

Solar Collector Factsheet He Jia HFC-2



Model	HFC-2
Type	Evacuated tube collector
Manufacturer	Changzhou He Jia Solar Energy Co.
Address	No. 16, Chingjiao rd, Dongqing town Changzhou, Jiangsu CN-213114 Changzhou
Telephone	+86 519 8896 7878
Fax	+86 519 8896 7868
Email	hjsun@vip.163.com
Internet	www.hjsolar.com.cn
Test date	05.2011

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



Dimensions

Total length	1.980 m
Total width	1.010 m
Gross area	2.000 m ²
Aperture area	1.640 m ²
Absorber area	2.032 m ²
Weight empty	56 kg

Technical data

Minimum flowrate	50 l/h
Nominal flowrate	90 l/h
Maximum flowrate	1200 l/h
Fluid content	0.8 l
Maximum operating pressure	6 bar
Stagnation temperature	289 °C

Types of mounting

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

Further information

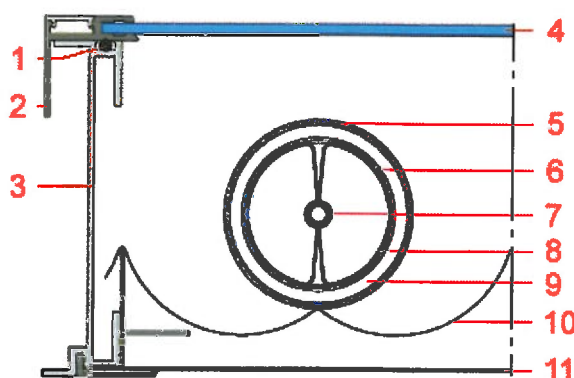
- Units in different sizes available

- Glazing replaceable

Hydraulic connection

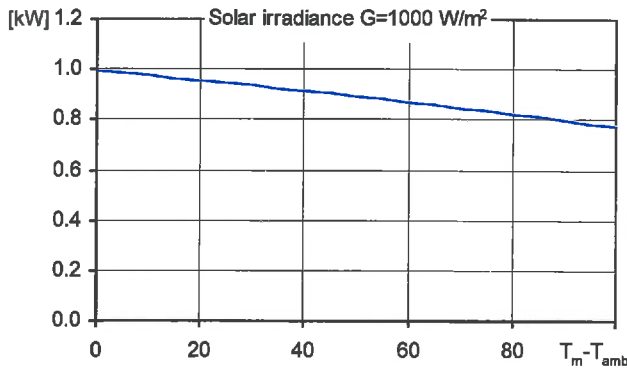
Copper pipe, nominal diameter 22 mm

Construction



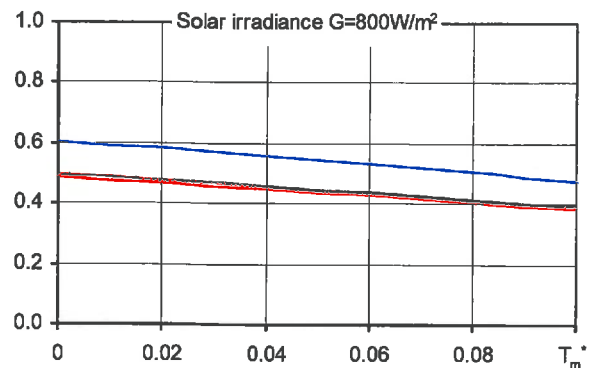
- 1 Sealing profile
- 2 Glass fixing profile
- 3 Casing
- 4 Glazing
- 5 Glazing
- 6 Absorber
- 7 Heat pipe
- 8 Heat-conducting metal sheet
- 9 Vacuum
- 10 CPC reflector
- 11

Peak Power per collector unit W_{peak}



Peak Power W_{peak}	994 W
Thermal capacity*	11.2 kJ/K
Flowrate during test	120 l/h
Fluid for test	Water-Glycol 33.3%

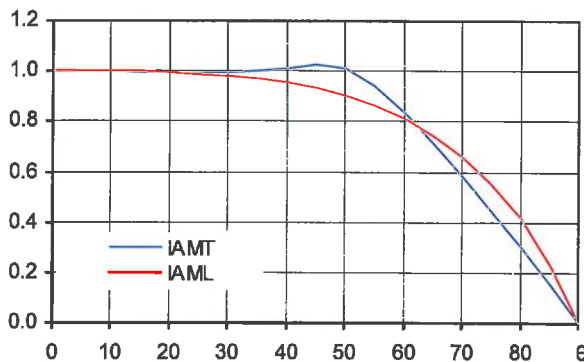
Relative efficiency η



Reference	Gross	Aperture	Absorber
η_0	0.497	0.606	0.489
a_1 [$WK^{-1}m^{-2}$]	0.88	1.08	0.87
a_2 [$WK^{-2}m^{-2}$]	0.0020	0.0025	0.0020

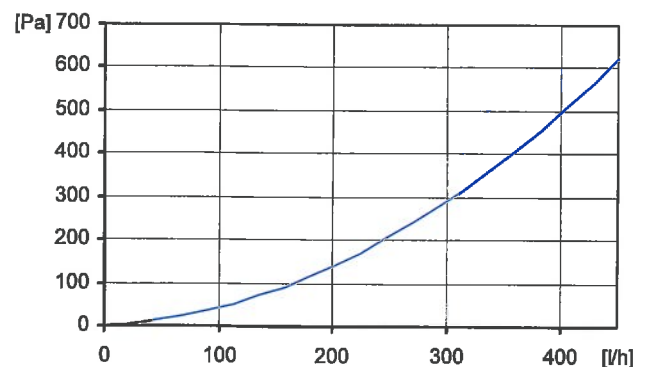
*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2006

Incident angle modifier IAM



K1, transversal IAM at 50°	1.01
K2, longitudinal IAM at 50°	0.90

Pressure drop Δp



Pressure drop at nominal flowrate
 $\Delta p = 35 \text{ Pa}$ ($T=20^\circ\text{C}$)

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: $F_{ss}^* = 60\%$

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: $F_{ss}^* = 25\%$

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: $F_{ss}^* = 25\%$

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**

5.09 m²
3.1 collectors

501 kWh/m²

76.1 m²
46.4 collectors

630 kWh/m²

13.8 m²
8.4 collectors

399 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.