

Solar Collector Factsheet

Winkler VarioSol A-antireflex



Model	VarioSol A-antireflex
Type	Flat plate collector
Manufacturer	Winkler Solar GmbH
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	AT-6800 Feldkirch
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Test date	10.2003

- Performance test EN12975:2001
- Quality test EN12975:2001



Dimensions	Technical data
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Total length	2.010 m
Total width	3.015 m
Gross area	6.060 m ²
Aperture area	5.525 m ²
Absorber area	5.410 m ²
Weight empty	190 kg

Minimum flowrate	120 l/h
Nominal flowrate	240 l/h
Maximum flowrate	960 l/h
Fluid content	3.2 l
Maximum operating pressure	6 bar
Stagnation temperature	-- °C

Types of mounting	Further information
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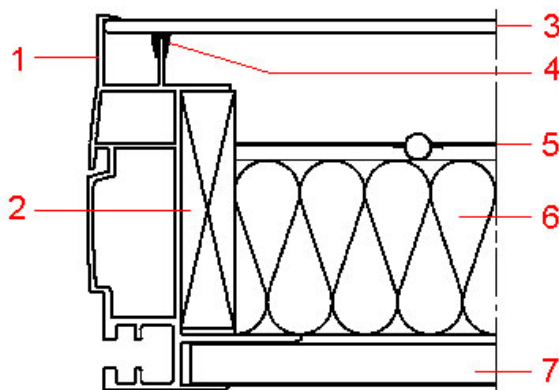
- Construction for sloping roof
- Integration into sloping roof
- On flat roof with stand
- Facade

- Units in different sizes available
- Glazing replaceable

Hydraulic connection

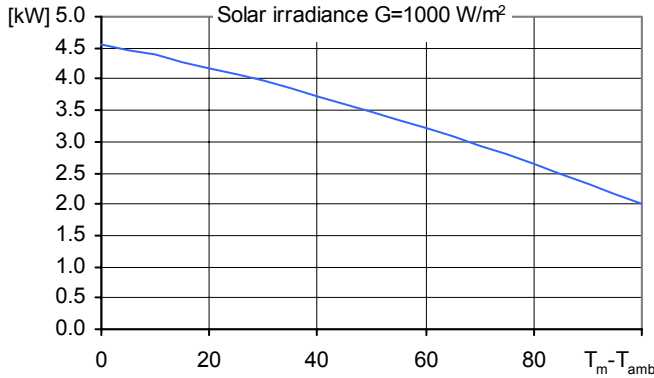
Copper pipe, nominal diameter 22 mm

Construction	
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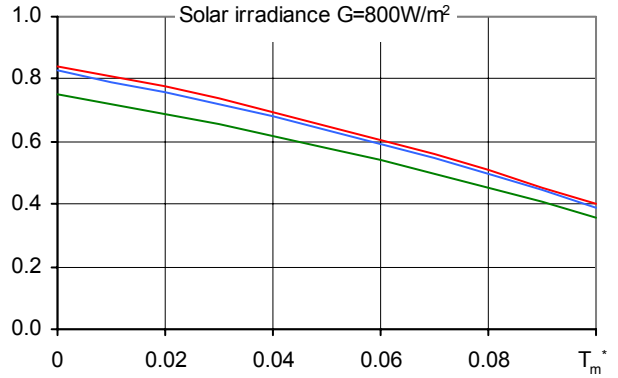


- 1 Casing
- 2 Lateral thermal insulation
- 3 Glazing
- 4 Sealing profile
- 5 Absorber
- 6 Thermal insulation
- 7 Casing, Rear panel

Peak Power per collector unit W_{peak}



Relative efficiency η

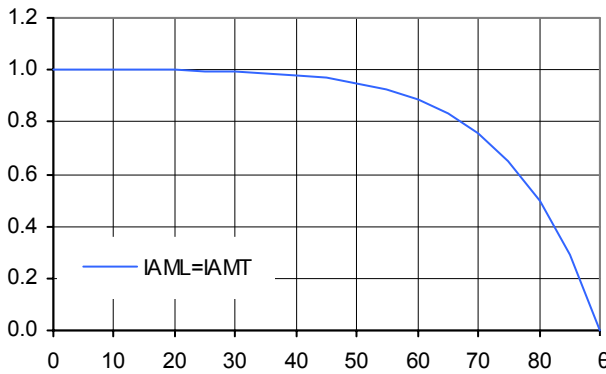


Peak Power W_{peak}	4561 W
Thermal capacity*	14.7 kJ/K
Flowrate during test	350 l/h
Fluid for test	Water-Glycol 33.3%

Reference	Gross	Aperture	Absorber
η_0	0.753	0.825	0.843
a_1 [$WK^{-1}m^{-2}$]	2.86	3.13	3.20
a_2 [$WK^{-2}m^{-2}$]	0.0138	0.0152	0.0155

*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2001

Incident angle modifier IAM



Pressure drop Δp

K1, transversal IAM at 50°	0.95
K2, longitudinal IAM at 50°	0.95

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

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°

Surface demand** **Solar yield****
Number of collectors

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

4.48 m²
0.8 collectors 569 kWh/m²

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

59.5 m²
10.8 collectors 808 kWh/m²

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

13.5 m²
2.4 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.

