

## Technical data of the flat solar collectors Ensol ES2V/2,65S and ES2V/2,65B for vertical installation

### ES2V/2,65S & ES2V/2,65B – flat solar collector for vertical montage with meander absorber.

Ensol solar collector type ES2V/2,65S and ES2V/2,65B 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.

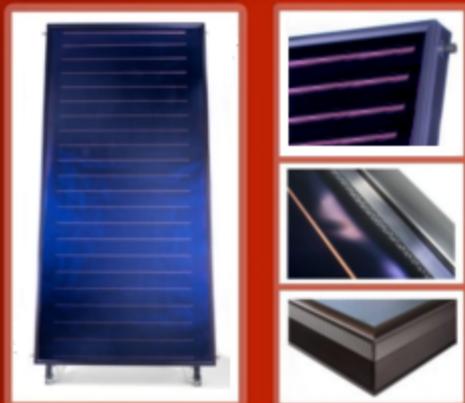
Collector's housing construction is based on a rigid frame bent from the special aluminium profile patented by ENSOL company. At the bottom the housing is closed with aluminium sheet, whereas the cover is made of special, high-transmission solar glass. The manner of fixing the glass ensures tightness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

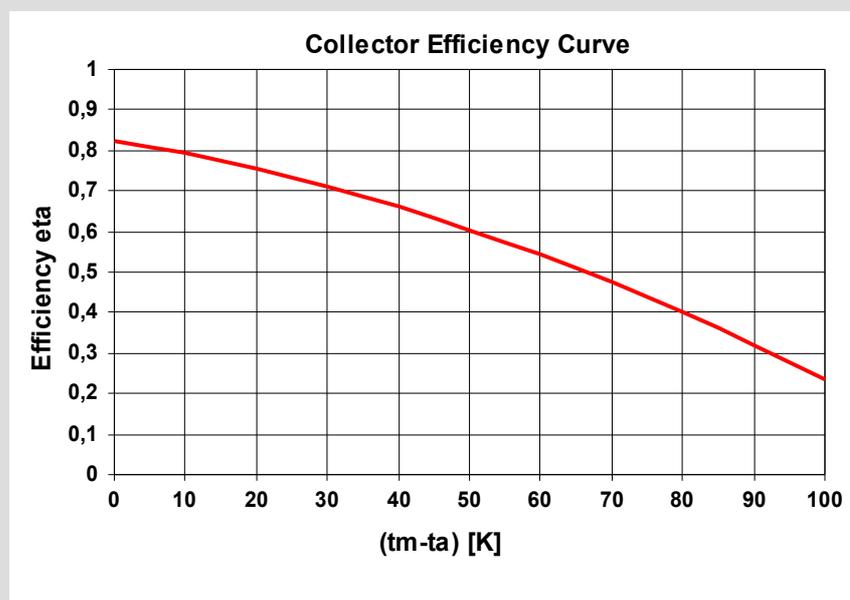
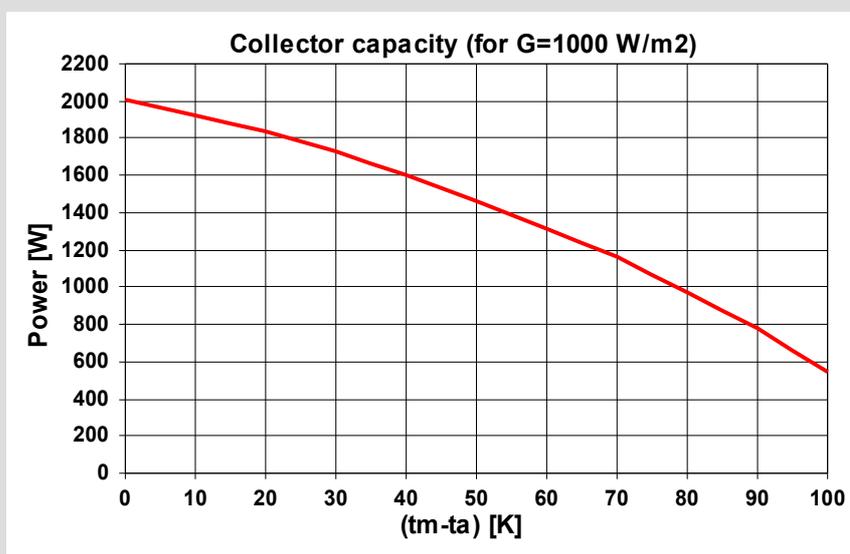
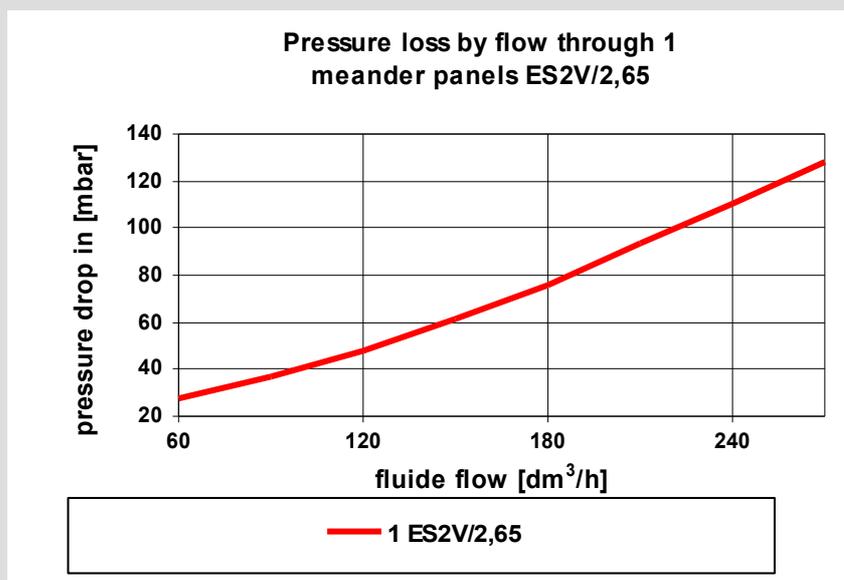
Meander absorber ensures steady heat removal through the circulating medium, and enable to install up to 10 collectors in one battery. Heat losses were minimized by application of lower and lateral insulation made of mineral wool of low heat conduction.

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 **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 <sup>2</sup>	2,65
optical efficiency	$\eta_0$	%	82,4
Coefficient	a1	W/(m <sup>2</sup> K)	2,905
Coefficient	a2	W/(m <sup>2</sup> K <sup>2</sup> )	0,030
Incidence angle modifier	IAM	-	0,850
Connection: copper tube	$\emptyset$	mm	22
housing	Alu-profile		
cover	Prismatic solar glass, 4mm in thicknes		
<b>Absorber:</b>			
absorber's type	Copper sheet, 0,2 mm in thickness		
selective layer	Blue Tec eta plus		
production technology	ultrasonic welding		
absorption coefficient	$\alpha$	%	95
emission coefficient	$\epsilon$	%	5
width	a	mm	1060
height	b	mm	2299
absorber's surface	S <sub>b</sub>	m <sup>2</sup>	2,44
active surface	S <sub>n</sub>	m <sup>2</sup>	2,44
liquid content	V	dm <sup>3</sup>	2,2
balance temperature	T <sub>r</sub>	°C	208
guaranteed minimal thermal output	kWh/m <sup>2</sup> ·rok		
Flow: recommended permissible	l/h l/h		approx. 75-105 50-150
<b>Insulation</b>	mineral wool		
conduction coefficient	$\lambda$	W/mK	0,035
thickness of the insulation layer:			
lower	d	mm	40
lateral	d <sub>1</sub>	mm	10
Research Report	TÜV Köln 21214977_EN_R/P		
Solar Keymark	011-71556 F		



**Legend:**

- tm - average temperature of liquid
- ta - ambient temperature
- G - solar irradiance