

Technical data of the flat solar collectors Ensol ES1V/2,65S and ES1V/2,65B for vertical installation

Ensol solar collector is designed for changing energy of solar radiation into useful thermal energy used for preparing warm service water, heating swimming-pools or supporting heat source in heating system.

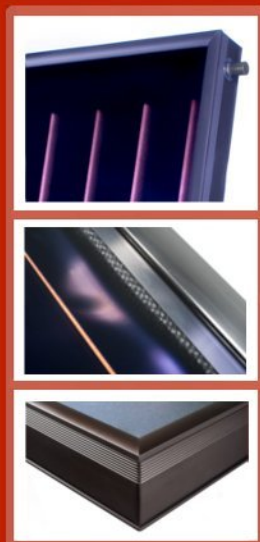
Collector's housing construction is based on a rigid frame bent from the special aluminium profile patented by ENSOL company. At the bottom the housing is closed with aluminium sheet, whereas the cover is made of special, high-transmission solar glass. The manner of fixing the glass ensures tightness of housing and minimizes the thermal tensions.

The main part of the collector is an absorber, the plate of which is made of copper sheet covered with the high selective eta plus coat in order to ensure high level of solar radiation absorption, which results in obtaining high efficiency of the energy conversion process).

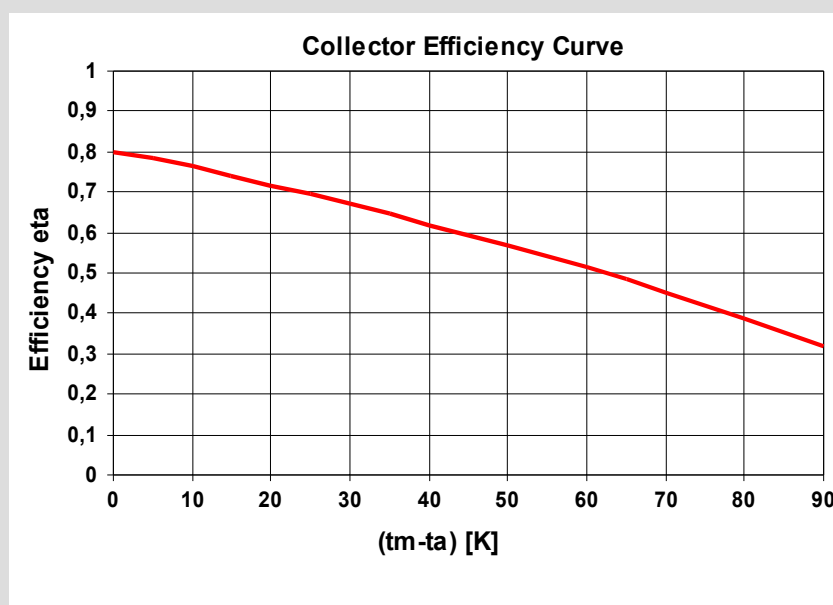
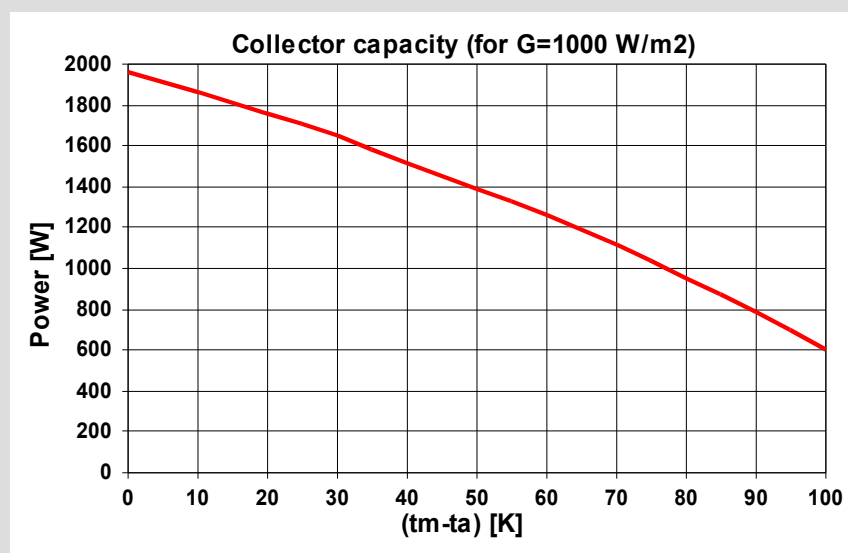
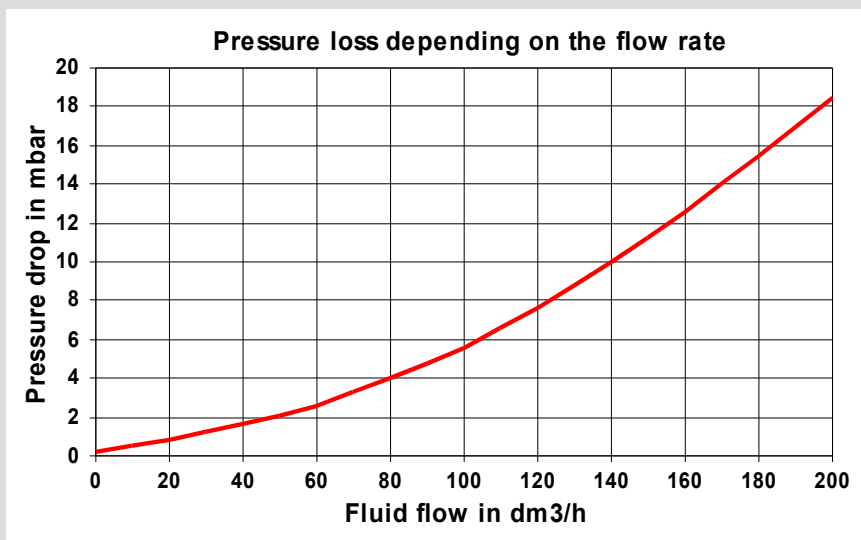
Absorber's plate is welded by means of ultrasonic welding with the system of copper tubes, in which the medium circulates.

Heat losses were minimized by application of lower and lateral insulation made of mineral wool of low heat conduction. Specially designed assembly sets made of stainless steel are used for trouble free and secure mounting of collectors to roof constructions with different angle of roof slope inclination.

Flat collectors with prismatic glass have certificate of compatibility with norm **DIN EN 12975- 2:2006** conducted by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH and the **Solar Keymark** certificate.



| Flat collector: | Symbol | Unit | Value |
|-------------------------------------|---|------------------------------------|--------------------|
| width | A | mm | 1120 |
| height | B | mm | 2356 |
| depth | C | mm | 85 |
| weight | m | kg | 49 |
| surface | S | m ² | 2,65 |
| optical efficiency | η_o | % | 79,8 |
| Coefficient | a1 | W/(m ² K) | 3,688 |
| Coefficient | a2 | W/(m ² K ²) | 0,019 |
| Connection: copper tube | \emptyset | mm | 22 |
| housing | Alu-profile | | |
| cover | Prismatic Solar glass, 4 mm in thickness | | |
| Absorber: | | | |
| absorber's type | Copper sheet, 0,2mm in thickness | | |
| selective layer | Blue Tec eta plus | | |
| production technology | ultrasonic welding | | |
| absorption coefficient | α | % | 95 |
| emission coefficient | ϵ | % | 5 |
| width | a | mm | 1066 |
| height | b | mm | 2303 |
| absorber's surface | S _b | m ² | 2,45 |
| active surface | S _n | m ² | 2,45 |
| liquid content | V | dm ³ | 2,2 |
| balance temperature | T _r | °C | 208 |
| guaranteed minimal thermal output | kWh/m ² -year | | |
| Flow: recommended permissible | l/h l/h | | ca 75 60-250 |
| Insulation | mineral wool | | |
| conduction coefficient | λ | W/mK | 0,035 |
| thickness of the insulation layer: | | | |
| lower | d | mm | 40 |
| lateral | d ₁ | mm | 10 |
| Research Report | TÜV Köln 21212847 | | |
| Solar Keymark | 011-7S1302 F | | |



Legend:

- t_m - average temperature of liquid
- t_a - ambient temperature
- G - solar irradiance