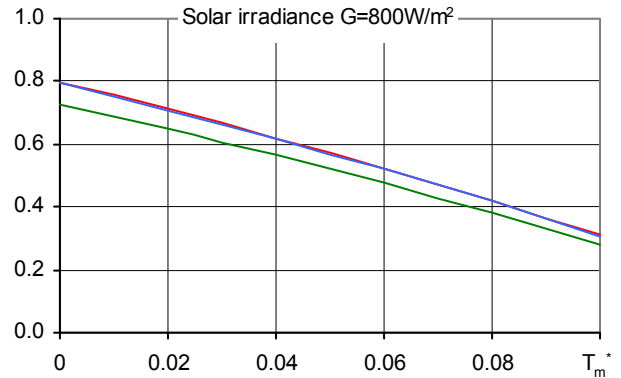
- 1 Glass fixing profile
- 2 Casing
- 3 Lateral thermal insulation
- 4 Sealing profile
- 5 Glazing
- 6 Sealing profile
- 7 Absorber
- 8 Thermal insulation
- 9 Thermal insulation
- 10 Rear panel

Peak Power per collector unit W_{peak}



Peak Power W_{peak}	1705 W
Thermal capacity*	7.4 kJ/K
Flowrate during test	178 l/h
Fluid for test	Water-Glycol 33.3%

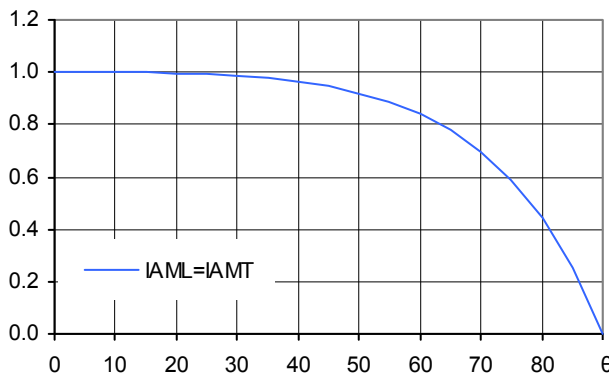
Relative efficiency η



Reference	Gross	Aperture	Absorber
η_0	0.727	0.795	0.798
a_1 [WK ⁻¹ m ⁻²]	3.79	4.15	4.16
a_2 [WK ⁻² m ⁻²]	0.0083	0.0091	0.0091

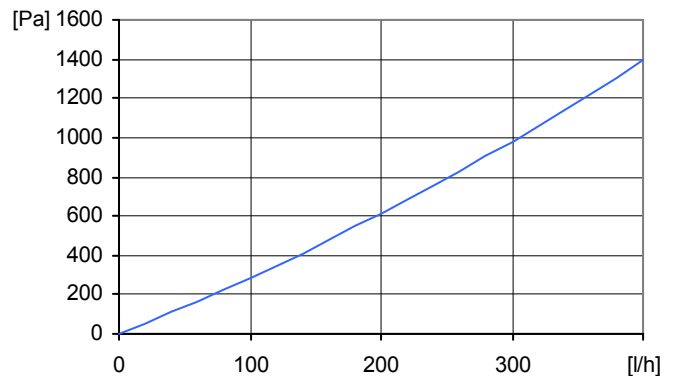
*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2006

Incident angle modifier IAM



K1, transversal IAM at 50°	0.92
K2, longitudinal IAM at 50°	0.92

Pressure drop Δp



Pressure drop at nominal flowrate
$\Delta p = 349 \text{ Pa}$ (T=20°C)

SPF Simulation of systems using Polysun

Short description of the system

Climate: Central Switzerland, orientation of the collectors: South,
Cold water 10°C, Hot water 50°

Domestic hot water: Fss* = 60%

Tank 450 l, collector inclination 45°,
Daily energy demand 10 kWh (4-6 persons)
Energy demand of the reference system 4200 kWh/year

Water pre-heating: Fss* = 25%

2 Tanks: 1500 l & 2500 l, collector inclination 30°,
Domestic hot water consumption 10'000 l/day (200 persons)
Daily heat losses (circulation and tanks) 60 kWh,
Energy demand of the reference system 191'700 kWh/year

Space heating system: Fss* = 25%

Combined storage 1200 l, collector inclination 45°,
Daily energy demand 10 kWh (4-6 persons), Building 200 m², moderately
heavy construction, well insulated, Heating power demand 5.8 kW (ambient
temperature -8°C), Energy demand space heating 12140 kWh/year,
Energy demand of the reference system 16340 kWh/year

Surface demand**
Number of collectors

Solar yield**

5.25 m²
2.4 collectors 484 kWh/m²

66.6 m²
31.1 collectors 721 kWh/m²

17.1 m²
8.0 collectors 314 kWh/m²

*) Fractional solar savings: Proportion of the final energy that, thanks to the solar system, can be saved compared to a reference system.
**) Surface demand and solar yield are given with respect to the aperture area.