

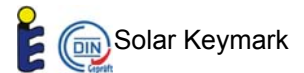
Solar Collector Factsheet

NES PK SL CL 2.15m²

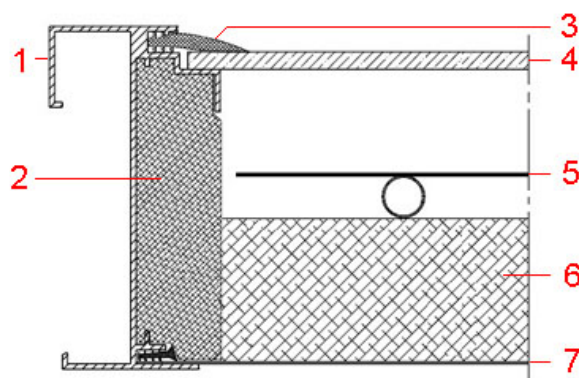


Model	PK SL CL 2.15m²
Type	Flat plate collector
Manufacturer	NES New Energy Systems Ltd.
Address	Blv. Madara 12
	BG-9700 Shumen
Telephone	+359 54 874 546
Fax	+359 54 874 556
Email	ftrade@sunsystem.bg
Internet	www.sunsystem.bg
Test date	04.2008

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

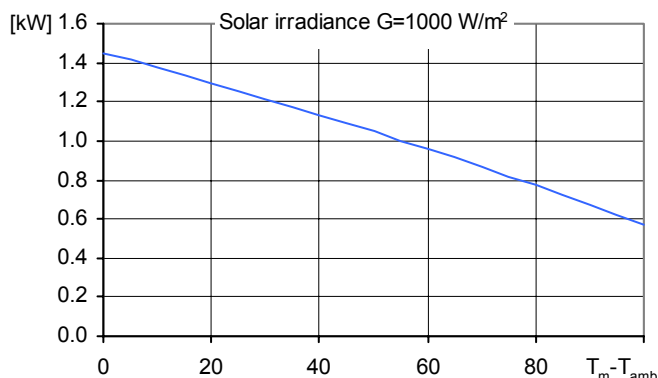


Dimensions		Technical data	
Total length	2.130 m	Minimum flowrate	20 l/h
Total width	1.005 m	Nominal flowrate	40 l/h
Gross area	2.141 m ²	Maximum flowrate	60 l/h
Aperture area	1.897 m ²	Fluid content	1.6 l
Absorber area	1.865 m ²	Maximum operating pressure	6 bar
Weight empty	38 kg	Stagnation temperature	200 °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		G1/2"	
Construction			



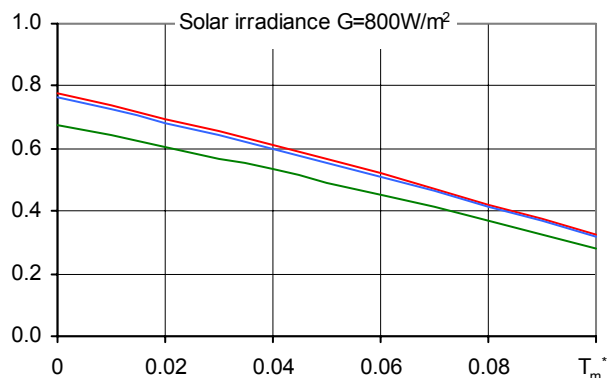
- 1 Casing
- 2 Lateral thermal insulation
- 3 Sealing profile
- 4 Glazing
- 5 Absorber
- 6 Thermal insulation
- 7 Rear panel

Peak Power per collector unit W_{peak}



Peak Power W_{peak}	1449 W
Thermal capacity*	4.9 kJ/K
Flowrate during test	140 l/h
Fluid for test	Water-Glycol 33.3%

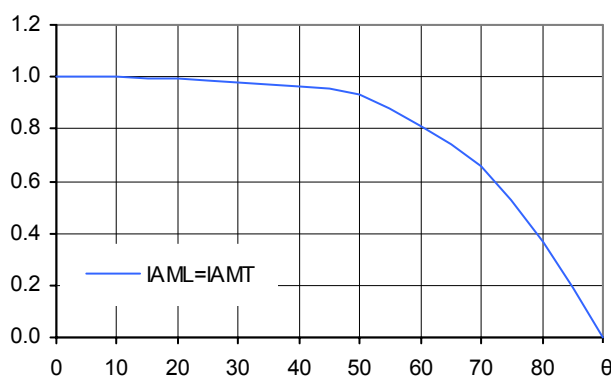
Relative efficiency η



Reference	Gross	Aperture	Absorber
η_0	0.677	0.764	0.777
a_1 [$WK^{-1}m^{-2}$]	3.40	3.83	3.90
a_2 [$WK^{-2}m^{-2}$]	0.0071	0.0080	0.0081

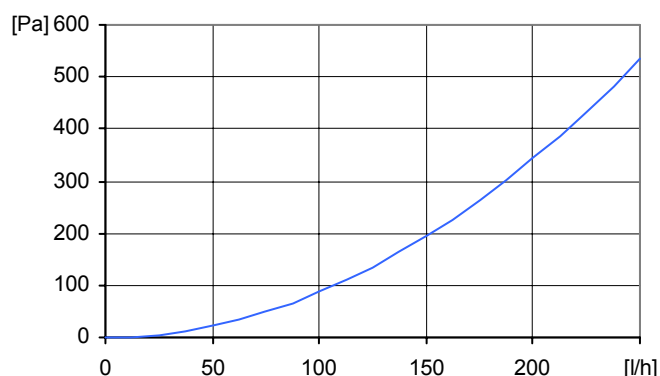
*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2006

Incident angle modifier IAM



K1, transversal IAM at 50°	0.93
K2, longitudinal IAM at 50°	0.93

Pressure drop Δp



Pressure drop at nominal flowrate
 $\Delta p = 14 \text{ Pa}$ ($T=20^\circ\text{C}$)

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**

5.29 m²
2.8 collectors 481 kWh/m²

67.9 m²
35.8 collectors 708 kWh/m²

16.9 m²
8.9 collectors 318 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.