

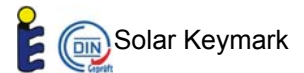
Solar Collector Factsheet

AMK-Collectra OPC 15



| | |
|---------------------|--|
| Model | OPC 15 |
| Type | Evacuated tube collector |
| Manufacturer | AMK-Collectra AG |
| Address | Bahnweg Nord 16 |
| | CH-9475 Sevelen |
| Telephone | +41 (081) 750 17 17 |
| Fax | +41 (081) 750 17 18 |
| Email | amk@amk-solac.com |
| Internet | www.amk-solac.com |
| Test date | 06.2008 |

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

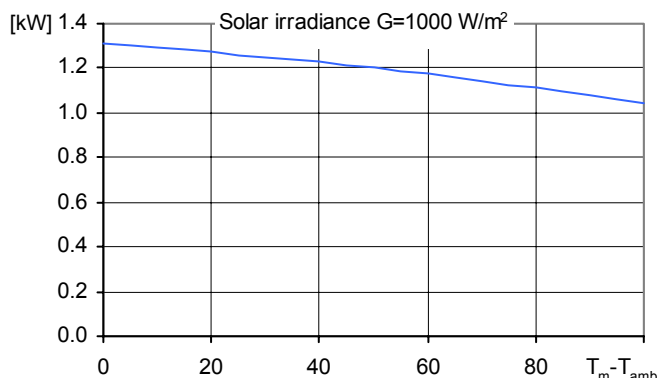


| Dimensions | | Technical data | |
|----------------------|----------------------|-----------------------------------|---------|
| Total length | 1.700 m | Minimum flowrate | 45 l/h |
| Total width | 1.250 m | Nominal flowrate | 66 l/h |
| Gross area | 2.125 m ² | Maximum flowrate | 150 l/h |
| Aperture area | 1.716 m ² | Fluid content | 2.0 l |
| Absorber area | 2.474 m ² | Maximum operating pressure | 10 bar |
| Weight empty | 47 kg | Stagnation temperature | 323 °C |

| Types of mounting | Further information |
|--|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Construction for sloping roof <input type="checkbox"/> Integration into sloping roof <input checked="" type="checkbox"/> On flat roof with stand <input checked="" type="checkbox"/> Facade | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Units in different sizes available <input type="checkbox"/> Glazing replaceable <p>Hydraulic connection G3/4"</p> |

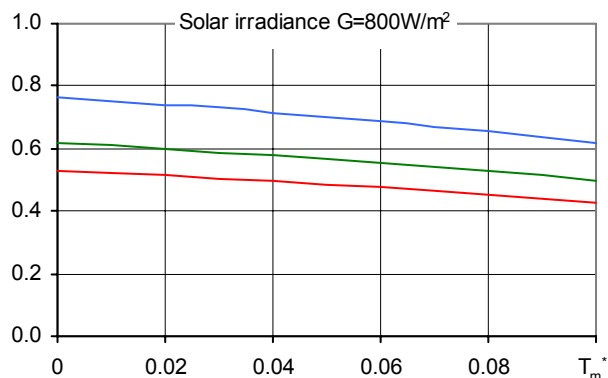
| Construction | |
|--------------|---|
| | <ul style="list-style-type: none"> 1 Glazing 2 Vacuum 3 Absorber 4 Heat-conducting metal sheet 5 U-tube 6 CPC reflector |

Peak Power per collector unit W_{peak}



| | |
|---|--------------------|
| Peak Power W_{peak} | 1311 W |
| Thermal capacity* | 13.7 kJ/K |
| Flowrate during test | 150 l/h |
| Fluid for test | Water-Glycol 33.3% |

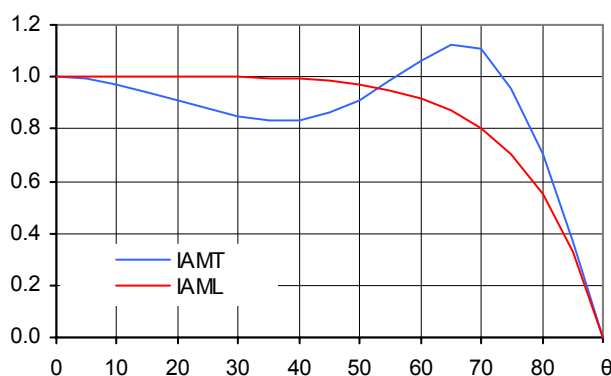
Relative efficiency η



| | | | |
|---|--------------|-----------------|-----------------|
| Reference | Gross | Aperture | Absorber |
| η_0 | 0.617 | 0.764 | 0.530 |
| a_1 [WK ⁻¹ m ⁻²] | 0.83 | 1.02 | 0.71 |
| a_2 [WK ⁻² m ⁻²] | 0.0043 | 0.0053 | 0.0037 |

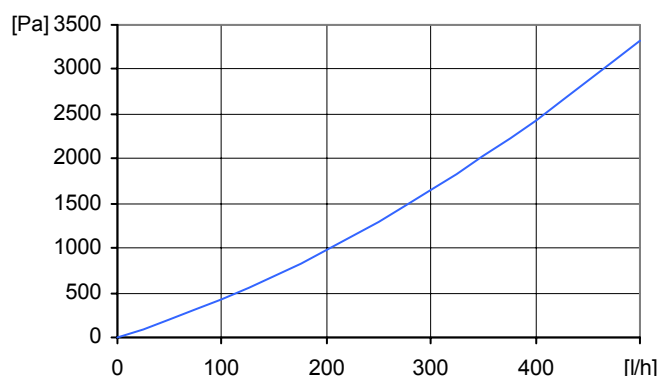
*) Specific thermal capacity C of the collector without fluid, determined according to 6.1.6.2 of EN12975-2:2006

Incident angle modifier IAM



| | |
|------------------------------------|------|
| K1, transversal IAM at 50° | 0.91 |
| K2, longitudinal IAM at 50° | 0.97 |

Pressure drop Δp



Pressure drop at nominal flowrate
 $\Delta p = 272$ 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: Fss* = 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: Fss* = 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: Fss* = 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

3.95 m²
2.3 collectors

58.7 m²
34.2 collectors

10.7 m²
6.2 collectors

Solar yield**

647 kWh/m²

818 kWh/m²

516 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.