



Imanco

Trading



SOLAR HEATING SOLUTIONS



New Efficient-S



CMG
SOLARI

Sigma



PATENTED



CMG SOLARI



20 Years of Solar Experience

- Manufacturer of solar thermal systems ONLY.
- Based in Italy. Products installed in many countries of the world, UAE included.
- Being not a corporation we must rely on quality products and sell them at competitive prices. Our clients know us with the formula "best product, best price".



Patents and Certification

CMG has 2 International Patents protected products:



European PCT:
IB 2009/006987



WO 2013069034 A1
Countries where patent holds:
Chile, China, India, UE, USA.

Italian Patent:
N. 0001395011

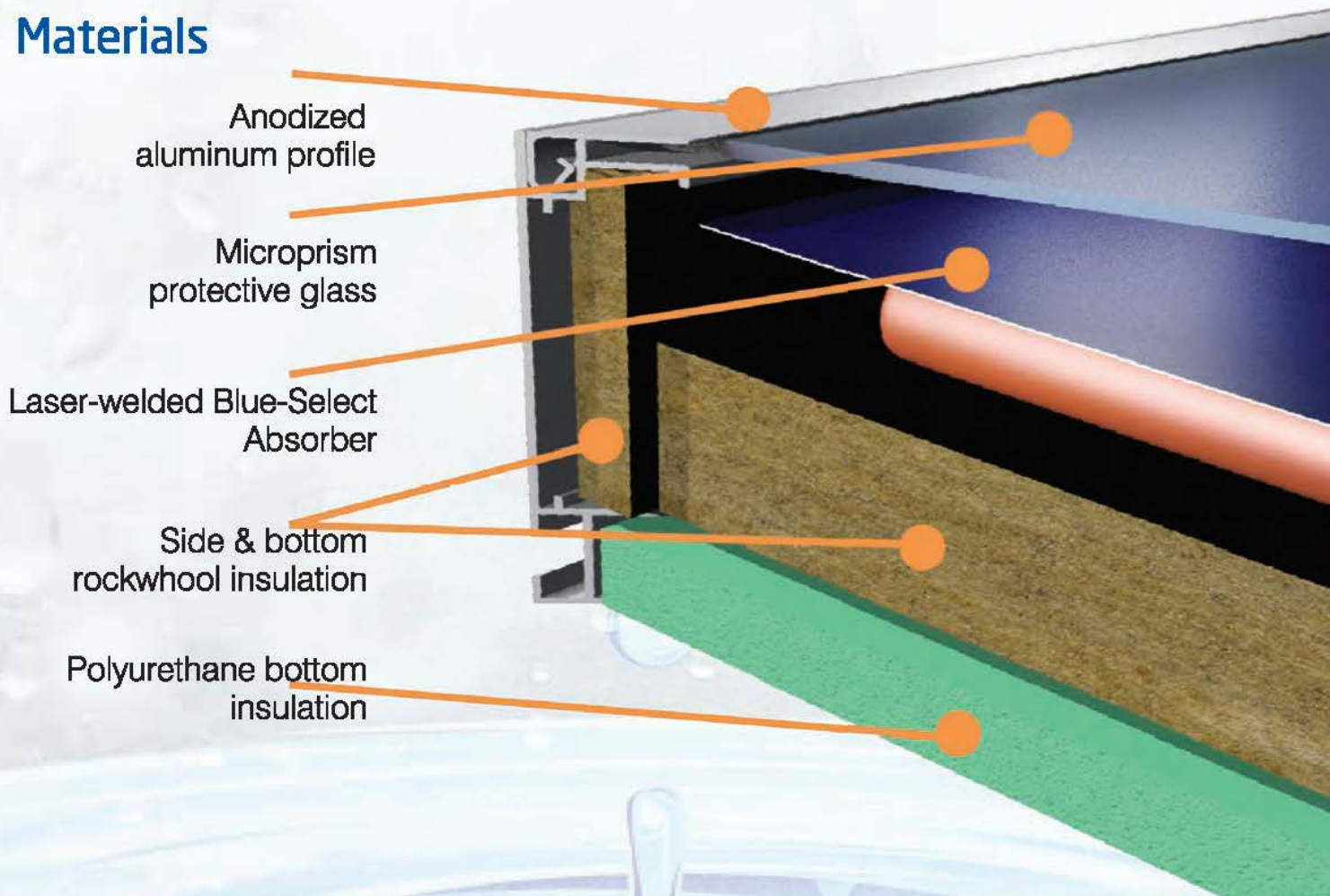


Solar Thermal Technology



ST makes use of solar radiation for the supply of hot domestic water (HDW) or of heat to the user.
Production of 30-80 liters/day per m² of collector area
Exploitable in processes that require large amounts of water for temperatures not exceeding 100 °C

Materials



Anodized aluminum profile

Microprism protective glass

Laser-welded Blue-Select Absorber

Side & bottom rockwool insulation

Polyurethane bottom insulation

Technologies necessary to:

- Make the most of the solar radiation (especially in conditions where it is weakest)
- Provide heat to the highest possible temperature

CMG Production



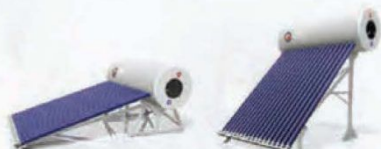
Forced Circulation

Systems where tank and collectors are in separate places. Circulation is imposed by a pump. Easy scalable.



Glycol Natural Circulation

Classic glycol natural circulation systems. They work by natural convection. Tank must be placed atop the collector



Glycol Natural Circulation with Inertial Tech

High quantity of heat stored. They can release heat to water even hours after the sunset.



Natural Circulation with Condensation Tech

Exploiting the evaporation and condensation cycle of a fluid to perform heat exchange at maximum efficiency.

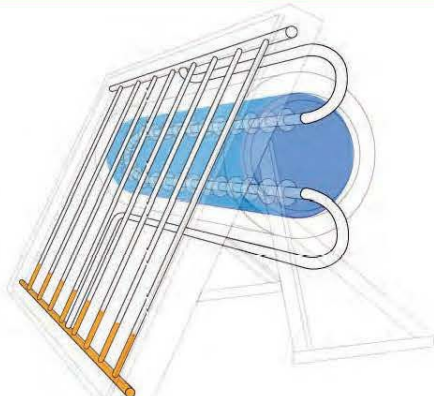


Collector EVO

- Full-plate absorber with Mirotherm® selective treatment (emissivity <math>< 5\%</math>)
- Anodized aluminium frame, made of continuous profile with 1 junction only (better insulation)
- Resistant to salt water environments
- 4mm Prismatic solar security glass (replaceable) with low-iron content, sealed with silicone resistant to high temperatures
- Laser welding without filler metal, for max. heat transfer to the harp in copper
- Insulation on bottom and on sides
- Certification EN-12975-2 and Solar Keymark seal of quality.



Natural Circulation by Condensation



at rest, the thermovector fluid (yellow painted) lies on the lower part of the collector, in liquid form

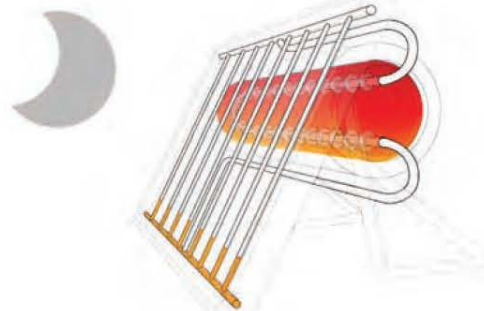


in presence of the sun, the evaporation and condensation cycle of the fluid quickly starts...

How it works...










...transferring the sun energy to water contained in the tank.



At night, the thermovector fluid comes back into liquid form on the lower part of the collector thus preventing the inverse cycle to take place, as instead would happens with traditional technology.

NewEfficient System

-  **New Condensation Cycle:** Solar circuit working with an evaporation-condensation cycle of an ethanol-based azeotropic fluid, characterized by high heat exchange efficiency, effective from -60°C up to $+180^{\circ}\text{C}$.
-  **Laser-welded Blue-Select Absorber:** Single plate absorber, with Blue-Select treatment (absorption 95%, emissivity 5%) and laser welding, for an optimal heat transfer to the thermovector fluid.
-  **Push-Tester Control (optional):** Immediate reading of the anode wear through the touch of a button placed on the tank.
-  **Microprismatic Glass :** 4 mm thick protective glass with microprisms finishing, with very high transparency and output barrier, to retain all the absorbed heat
-  **Extractable Inspection Flange:** tank inspection flange for limestone cleaning, with a connection for integration by electrical resistance (optional).
-  **Enameled tank in Steel:** Accumulation tank in steel with double Enameling treatment at 850°C , equipped with cathodic protection.
-  **Jacket-type Heat Exchanger:** Jacket-type heat exchanger, great exchange area to guarantee an optimal heat transfer.

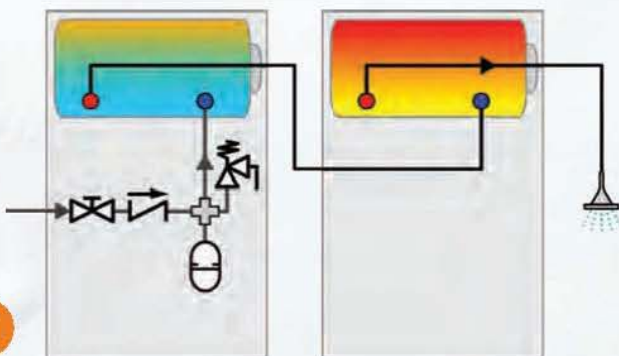
NewEfficient System

The most innovative system on the market:

- tank placed on the rear of the collector
- simplicity of connection, plug & play installation
- works even if not levelled
- it does not require to be covered during installation
- no maintenance on the solar circuit
- perfect for application with maximum architectural integration
- no overheating problems

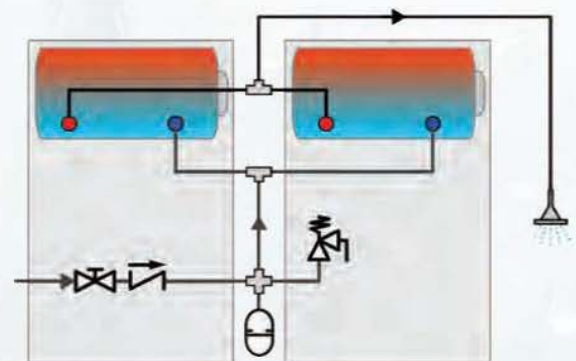


This product can be used as a single block or can be connected in various combinations **series / parallel** in order to implement the system that best suits the needs of the customer in terms of heat production, accumulation amount and space available.



a

Series Connection:
Higher average temperature



b

Parallel Connection:
Greater production, better performance in the whole year

NewEfficient-S Condensation Technology

"Technologically immune"
to typical glycol natural circulation issues:



Sealed circuit that can work up
No liquid evaporating problems



Working fluid freezing point is -60° .

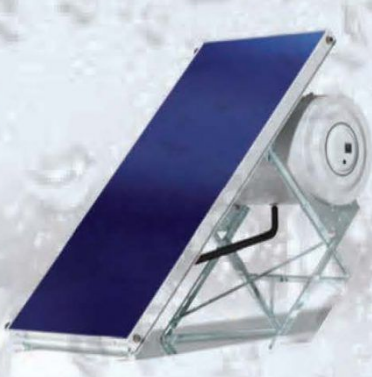


The solar circuit does not need
any intervention, the liquid does not age or
become acid, avoiding internal corrosion.

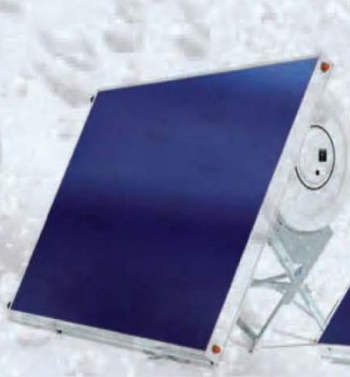
New Efficient-S



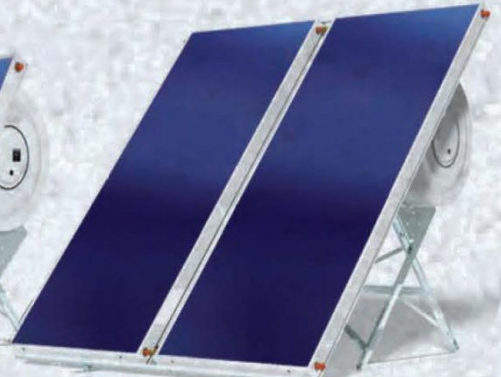
CMG
SOLARI



NEHS-160



NEHS-200



NEHS-300

Installation Examples:



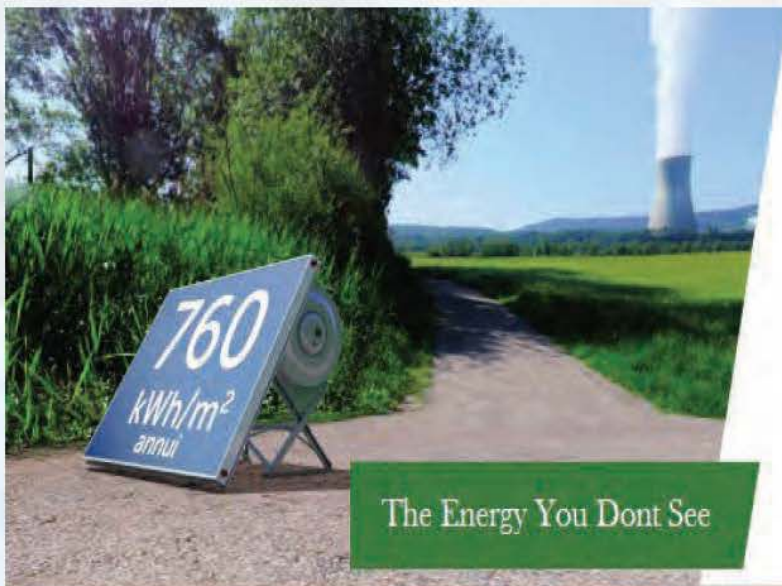
Installation Examples:

This product can be used as a single block or can be connected in various combinations series / parallel in order to implement the system that best suits the needs of the customer in terms of heat production, accumulation amount and space available.



5

The Most efficient system



The Energy You Dont See

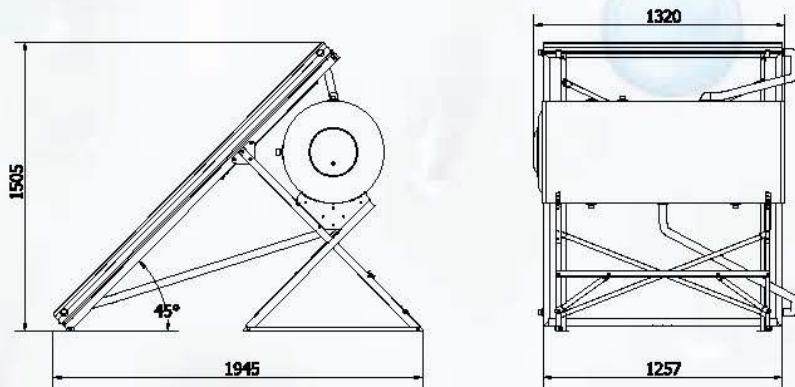
NewEfficient-S



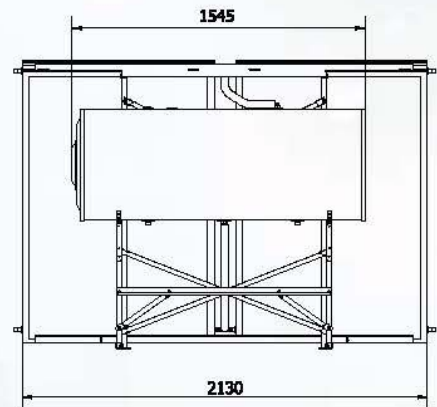
Patented Italiano N.0001395011. PCT/1B2009/006987

Dimensions [mm]

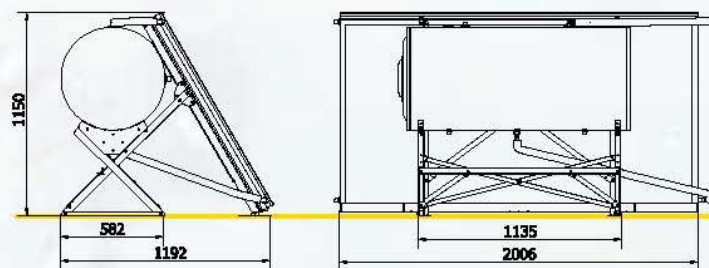
NEHS-161-2,5



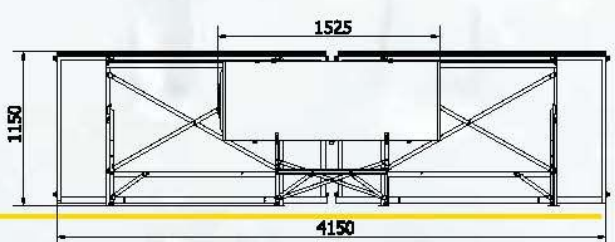
NEHS-302-4



NETPS-201-2,5



NETPS-302-5



Accessories

Push-Tester Control



Detection system of the magnesium anode state of wear.

Electronic Anode



Impressed current cathodic protection system

Electric Resistance



Thermostat and armored electric resistance 1,2 kW (1" ¼ M)

Water Heater integration flange



Flange with water-to-water heat exchanger

Specification

TANK

Building Material: steel with double enamel treatment at 850 °C
 External Cover: prepainted steel
 Working Pressure: 6 bar Max. Working Pressure: 10 bar
 Test Pressure: 15 bar
 Insulation: polyurethane, thickness 50 mm
 Heat Exchanger: jacket-type

COLLECTOR

Absorber: single-plate with Blue-Select high selective treatment and laser welding
 Absorption: 95% Emission: 5% (± 2%)
 Isolamento: ecological glass wool, thickness 30 mm on bottom and 15 mm on walls

SUPPORT FRAME

Building Material: pre-galvanized steel sheet

Version	Tank Capacity	Gross Area m ²	Aperture Area m ²	Approx. empty weight kg	Installation		Price VAT excl.
	L				flat roof	sloping roof	
NEHS-161-2,5	160	2.53	2.31	130	●	●	
NEHS-302-4	300	4.04	3.66	170	●	●	
NETPS-201-2,5	200	2.52	2.33	145	●	-	
NETPS-302-5	300	5.06	4.62	210	●	-	

kit-EVO

NATURAL CIRCULATION SYSTEMS WITH GLYCOL

- Single-plate laser welded Blue-Select absorber
- Tank with double vitreous enameling treatment at 850 °C and stainless steel cover
- Installable on flat and sloping roofs
- Tempered solar glass with low iron content
- Removable inspection flange



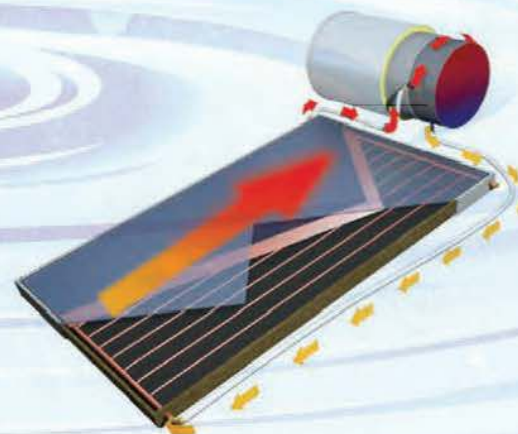
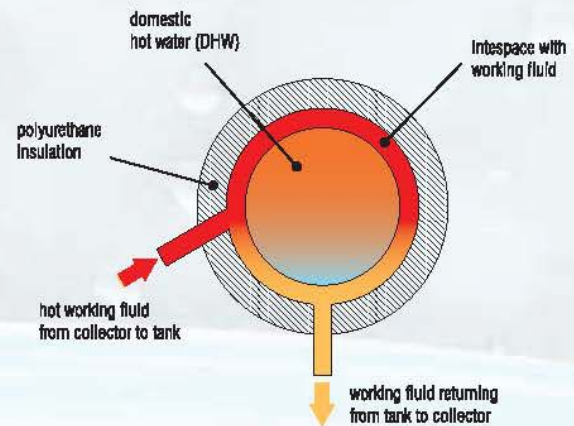
Warranty 5 years



The EVO kit is available in a lowered frame version EQUATOR that, with a height just above one meter, becomes practically invisible on flat roofs

Natural Circulation with Glycol

The primary circuit of the system is constituted by the solar collector and the interspace inside the jacketed tank. The absorbing surface transmits heat to the working fluid that, getting hotter, grows in volume, and becoming more rarefied and light, rises along the plate reaching the interspace where it transfers its heat to the domestic water contained in the tank through the surface of contact. The working fluid getting cooler, grows in specific weight, and so descends to the bottom of the absorber plate to start a new cycle. The process lasts until the plate gets heated by the sun. With respect to other classic systems, EVO is characterized for having the working fluid inlet positioned in the median part of the interspace, enabling a quicker heating of the water present in the upper part of the DHW tank and a better heat stratification.





Collectors

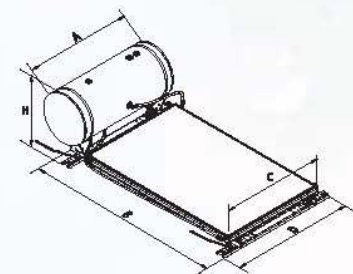
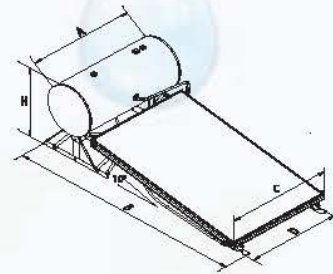
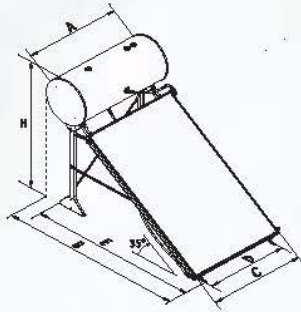
Particularities

- Selective absorber
- Laser welding
- Aluminium frame
- A single riveted joint
- Possibility of glass replacement
- Walls insulation

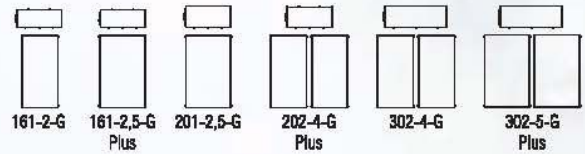
Installation Examples:



Dimensions [cm]



Sizes:



flat roof						
	161-2-G	161-2,5-G Plus	201-2,5-G	202-4-G Plus	302-4-G	302-5-G Plus
A	130	130	130	130	155	155
B	229	229	232	232	232	232
C	100	125	125	215	215	265
D	97	97	107	107	133	133
E	220	220	220	220	220	220
H	178	178	184	184	184	184

flat roof						
	161-2-G	161-2,5-G Plus	201-2,5-G	202-4-G Plus	302-4-G	302-5-G Plus
A	130	130	130	130	155	155
B	282	282	282	282	282	282
C	100	125	125	215	215	265
D	100	100	112	112	138	138
H	92	92	97	97	97	97

sloping roof						
	161-2-G	161-2,5-G Plus	201-2,5-G	202-4-G Plus	302-4-G	302-5-G Plus
A	130	130	130	130	155	155
B	240	240	240	240	240	240
C	118	125	125	215	215	265
D	150	150	150	150	150	150
H	74	74	74	78	78	78

Accessories

Electronic Anode



Impressed current cathodic protection system

Push-Tester Control



Detection system of the magnesium anode state of wear.

Electric Resistance



Thermostat and armored electric resistance 1,2 kW (1" ¼ M)

Water Heater integration flange



Flange with water-to-water heat exchanger

Specification

TANK

Building Material: steel with double enamel treatment at 850 °C
 External Cover: pre-painted steel (stainless steel as optional)
 Working Pressure: 6 bar
 Max. Working Pressure: 10 bar Test Pressure: 15 bar
 Insulation: polyurethane, thickness 60 mm
 Heat Exchanger: jacket type

COLLECTOR

CMG EVO 2000/2500

selective flat collector

SUPPORT FRAME

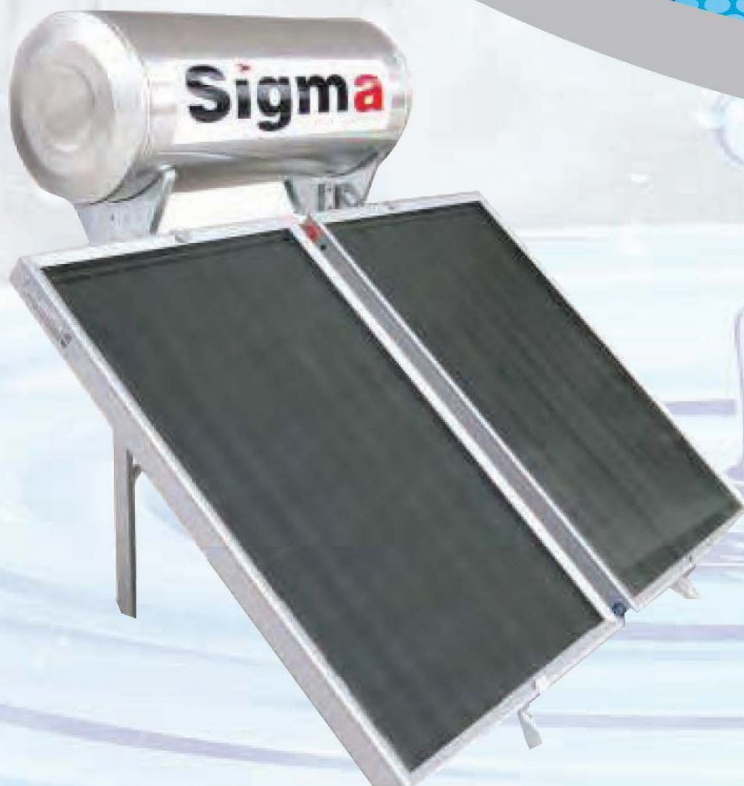
Building Material:

hot dip galvanized steel profiles

Size	Tank Capacity L	Absorber Plates #	Aperture Area m ²	Approx. empty weight kg	Price VAT excl.		
					flat roof	flat roof EQUATOR	sloping roof
kit EVO 161-2-G	150	1 (x 2 m ²)	1,83	95			
kit EVO 161-2,5-G Plus	150	1 (x 2,5 m ²)	2,34	105			
kit EVO 201-2,5-G	200	1 (x 2,5 m ²)	2,34	120			
kit EVO 202-4-G Plus	200	2 (x 2 m ²)	3,66	150			
kit EVO 302-4-G	300	2 (x 2 m ²)	3,66	175			
kit EVO 302-5-G Plus	300	2 (x 2,5 m ²)	4,68	190			



Sigma®



PRODUCT CONFORMITY
ASTM C1029
Certificate No. CL13020195



The company



Our company

Sigma Energy, manufactures industrial solar thermal systems from 1983, using always the latest cutting edge technology. Our company is located in the city of Volos, Central Greece.

Our company is a family company, and already the third generation has been positioned in the managing of the company. From the first days of the company's establishment **Sigma Energy** occupies 15 people (Managing stuff, engineers, labour forc, installation crew).

We allocate a vast network of partners in Greece and throughout Europe, Africa and Gulf region as well. We expand day by day using a specific business development strategy,structured through our many years of experience.

5 reasons to choose Sigma as your long term partner

1. We posses a market share of 8% for the last 6 years in the Greek solar market. First in sales in Central Greece, for the last 20 years.
2. **Our flexibility. Our production facility is very adaptive. Therefore we can adapt to any special need, that our clients might come up with.**
3. 32 years of solar engineering.
4. Our technical departmen, deals directly with any technical issue that might arise, either this is addressed to a wholesale or retaile partner.
5. Our 20 years of EPC experience.

We have earned our customers respect since we provide:

- High product quality
- Specific delivery time
- Competitive pricing
- After sales support
- Innovative products



Headquarters in Volos

Sigma in numbers

- Total complete systems installed from 1983 : 60.000 (sixty thousand).
- Total installed collectors in sqm: 650.000 sqm.
- Total installed capacity of storage tanks: 20.000 tonnes.
- Our manufacturing capacity, oscillates at 60,000 m² of collector area and 200,000 litres, per year.

Production specifications - standards

Sigma's Energy manufacturing process is certified with the ISO 9001: 2008.

Our solar collectors are solar keymark certified and are constantly checked for their quality and efficiency as well.

Our complete solar systems, have been also certified, based on the energy efficiency from EAOT (Greek standardisation institution).

Sigma's solar systems, are manufactured based on the latest European standards, of EN 12975-1 and EN 12975-2.





Collector MED



Absorbing the sun

The MED 1.5, MED2, S2.3 and MED 2.5 collectors are manufactured based on the most modern certifications and specifications in the EU.

The specific type of collectors, are destined for countries similar to Greece's climate conditions.


Every type is laser welded, securing optimum contact between the absorber and the copper pipes.

The specific collectors, can be used either for residential, commercial and industrial projects.


In the same time, they can be used in thermosiphonic and forced systems (residential use) and in commercial and industrial projects, installed in the form of banks.





Model	MED 1.5
External dimensions (mm)	1500 x 1007 x 85
Vertical copper pipes - diameter, thickness and number (mm)	Ø6 x Ø 0.40 9 pieces
Horizontal copper pipes - diameter, thickness and number (mm)	Ø22 x Ø 0.70 with Ø22 joints on two sides
Selective aluminium absorber (thickness and number) (mm)	Aluminium 110 x Ø 0.40, 9 pieces, laser welded
Spectrum absorber coating	Selective absorber with blue titanium absorbance α=95%, emittance ε=3.5%
Insulation material back / side	30mm / 20 glasswool
Frame	Anodised aluminium profile
Glass	6-4mm low iron tempered glass with absorbance 0.90%
Backing sheet	Aluminium 0.4mm
Weight	23kg
Fluid volume	1.3l



Model	MED 2.3
External dimensions (mm)	1899 x 1389 x 85
Vertical copper pipes - diameter, thickness and number (mm)	Ø6 x Ø 0.40 10 pieces
Horizontal copper pipes - diameter, thickness and number (mm)	Ø22 x Ø 0.70 with Ø22 joints on two sides
Selective aluminium absorber (thickness and number) (mm)	Aluminium 110 x Ø 0.40, 10 pieces, laser welded
Spectrum absorber coating	Selective absorber with blue titanium absorbance α=95%, emittance ε=3.5%
Insulation material back / side	30mm / 20 glasswool
Frame	Anodised aluminium profile
Glass	6-4mm low iron tempered glass with absorbance 0.90%
Backing sheet	Aluminium 0.4mm
Weight	29kg
Fluid volume	1.9L



Model	MED 2
External dimensions (mm)	2006 x 1007 x 85
Vertical copper pipes - diameter, thickness and number (mm)	Ø6 x Ø 0.40 9 pieces
Horizontal copper pipes - diameter, thickness and number (mm)	Ø22 x Ø 0.70 with Ø22 joints on two sides
Selective aluminium absorber (thickness and number) (mm)	Aluminium 120 x Ø 0.40, 9 pieces, laser welded
Spectrum absorber coating	Selective absorber with blue titanium absorbance α=95%, emittance ε=3.5%
Insulation material back / side	30mm / 20 glasswool
Frame	Anodised aluminium profile
Glass	6-4mm low iron tempered glass with absorbance 0.90%
Backing sheet	Aluminium 0.4mm
Weight	27kg
Fluid volume	1.6L



Model	MED 2.5
External dimensions (mm)	2006 x 2570 x 85
Vertical copper pipes - diameter, thickness and number (mm)	Ø6 x Ø 0.40 11 pieces
Horizontal copper pipes - diameter, thickness and number (mm)	Ø22 x Ø 0.70 with Ø22 joints on two sides
Selective aluminium absorber (thickness and number) (mm)	Aluminium 110 x Ø 0.40, 11 pieces, laser welded
Spectrum absorber coating	Selective absorber with blue titanium absorbance α=95%, emittance ε=3.5%
Insulation material back / side	30mm / 20 glasswool
Frame	Anodised aluminium profile
Glass	6-4mm low iron tempered glass with absorbance 0.90%
Backing sheet	Aluminium 0.5mm
Weight	34kg
Fluid volume	1.9L

Production specifications - standards

Sigma's Energy manufacturing process is certified with the ISO 9001:2008.

Our solar collectors are solar keymark certified and are constantly checked for their quality and efficiency as well.

Our complete solar systems, have been also certified, based on the energy efficiency from ENOT (Greek standardisation institution).

Sigma's solar systems, are manufactured based on the latest European standards, of EN 12875-1 and EN 12875-2.





Thermosiphonic storage tank placed in an horizontal position



Surrounding jacket for maximum efficiency

Since the system, functions without a circulator, the Sigma storage tank uses, for maximum efficiency, a jacket heat exchanger, which surrounds most of the storage tank's perimeter.

Powerful polyurethane insulation

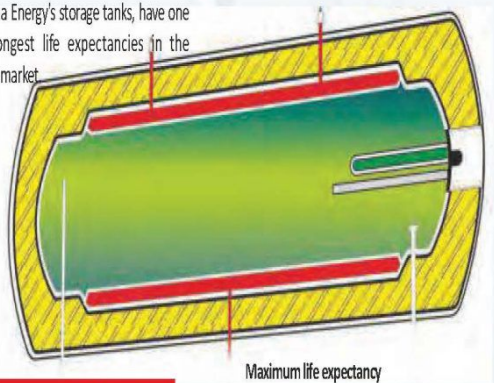
Hot water due to the powerful 50mm insulation, which surrounds the whole storage tank, with no C.F.C. The infusion, is done with special mixing machine for perfect and homogeneous result.

Due to the low carbon steel, the enamelling process, the outer anodised aluminium frame, and the technical integrity of our company, we guarantee the long life expectancy of the storage tank. Even under the most harsh conditions, a solar system can face, Sigma Energy's storage tanks, have one of the longest life expectancies in the European market.

Safe use of clean water

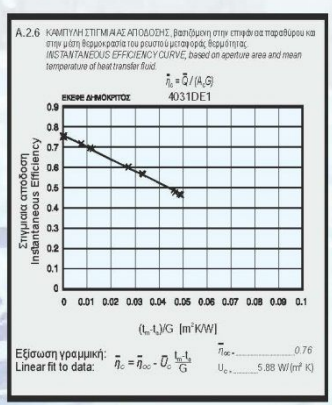
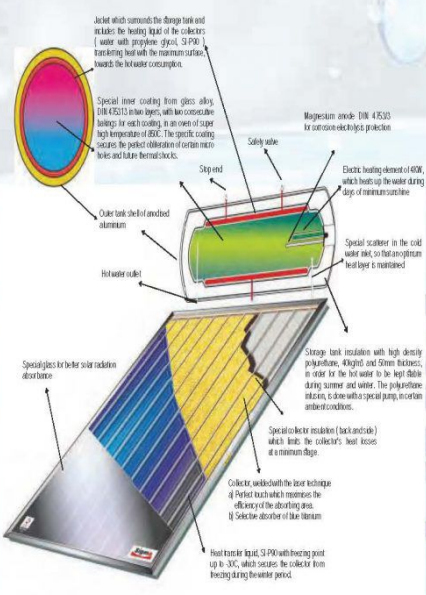
The inner surface of the storage tank, has been enamelled with a special inactive material - mixture of inorganic silicon based salts - with no chemicals added (enamelling process).

The high baking temperature in 850°C, creates an inner surface of glass alloy, which results to the fact that, the water inside the storage tank, to be so clear, not even for hot water use, but also for other house uses. Perfectly secure, since it deters the development of bacteria DIN 4753 Teil 3& 6. The enamelling process is certified by the enamel quality labelling (DEV).



Maximum life expectancy

Thermosiphonic systems





Installation Examples:



Solar systems for Flat roof

Solar thermosiphonic system for flat roof installation. Easy and economical installation, no circulator required, minimal maintenance of the system. System inclination 45. South orientation.

Flat roof solar collectors for flat roof. The storage tank can be installed in the heating room, and the hot water system requires a differential thermostat and a circulator. System inclination 45. South orientation



Model	L	150	200	300	500	750	1000
Coil S1 input/outlet	G	1"	1"	1"	1"	1"	1"
Max. collector's area S1	m ²	2,7	4	6	10	16	20
Heat exchanging surface for S1	m ²	0,78	1	1,55	1,92	2,2	2,5
In connection to S1 with 80° C and water temperature at 15° C / 60° C	kw	13,1	14,4	22,9	25,8	30,15	39,5
KW/L/h (solar collector)	l/h	900	900	900	900	900	900
Power of the electric heater	Kw	4	4	4	6	6	2x6
Input cold water	G	1"	1"	1"	1¼"	1¼"	1¼"
Output hot water	G	1"	1"	1"	1¼"	1¼"	1¼"
Recirculation	G	1"	1"	1"	1"	1"	1"
Weight	kg	61	85	110	140	228	243
Size H	mm	1050	1400	1620	1700	1800	2000
Size D	mm	560	600	630	750	1000	1000
Insulation diameter	mm	55	55	55	55	100	100

Model	120	150	200	300
Outer casing	Anodised aluminium of 0.6mm	Anodised aluminium of 0.6mm	Anodised aluminium of 0.6mm	Anodised aluminium of 0.6mm
Insulation	Polyurethane C.F.C free, p = 40kg/m ² , thickness 50mm	Polyurethane C.F.C free, p = 40kg/m ² , thickness 50mm	Polyurethane C.F.C free, p = 40kg/m ² , thickness 50mm	Polyurethane C.F.C free, p = 40kg/m ² , thickness 50mm
Storage tank thickness (mm)	2,5	2,5	2,5	2,5
Storage tank protection	850 °C with enamelling process	850 °C with enamelling process	850 °C with enamelling process	850 °C with enamelling process
Working pressure (Bar)	4	4	4	4
Dimensions (mm)	Φ520 x 1290	Φ520 x 1290	Φ580 x 1290	Φ580 x 1690
Jacket capacity in liquid(L)	4,0	4,6	4,9	5,8
Weight (kg)	48	57	65	90