

Solar Collector Factsheet

Sieger Solar Sunstar HP65-30

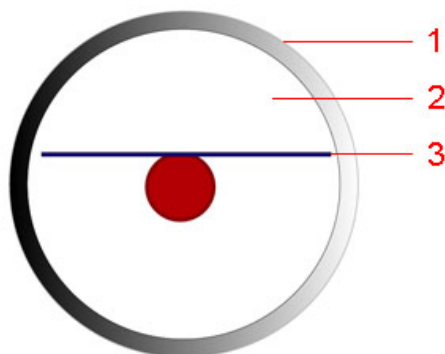


Model	Sunstar HP65-30
Type	Evacuated tube collector
Manufacturer	SG Sieger-Solar KG
Address	Heideweg 28
	DE-53604 Bad Honnef
Telephone	+49 2224 90 13 70-0
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Email	info@sg-sieger-solar.de
Internet	www.sieger-solar.de
Test date	06.2007

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

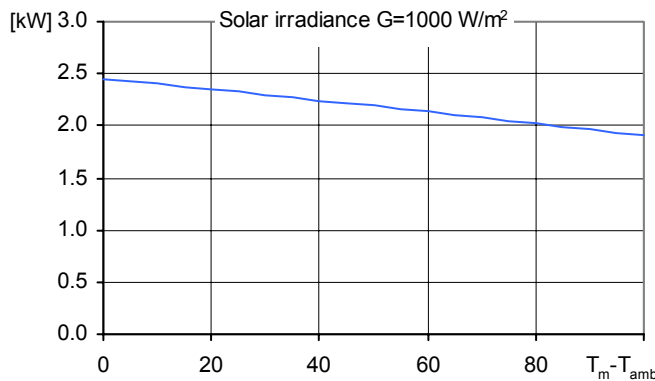


Dimensions		Technical data	
Total length	1.980 m	Minimum flowrate	90 l/h
Total width	2.152 m	Nominal flowrate	240 l/h
Gross area	4.261 m ²	Maximum flowrate	400 l/h
Aperture area	3.175 m ²	Fluid content	1.4 l
Absorber area	2.972 m ²	Maximum operating pressure	6 bar
Weight empty	86 kg	Stagnation temperature	252 °C
Types of mounting		Further information	
<input checked="" type="checkbox"/> Construction for sloping roof		<input checked="" type="checkbox"/> Units in different sizes available	
<input type="checkbox"/> Integration into sloping roof		<input type="checkbox"/> Glazing replaceable	
<input checked="" type="checkbox"/> On flat roof with stand		Hydraulic connection	
<input type="checkbox"/> Facade		Copper pipe, nominal diameter 22 mm	
Construction			



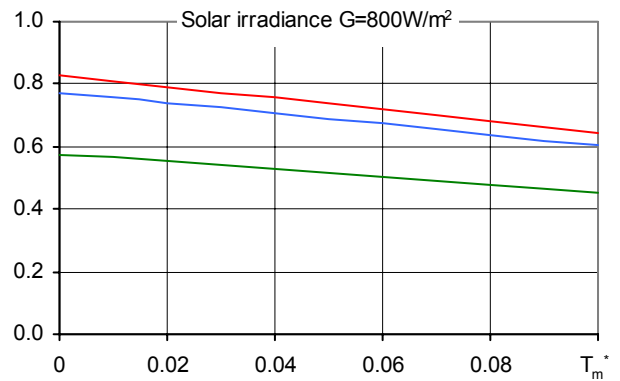
- 1 Glazing
- 2 Vacuum
- 3 Absorber

Peak Power per collector unit W_{peak}



Peak Power W_{peak}	2455 W
Thermal capacity*	8.7 kJ/K
Flowrate during test	240 l/h
Fluid for test	Water-Glycol 33.3%

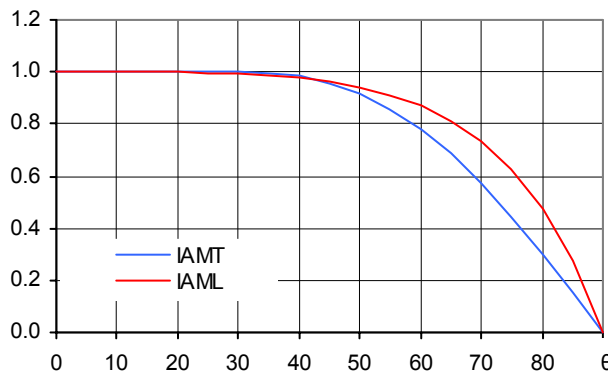
Relative efficiency η



Reference	Gross	Aperture	Absorber
η_0	0.576	0.773	0.826
a_1 [$WK^{-1}m^{-2}$]	1.21	1.62	1.73
a_2 [$WK^{-2}m^{-2}$]	0.0008	0.0010	0.0011

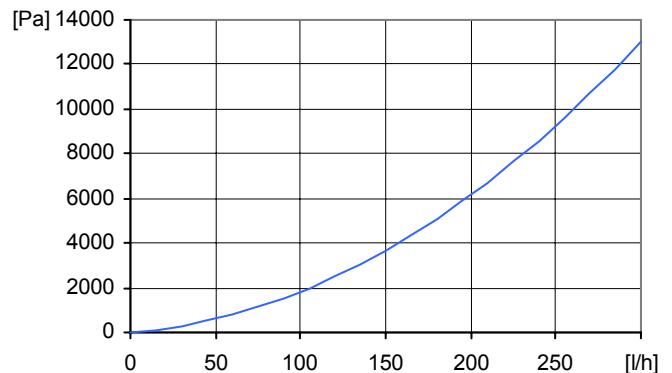
*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2006

Incident angle modifier IAM



K1, transversal IAM at 50°	0.91
K2, longitudinal IAM at 50°	0.94

Pressure drop Δp



Pressure drop at nominal flowrate
$\Delta p = 8587$ 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: $F_{ss}^* = 60\%$

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**

4.09 m²
1.3 collectors 624 kWh/m²

60.3 m²
19.0 collectors 797 kWh/m²

10.9 m²
3.4 collectors 506 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.