

## Technical Data for flat solar collectors EM2V/2,0S Al-Cu EM2V/2,0B Al-Cu for vertical mounting

**EM2V/2,0S Al-Cu i EM2V/2,0B Al-Cu – flat solar collector with meander absorber, made of copper and aluminum, designed for vertical mounting.**

Solar collector ENSOL EM2V/2,0S Al-Cu i EM2V/2,0B Al-Cu Cu is designed for changing energy of solar radiation into useful thermal energy used for providing warm service water, heating swimming pools or supporting a heat source in a heating system.

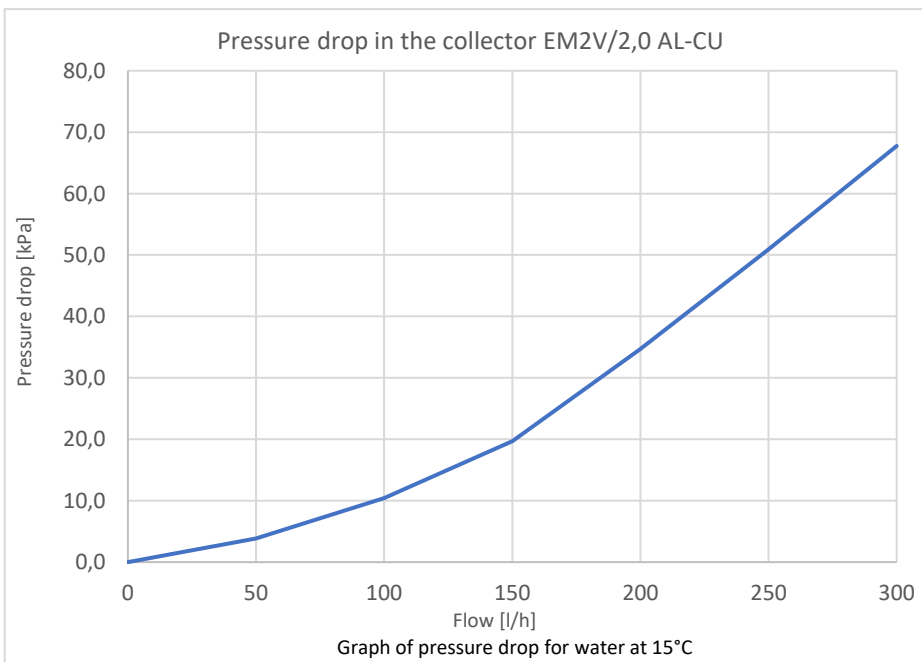
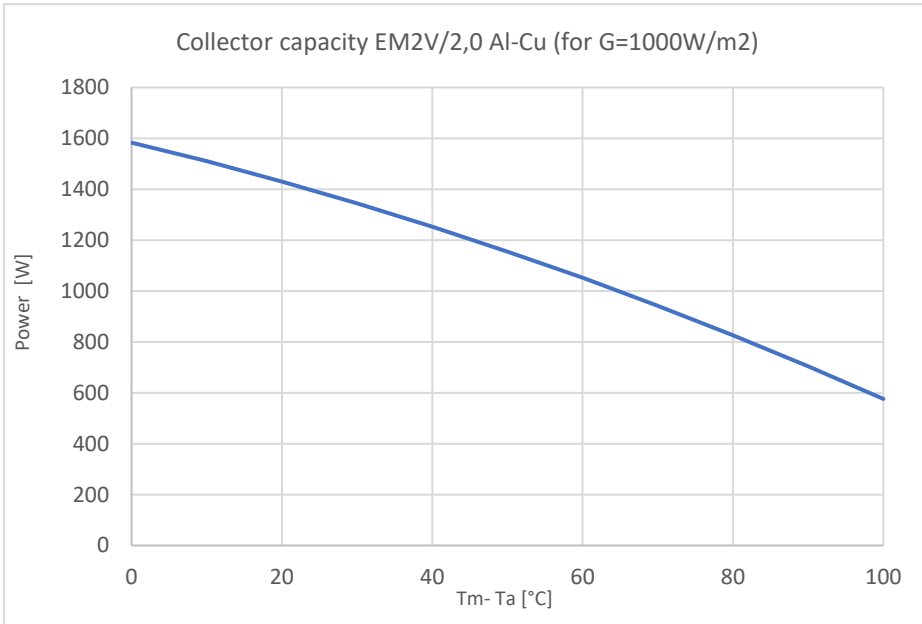
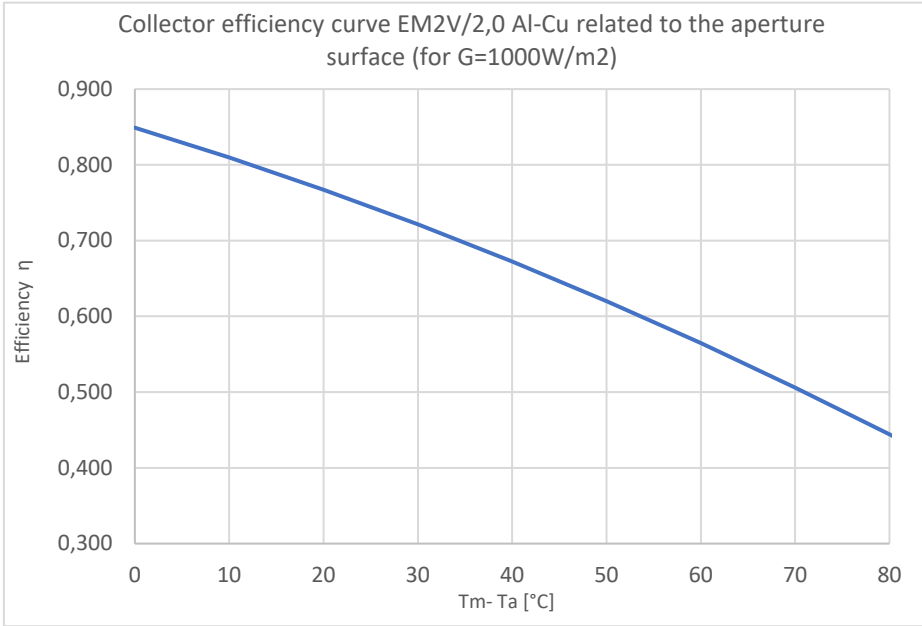
Collector's housing construction is based on a rigid frame bent from a special aluminum profile patented by ENSOL company. At the bottom the housing is closed with an aluminum sheet, whereas the cover is made of special, high-transmission solar glass. The manner of fixing the glass ensures tightness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

The main part of the collector is an absorber, the plate of which is made of aluminum sheet covered with a high selective coat in order to ensure a high level of solar radiation absorption, which results in obtaining high efficiency of the energy conversion process. The absorber's plate is connected by means of laser welding with the copper tubes system, in which the medium circulates.

Heat losses were minimized by application of lower and lateral insulation. Specially designed assembly sets made of aluminium and stainless steel are used for trouble-free and secure mounting of collectors to roof constructions with different angles inclination.

Flat collectors EM2V/2,0S Al-Cu and EM2V/2,0B Al-Cu have certificate of compatibility with norm **DIN EN 12975-1:2011 and DIN EN ISO 9806:2014** conducted by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH and the **Solar Keymark certificate**.

Flat collector:		Symbol	Unit	Value	
Width		A	mm	1006	
Height		B	mm	1988	
Depth		C	mm	85	
Weight		m	kg	40	
Surface		S	m <sup>2</sup>	2,0	
Collector efficiency EM2V/2,0 Al-Cu (for G=1000W/m2)					
Tm-Ta	0 K	10 K	30 K	50 K	70 K
Power	1 583 W	1510 W	1 345 W	1 156 W	944 W
Parameters relative to the area of the aperture					
Optical efficiency	η <sub>0,hem</sub>	%	84,9		
Coefficient	a <sub>1</sub>	W/(m <sup>2</sup> K)	3,778		
Coefficient	a <sub>2</sub>	W/(m <sup>2</sup> K <sup>2</sup> )	0,016		
Parameters relative to the gross area					
Optical efficiency	η <sub>0,hem</sub>	%	79,2		
Coefficient	a <sub>1</sub>	W/(m <sup>2</sup> K)	3,523		
Coefficient	a <sub>2</sub>	W/(m <sup>2</sup> K <sup>2</sup> )	0,015		
Coefficient of angle of incidence	IAM (K <sub>a</sub> =50°)	-	0,88		
Connection: copper tube	∅	mm	22		
Housing	Aluminum profile				
Cover	Tempered solar glass, 4mm thick				
<b>Absorber:</b>					
Absorber's type	Hydraulic system Cu – Al sheet				
Absorber sheet coating	High selective layer				
Execution technology	Laser welding				
Absorption coefficient	α	%	95		
Emission coefficient	ε	%	5		
Width	a	mm	964		
Height	b	mm	1946		
Absorber's surface	S <sub>b</sub>	m <sup>2</sup>	1,865		
Aperture surface	S <sub>a</sub>	m <sup>2</sup>	1,865		
Liquid content	V	dm <sup>3</sup>	1,8		
Stagnation temperature	T <sub>s</sub>	°C	190,3		
Flow:				ok.	
Recommended	l/h			60-90	
Permissible	l/h			50-220	
<b>Lower insulation :</b>	Mineral wool 40 mm thick				
<b>Lateral insulation</b>	Melamine foam 8 mm thick				
Solarkeymark	011-7S2562 F				



The key:  
 $t_m$  – average liquid temperature;  
 $t_a$  – environment temperature;  
 $G$  – intensity of solar radiation