

Solar Collector Factsheet

RZ Solartechnik DF100-6

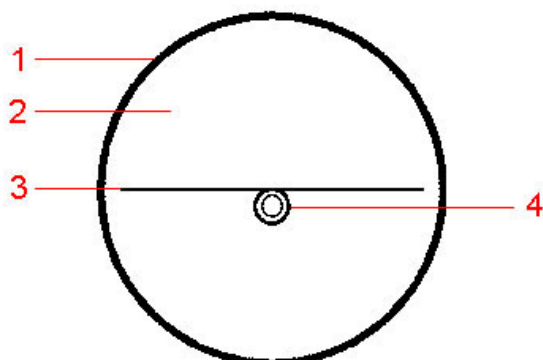


Model	DF100-6
Type	Evacuated tube collector
Manufacturer	R/Z Solartechnik
Address	Friedrich von Teck Strasse 20
	DE-89420 Höchstädt
Telephone	++49 9074 9220378
Fax	++49 9074 9220370
Email	rzsolartechnik-zangl@gmx.de
Internet	--
Test date	07.2007

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

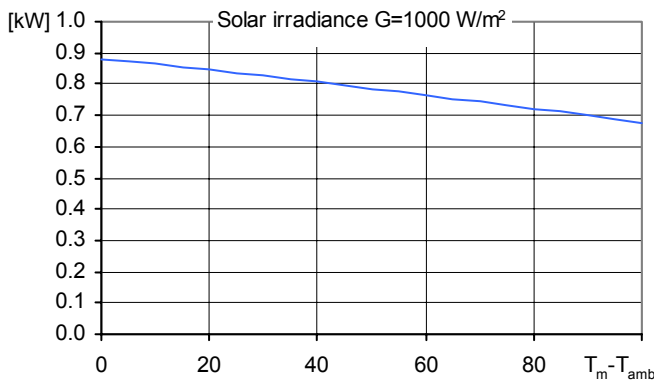


Dimensions		Technical data	
Total length	2.206 m	Minimum flowrate	50 l/h
Total width	0.720 m	Nominal flowrate	100 l/h
Gross area	1.588 m ²	Maximum flowrate	200 l/h
Aperture area	1.114 m ²	Fluid content	1.4 l
Absorber area	1.069 m ²	Maximum operating pressure	6 bar
Weight empty	40 kg	Stagnation temperature	369 °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 checked="" type="checkbox"/> Facade		Copper pipe, nominal diameter 22 mm	
Construction			



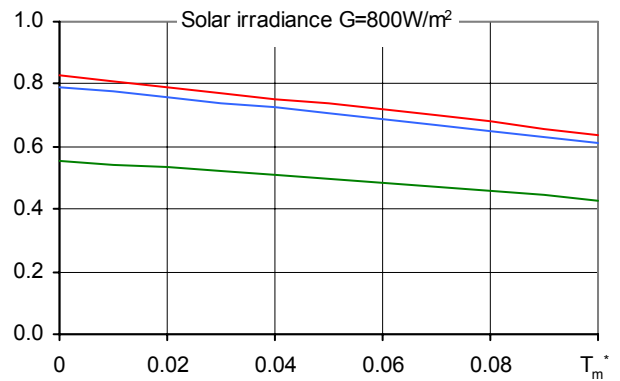
- 1 Glazing
- 2 Vacuum
- 3 Absorber
- 4 Coaxial tube

Peak Power per collector unit W_{peak}



Peak Power W_{peak}	882 W
Thermal capacity*	2.3 kJ/K
Flowrate during test	100 l/h
Fluid for test	Water-Glycol 33.3%

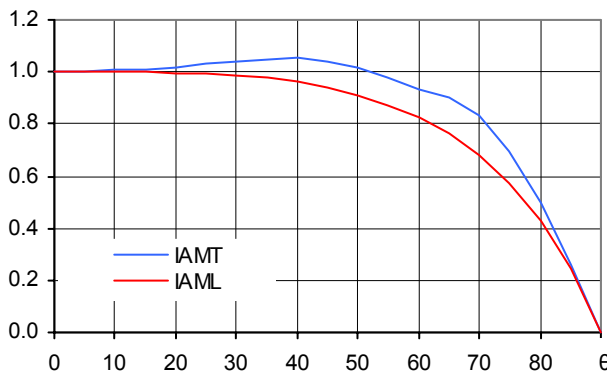
Relative efficiency η



Reference	Gross	Aperture	Absorber
η_0	0.555	0.792	0.825
a_1 [$WK^{-1}m^{-2}$]	1.14	1.62	1.69
a_2 [$WK^{-2}m^{-2}$]	0.0015	0.0021	0.0022

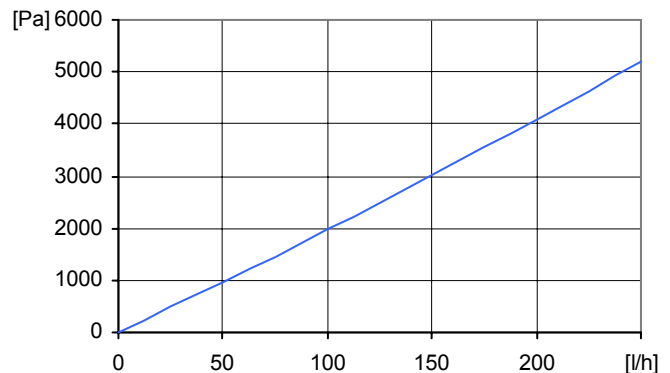
*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2006

Incident angle modifier IAM



K1, transversal IAM at 50°	1.02
K2, longitudinal IAM at 50°	0.91

Pressure drop Δp



Pressure drop at nominal flowrate
$\Delta p = 1973$ 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**

3.86 m²
3.5 collectors 661 kWh/m²

56.4 m²
50.6 collectors 852 kWh/m²

10.3 m²
9.2 collectors 536 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.