

EM1V/2,0S and EM1V/2,0B – flat solar collector with double harp absorber, made entirely of copper, designed for vertical mounting.

Solar collector ENSOL EM1V/2,0S and EM1V/2,0B 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.

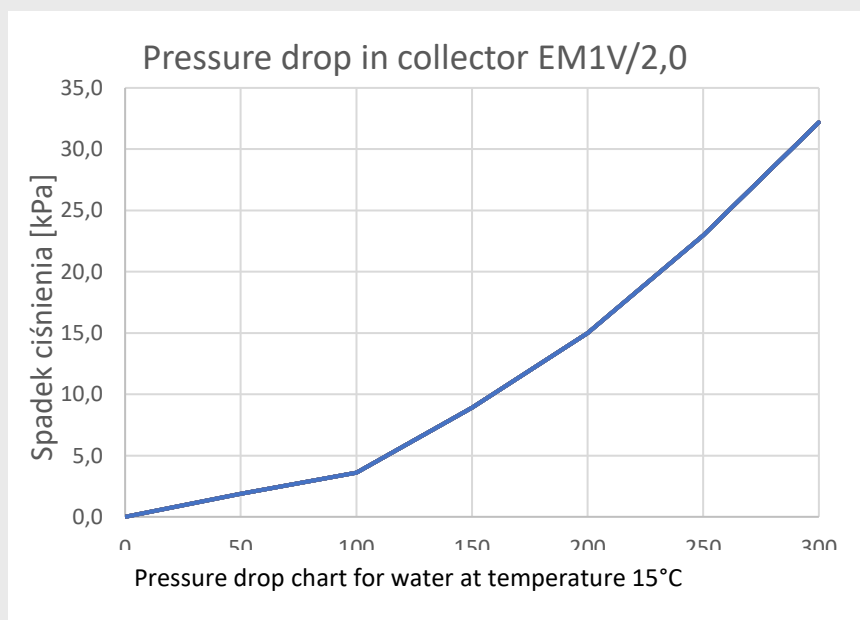
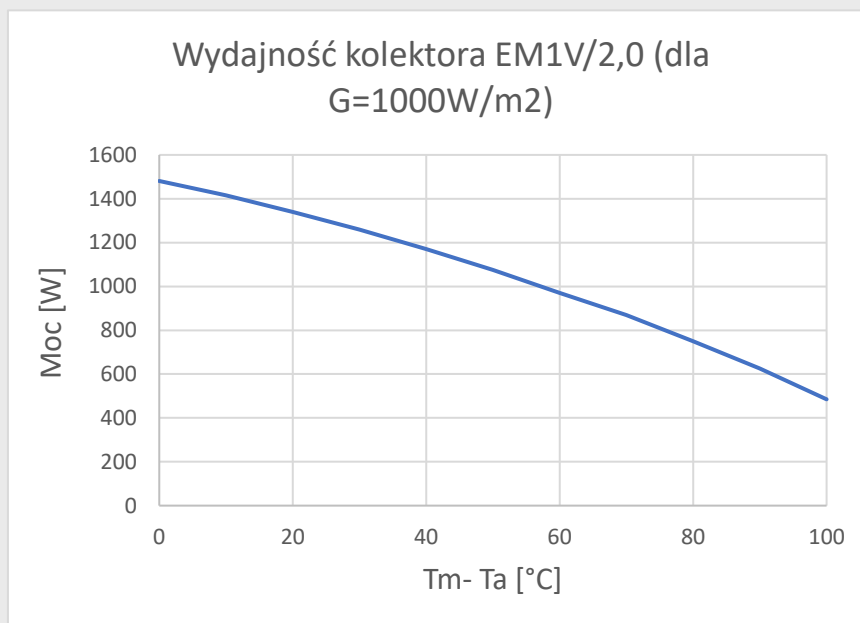
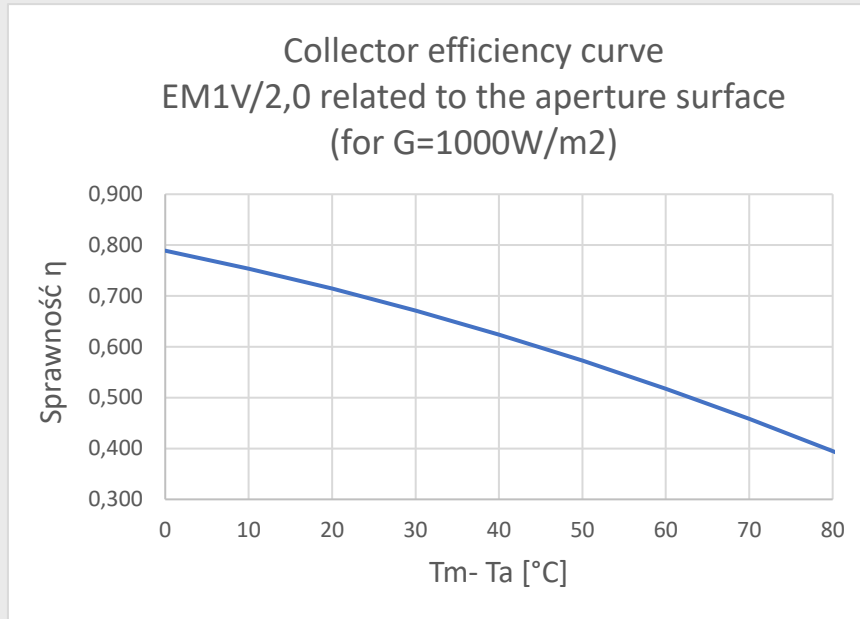
Collector's housing construction is based on a rigid frame bent from a special aluminum profile patented by ENSOL company. At the bottom the housing is closed with an aluminum sheet, whereas the cover is made of special, high-transmission solar glass. The manner of fixing the glass ensures tightness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

The main part of the collector is an absorber, the plate of which is made of copper sheet covered with a high selective eta plus 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 ultrasonic welding with the copper tubes system, 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 angles inclination.

Flat collectors **EM1V/2,0S and EM1V/2,0B** have certificate **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	1006
Height	B	mm	1988
Depth	C	mm	85
Weight	m	kg	40
Surface	S	m ²	2,0
Optical efficiency *	η_0	%	78,9
Coefficient *	a1	W/(m ² K)	3,327
Coefficient *	a2	W/(m ² K ²)	0,020
Coefficient of angle of incidence	IAM	-	0,89
Connection: copper tube	\emptyset	mm	22
Housing	Aluminum profile		
Cover	Tempered solar glass, 4mm thick		
Absorber:			
Absorber's type	Hydraulic system Cu – Cu sheet		
Absorber sheet coating	High selective layer		
Execution technology	Ultrasonic welding		
Absorption coefficient	α	%	95
Emission coefficient	ϵ	%	5
Width	a	mm	964
Height	b	mm	1946
Absorber's surface	S _b	m ²	1,876
Aperture surface	S _n	m ²	1,876
Liquid content	V	dm ³	1,8
Stagnation temperature	T _s	°C	202,3
Guaranteed minimal thermal output	kWh/m ² -year		525
Flow:			
Recommended	l/h	60-90	
Permissible	l/h	50-220	
Lower insulation	Mineral wool 40 mm thick		
Lateral insulation	Melamine foam 8 mm thick		
*Data relative to the aperture area:			
Solarkeymark	011-7S2284 F		



The key:

t_m – average liquid temperature;

t_a – environment temperature;

G – intensity of solar radiation