

Solar Collector Factsheet

Winkler VarioSol E

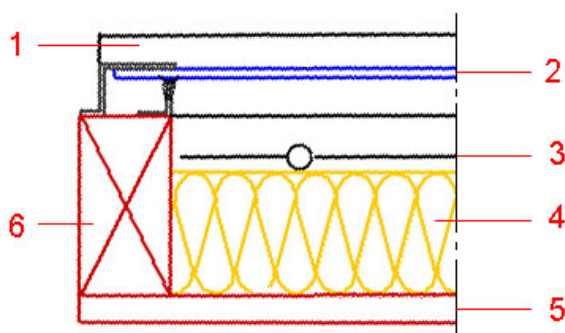


Model	VarioSol E
Type	Flat plate collector
Manufacturer	Winkler Solar GmbH
Address	Räterweg 17
	AT-6800 Feldkirch
Telephone	+43 (05522) 76139
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Email	solar@winklersolar.com
Internet	www.winklersolar.com
Test date	04.2000

- Performance test EN12975
- Quality test EN12975

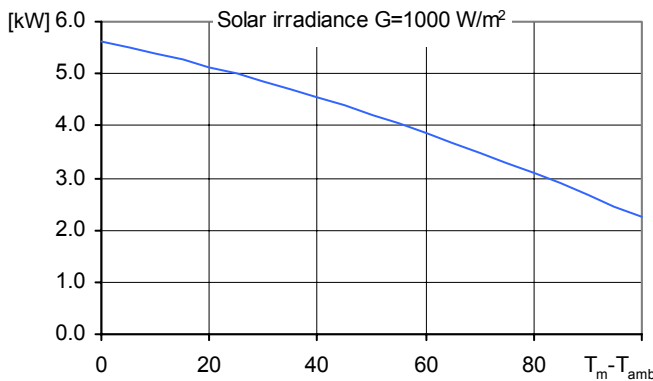


Dimensions		Technical data	
Total length	2.017 m	Minimum flowrate	160 l/h
Total width	4.000 m	Nominal flowrate	500 l/h
Gross area	8.068 m ²	Maximum flowrate	960 l/h
Aperture area	7.324 m ²	Fluid content	5.1 l
Absorber area	7.168 m ²	Maximum operating pressure	6 bar
Weight empty	245 kg	Stagnation temperature	-- °C
Types of mounting		Further information	
<input type="checkbox"/> Construction for sloping roof		<input checked="" type="checkbox"/> Units in different sizes available	
<input checked="" type="checkbox"/> Integration into sloping roof		<input checked="" 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			



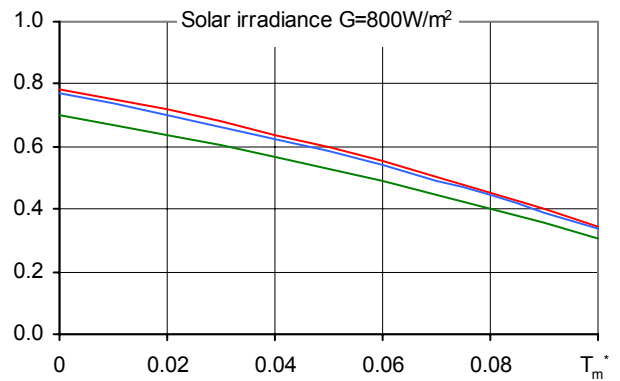
- 1 Cover rail
- 2 Glazing
- 3 Absorber
- 4 Thermal insulation
- 5 Rear panel
- 6 Casing

Peak Power per collector unit W_{peak}



Peak Power W_{peak}	5634 W
Thermal capacity*	25.9 kJ/K
Flowrate during test	457 l/h
Fluid for test	Water-Glycol 33.3%

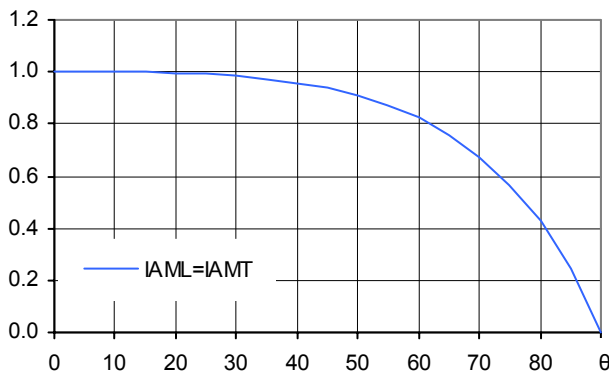
Relative efficiency η



Reference	Gross	Aperture	Absorber
η_0	0.698	0.769	0.786
a_1 [$WK^{-1}m^{-2}$]	2.80	3.08	3.15
a_2 [$WK^{-2}m^{-2}$]	0.0141	0.0156	0.0159

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

Incident angle modifier IAM



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

Pressure drop Δp

Pressure drop at nominal flowrate
 $\Delta p = \text{-- Pa}$ (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: $F_{ss}^* = 60\%$
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** **Solar yield****
Number of collectors

5.07 m² 502 kWh/m²
0.7 collectors

66.7 m² 720 kWh/m²
9.1 collectors

15.8 m² 341 kWh/m²
2.2 collectors

*) 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.