Energetyka Solarna ensol Sp. z o.o.

Large surface solar collectors technical data DIS150 with double glass for thermal energy storage installations

DIS150 with double glass– a large surface collector designed for thermal energy storage installations.

Solar collector ENSOL DIS150DG was designed for thermal Energy storage installations. A distinctive parameter in relation to standard collectors is a significant reduction of heat losses from the collector to the environment. Heat losses are of special importance during the collector operation in significant temperature differences tm-ta, which occurs for a significant period of time in heat storage installations.

The heat losses reduction translates directly into the reduction of the a1 and a2 coefficients, and they were obtained by:

- the use of two pieces of solar glass,

- increasing the space (insulating air gap) between the solar glass and the absorber,

- increasing the thickness of the lower insulation of the collector,

- increasing the thickness of the lateral insulation of the collector.

In addition, the collector frame was designed to partly take over the role of the mounting set, which on the one hand ensures high resistance to weather conditions, and at the same time considerably facilitates and speeds up the installation of collectors on the ground.

Flat collectors DIS150 have certificate of compatibility with norm DIN EN 12975-1:2011-01 i DIN EN ISO 9806:2018-04 wydany przez TÜV Rheinland Immissionsschutz und Energiesysteme GmbH and Solar Keymark.

Flat collector:	Symbol	Unit	Value
Width	A	mm	6606
Height	B	mm	2350
Depth	C	mm	173
Weight	m	kg	570
Surface	S	m^2	15,50

Collector efficiency DIS 150 (for G = 1000 W/m2)						
Tm-Ta	0 K	10 K	30 K	50 K	70 K	90 K
Power	11 697	11 339	10 549	9 659	8 670	7 582

Parameters relative to the area of the aperture			
Optical efficiency	ηo,hem	%	82,0
Coefficient	a1	$W/(m^2K)$	2,441
Coefficient	a2	$W/(m^2K^2)$	0,009
Parameters relative to the gross area			
Optical efficiency	ηo,b	%	76,5
Coefficient	a1	$W/(m^2K)$	2,23
Coefficient	a2	$W/(m^2K^2)$	0,008
Coefficient of angle of incidence	IAM(K_d=50°)	-	0,91
Connection:	Semi-screw nuts 1 ¼''		
Housing	Aluminium profile		
Cover	Tempered solar glass - Outside: 4mm thick, AR coating - Inside 3,2mm thick, AR coating		
Absorber:			
Absorber's type	6 meander absorbers connected in parallel		
Absorber sheet coating	High selective layer		
Execution technology	Laser welding		
Absorption coefficient	α	%	95
Emission coefficient	ε	%	5
Width	a	mm	6 x 1021
Height	b	mm	6 x 2266
Absorber area		m^2	13,9
Aperture area	A_a	m^2	14,2
Liquid content	V	dm^3	15
Stagnation temperature	T_s	°C	250
Flow: Recommended (15-25dm3/h) per 1m2(absorber)) Nominal (max. 86 dm3/h) per 1m2(absorber) Maximal flow for battery of collectors		dm3/h dm3/h dm3/h	210-345 1200 1900
Lower insulation material:	Mineral wool, thickness 80 mm		
Lateral insulation material:	Mineral wool, thickness 30 mm		
Guarantee	10 years		
Solar Keymark	011-7S2978 F (by 2025-07-31)		

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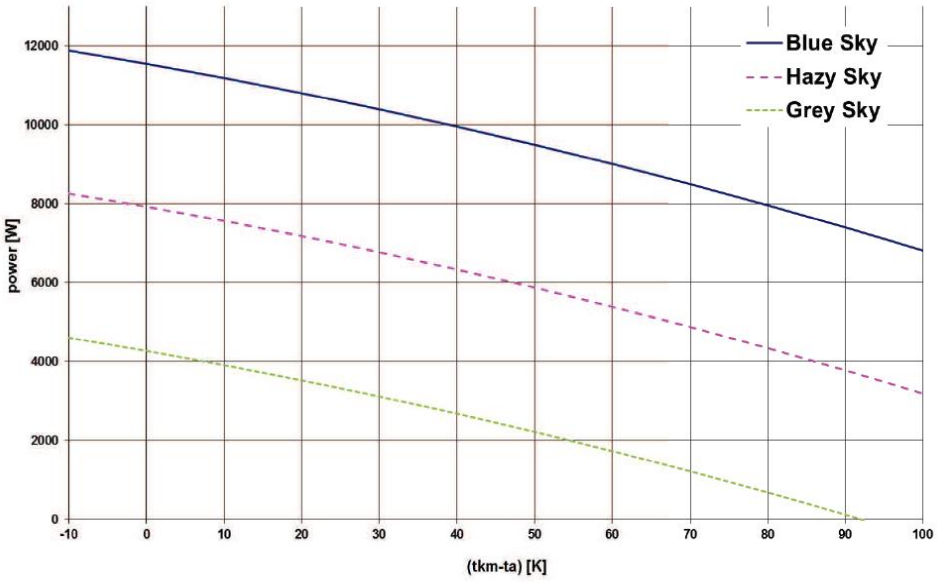
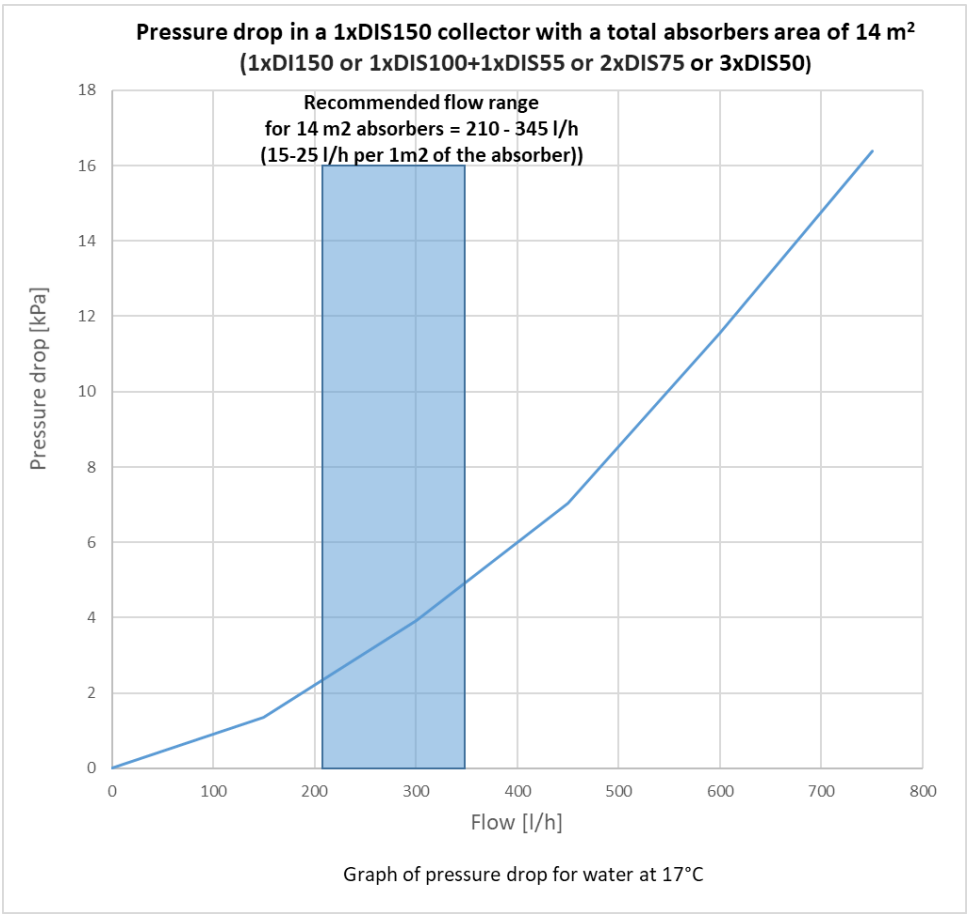
Collector power output





Graph of pressure drop for water at 17°C

The key:
tkm – average liquid temperature;
ta – environment temperature;