Technical characteristics of
PVT 450 Wp

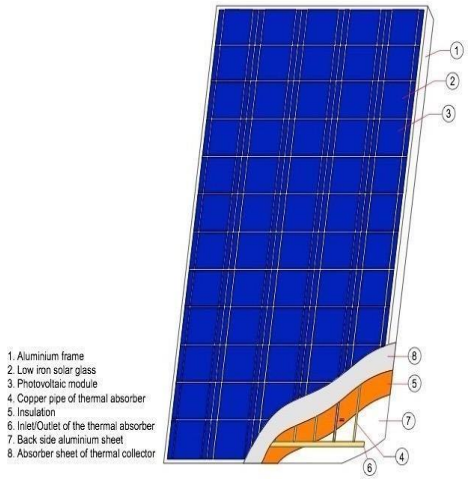
PV module: ML System 450Wp
Solar thermal absorber: Center for Plasma Technologies
Assembled at: Center for Plasma Technologies
Researched and developed by: R&D Center for Plasma Technologies

PVT collectors provide both electrical and thermal energy.
Electrical power is around 15% more than standard PV panel plus 2 to 2.5 times more thermal power compare with electrical power from PV standard module.
The greater part of the absorbed solar radiation by photovoltaic is converted into heat (at about 70% - 80%), small part reflected and the rest into electricity. As result of that cell temperature of PV is increasing. This effect reduces PV electrical efficiency.
In façade or inclined roof installations on buildings, the thermal losses are reduced due to the thermal protection of PV rear surface and PV modules operate at higher temperatures.
This undesirable effect can be partially avoided by **PVT hybrid collector (Pictures a and b)** applying a suitable heat extraction with a fluid circulation, keeping the electrical efficiency at a satisfactory level.

- **Unglazed: PV panel** without additional glass which produce more electrical power.

a)

b)



Data sheet with technical characteristics of PVT 450 Wp:

MODEL		PVT 450Wp
Photovoltaic part	Dimensions	2094x1038x35
	Weight	36kg
	Type of frame	Aluminum
	Front side	Low iron %,AR glass 3.2mm
	Number of PV cells	144
	Type of PV	Monocrystalline
	Dimensions of PV cells	166x83 mm
	Max. electrical Power P max	**450 Wp**
	Module Efficiency	20.7 %
	Temperature Coefficient I_{sc}	0,05 %K
	Temperature Coefficient V_{oc}	-0.33 %K
	Performance Coefficient P_{mpp}	-0.36% K
	Gross area	2.17m2
Thermal part	**Pic thermal power / collector**	**1160 Wp**
	Input and output connection of thermal absorber	Copper pipe F22 mm
	Type of medium	Propylene glycol
	Quantity of medium	0.95l
	Absorber Sheet	Aluminum
	Register	Copper pipe F6mm
	Insulation	Stone wool 20 mm.
	η0,hem, no wind (Collector efficiency based on hemispherical irradiance and no wind)	0.566
	a1 (Heat loss coefficient)	12.43 Wm-2K-1
	a2 (Heat loss coefficient)	0.006 Wm-2K-2