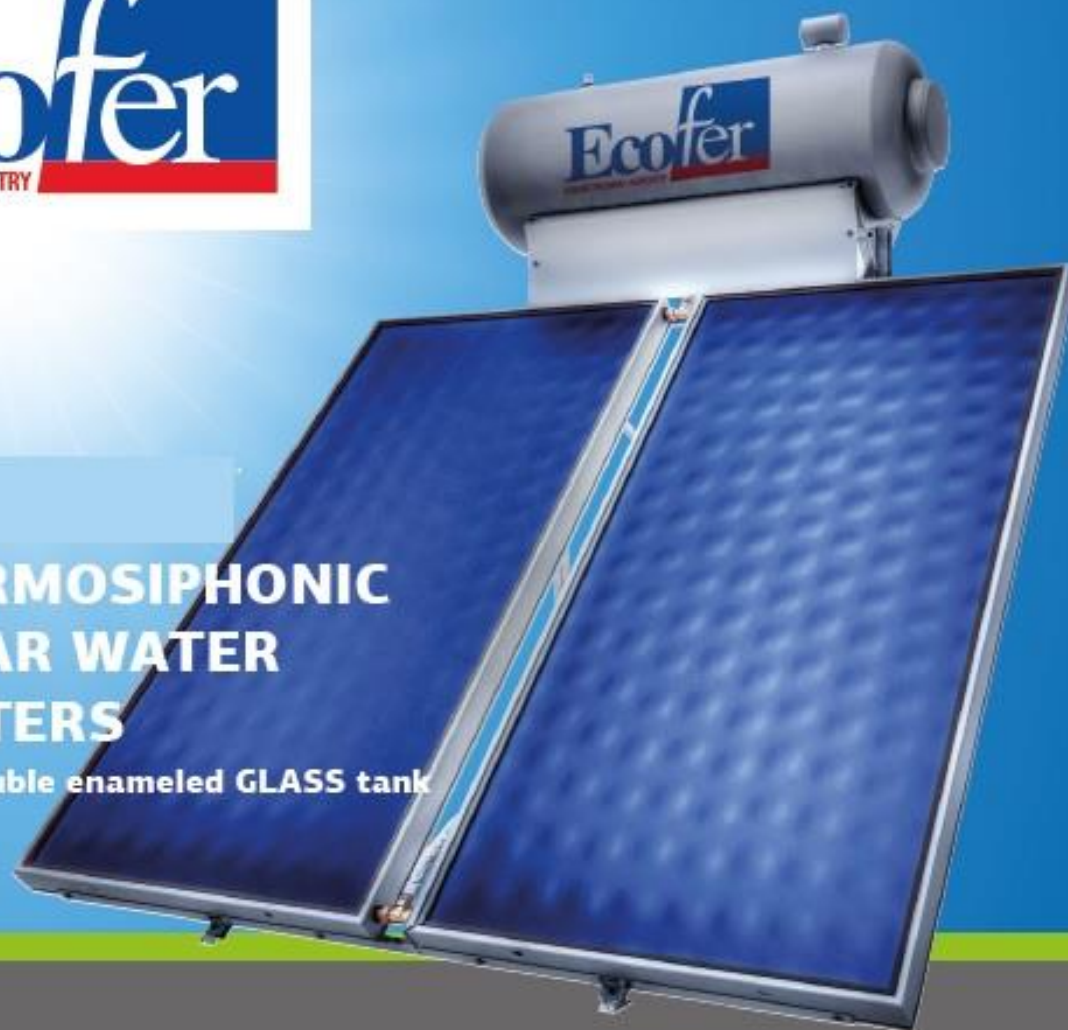


THERMOSIPHONIC SOLAR WATER HEATERS

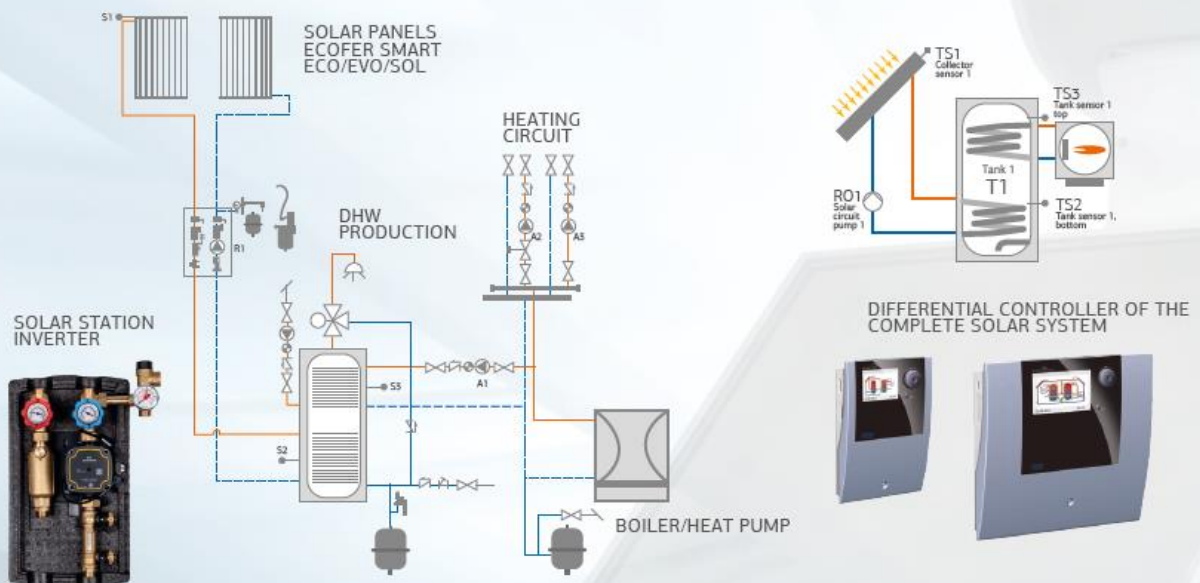
With double enameled GLASS tank



- External cover from aluminum, treated with electrostatic painting "seaside class"
- Inner tank from low carbon steel, 2.5mm thick. Double enameled, according DIN 4753, baked at 860°C
- Heat exchanger mantel type, of the same material and thickness of 1.5mm
- Insulation 50mm thick, of expanded P.U. CFC free of high density (52kg/m³)
- Cathodic protection with replaceable magnesium rod L=500mm

DESCRIPTION

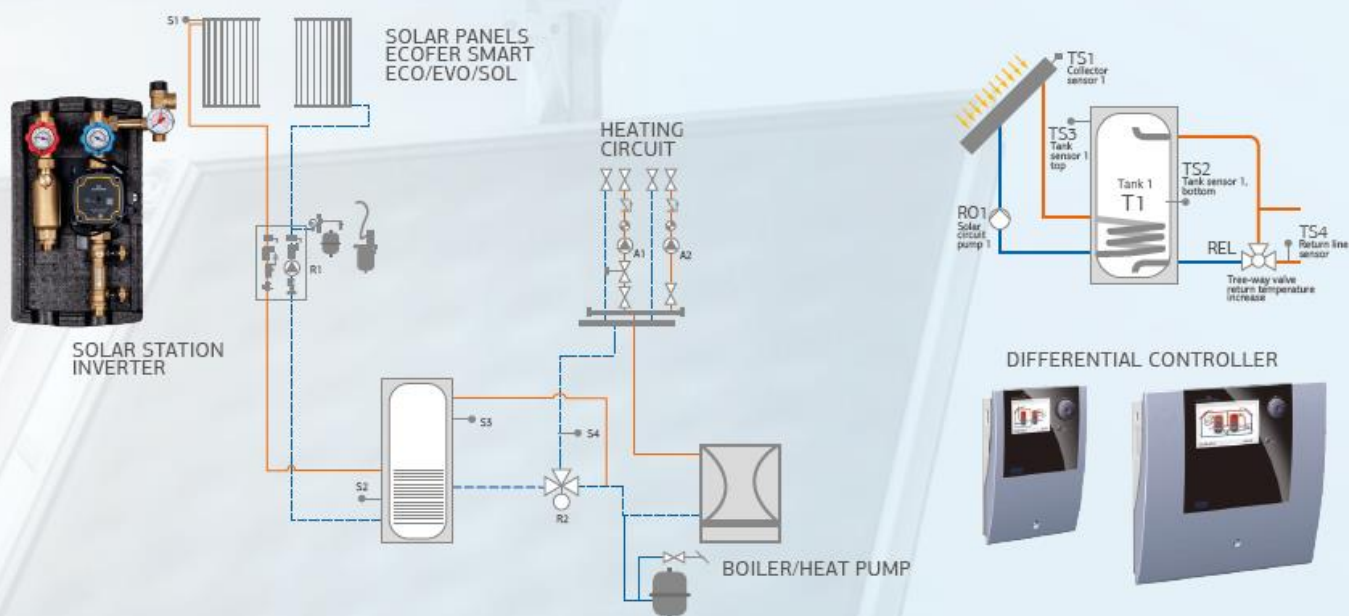
Glass enameled tank: 120 lt / Blue selective Collector: 2,00 m ²
Glass enameled tank: 160 lt / Blue selective Collector: 2,3 m ²
Glass enameled tank: 160 lt / Blue selective Collector: 2,5 m ²
Glass enameled tank: 200 lt Glass / Blue selective Collectors: 2 x 1,5 m ²
Glass enameled tank: 300 lt / Blue selective Collectors: 2 x 2 m ²



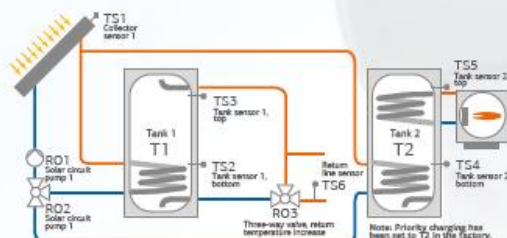
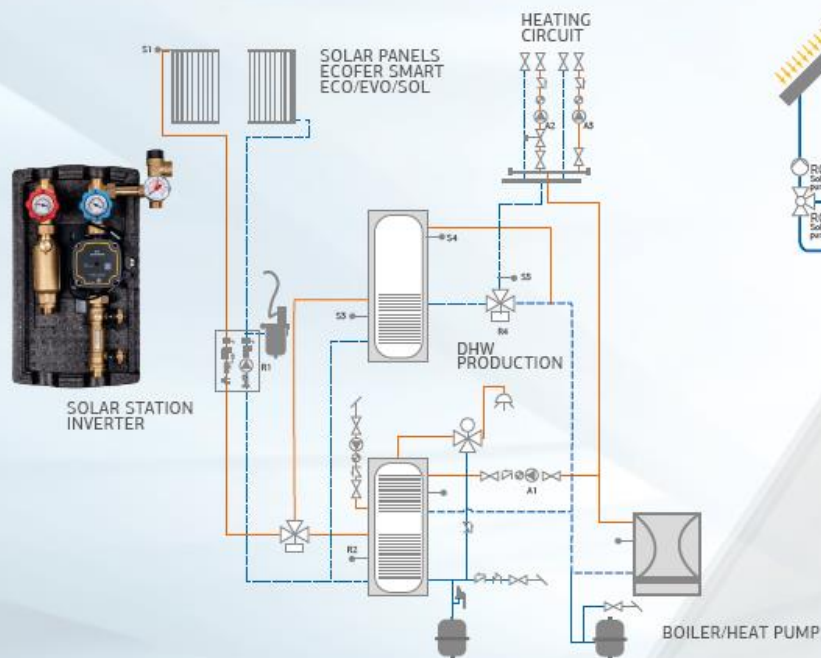
Complete solar system	150/2,5	200/3	300/4	500/6	750/10	1000/14
Vertical floor standing storage tank with double heat exchanger	150 lt	200lt	300lt	500lt	750lt	1000lt
Double heat exchangers	•	•	•	•	•	•
Hugh Selective flat solar thermal collectors	1	2	2	3	5	7
Selective surface	2,5m ²	3 m ²	4 m ²	6 m ²	10 m ²	14 m ²
Solar station includes: Ball valve with thermometer, safety valve 6 bar with pressure gauge, circulation pump GRUNDFOS PM2 15-65 130, flowmeter (2 to 12 lt/min) and filling &draining valve, degasifier with manual air vent.						
Differential controller Smart Sol Nano Advance	•	•	•	•	•	•
Differential controller includes: 2 Solar Thermal Plant Tank Sensors PT 1000 PVC, Length 2500mm, 1 Solar Thermal Plant Collector Sensor PT 1000Silicone, Length 2500mm high temperatures (180o C)						
Collectors base	•	•	•	•	•	•
Propylene glycol antifreeze	2 lt	2 lt	3 lt	4 lt	5 lt	7 lt
Collectors mounting kit	•	•	•	•	•	•
Automatic filling valve	•	•	•	•	•	•
Cross fitting chamfered ring and copper connections Φ22×22	•	•	•	•	•	•
Automatic air vent & valve	•	•	•	•	•	•
Electrical resistance	4 kw	4 kw	4 kw	On demand	On demand	On demand
Expansion vessel	8 lt	8 lt	18 lt	24 lt	24 lt	35 lt
Pressure expansion vessel for storage tank	12lt	16lt	24lt	50lt	60lt	80lt

FORCED CIRCULATION SYSTEMS for space heating

Ecofer
SOLAR THERMAL INDUSTRY



Complete solar system	500/10	800/12	1000/16	1500/20	2000/24
Buffer tank with one heat exchanger	500 lt	800lt	1000lt	1500lt	2000lt
High Selective flat solar thermal collectors	5	6	8	10	12
Selective surface	10m ²	12 m ²	16 m ²	20 m ²	24 m ²
Solar station Inverter Smart Sol	•	•	•	•	•
Solar station includes: Ball valve with thermometer, safety valve 6 bar with pressure gauge, circulation pump inverter with PWM signal,) and filling &draining valve, degasifier with manual air vent.					
Differential controller Smart Sol Top	•	•	•	•	•
Differential controller includes: 3 Solar Thermal Plant Tank Sensors PT 1000 PVC, Length 2500mm, 1 Solar Thermal Plant Collector Sensor PT 1000Silicone, Length 2500mm high temperatures (180o C)					
Collectors base	•	•	•	•	•
Propylene glycol antifreeze	5 lt	6 lt	8 lt	10 lt	12 lt
Automatic filling valve	•	•	•	•	•
Cross fitting chamfered ring and copper connections Φ22×22	•	•	•	•	•
Automatic air vent & valve	•	•	•	•	•
Automatic air vent & valve	•	•	•	•	•
Electrical resistance	4 kw	4 kw	4 kw	On demand	On demand
Expansion vessel	24 lt	35 lt	50 lt	80 lt	80 lt
Pressure expansion vessel for storage tank	35lt	35lt	50lt	80lt	100lt



DIFFERENTIAL CONTROLLER OF THE COMPLETE SOLAR SYSTEM



Complete solar system	500/160/12	800/200/16	1000/300/18	1500/500/20
Buffer tank with one heat exchanger	500 lt	800lt	1000lt	1500lt
Vertical floor standing storage tank with double heat exchanger	160 lt	200lt	300lt	500lt
High Selective flat solar thermal collectors of 2m ²	6	8	9	10
Selective surface	12m ²	16 m ²	18 m ²	20 m ²
Solar station Inverter Smart Sol	•	•	•	•
Solar station includes: Ball valve with thermometer, safety valve 6 bar with pressure gauge, circulation pump inverter with PWM signal,) and filling &draining valve, degasifier with manual air vent.				
Differential controller Smart Sol Plus Premium	•	•	•	•
Differential controller includes: 5 Solar Thermal Plant Tank Sensors PT 1000 PVC, Length 2500mm, 1 Solar Thermal Plant Collector Sensor PT 1000Silicone, Length 2500mm high temperatures (180o C)				
Collectors base	•	•	•	•
Propylene glycol antifreeze	6 lt	8 lt	9 lt	10 lt
Collectors mounting kit	•	•	•	•
Automatic filling valve	•	•	•	•
Cross fitting chamfered ring and copper connections Φ22×22	•	•	•	•
Automatic air vent & valve	•	•	•	•
Electrical resistance	4 kw	4 kw	4 kw	On demand
Expansion vessel	24 lt	35 lt	50 lt	80 lt
Pressure expansion vessel for storage tank	35lt	35lt	50lt	80lt



SMART collector series

for the Mediterranean climate!

SMART collector series

High aesthetics and functionality are the main characteristics of the solar collector series **SMART ECOFER** innovates with evidence and presents the advantages of the collector series designed for the **Mediterranean climate!**



IKONOMOU Z. KOSTAS HEATING - AIR CONDITIONING - SOLAR THERMAL MANUFACTURER

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Branch: 6, ITHOMIS STR. GR-15231 ATHENS GREECE

TEL.: (+30) 2106715510 Whatsapp: (+30) 6940889459 FAX: (+30) 2106542877

www.smartsol.gr mail: ecofer@ecofer.gr

SMART collector series

SMART EVO

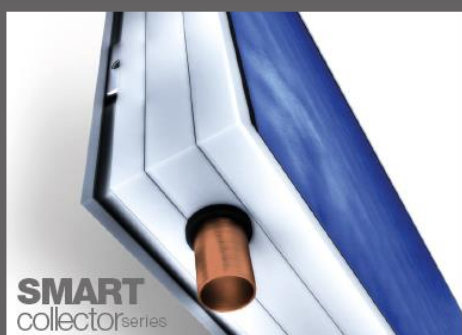
- Absorptive aluminum surface with blue selective PVD coating technology.
- Ø8mm Risers.

SMART ECO for hot climate

- Absorptive aluminum surface with black selective coating.
- Ø8mm Risers.

SMART ARGO for open loop systems

- Absorptive aluminum surface with blue selective PVD coating technology
- Ø15mm Risers.



- 8 available sizes range from 1.5 m² to 2.9 m².
- Global installation system with internal movable parts
- Lightweight for easy transport and installation.
- One-piece anodized profile, non-corrosion technology for ultimate seal against moisture and air micro-particles.
- Safety glass with high permeability.
- Back and side glass-wool insulation.
- HARP type absorber (headers and risers) welded with **Laser** technology
- x2 stainless vents positioned at the bottom.
- Vertically or horizontally mounting possibility
- x2 or x4 outlets Cu D22.

Technical Data		SMART EVO / SMART ECO							
Type	Sl	SE 15	SE 17	SE 19	SE 20	SE 23	SE 25	SE 27	SE 29
Overall Area	m ²	1.51	1.68	1.96	2.02	2.25	2.52	2.66	2.92
Absorber Area	m ²	1.35	1.51	1.79	1.83	2.03	2.33	2.43	2.71
Length Width Height	mm	1503	1420	1503	2006	1893	2006	2261	2006
		1007	1183	1305	1007	1183	1257	1183	1457
		85	85	85	85	85	85	85	85
Weight (Dry)	Kg	21	23	26	27	29	34	36	42
Absorber Volume Capacity	Ltr.	1.3	1.4	1.5	1.6	1.8	1.9	2	2.1

Max Operating Pressure: 10 bar

Technical Data		SMART ARGO							
Type	Sl	SA 15	SA 17	SA 19	SA 20	SA 23	SA 25	SA 27	SA 29
Overall Area	m ²	1.51	1.68	1.96	2.02	2.25	2.52	2.66	2.92
Absorber Area	m ²	1.35	1.51	1.79	1.83	2.03	2.33	2.43	2.71
Length Width Height	mm	1503	1420	1503	2006	1893	2006	2261	2006
		1007	1183	1305	1007	1183	1257	1183	1457
		85	85	85	85	85	85	85	85
Weight (Dry)	Kg	22	24	27	29	31	36	38	44
Absorber Volume Capacity	Ltr.	2.4	2.7	3	3	3.4	4	4.5	5

Max Operating Pressure: 10 bar

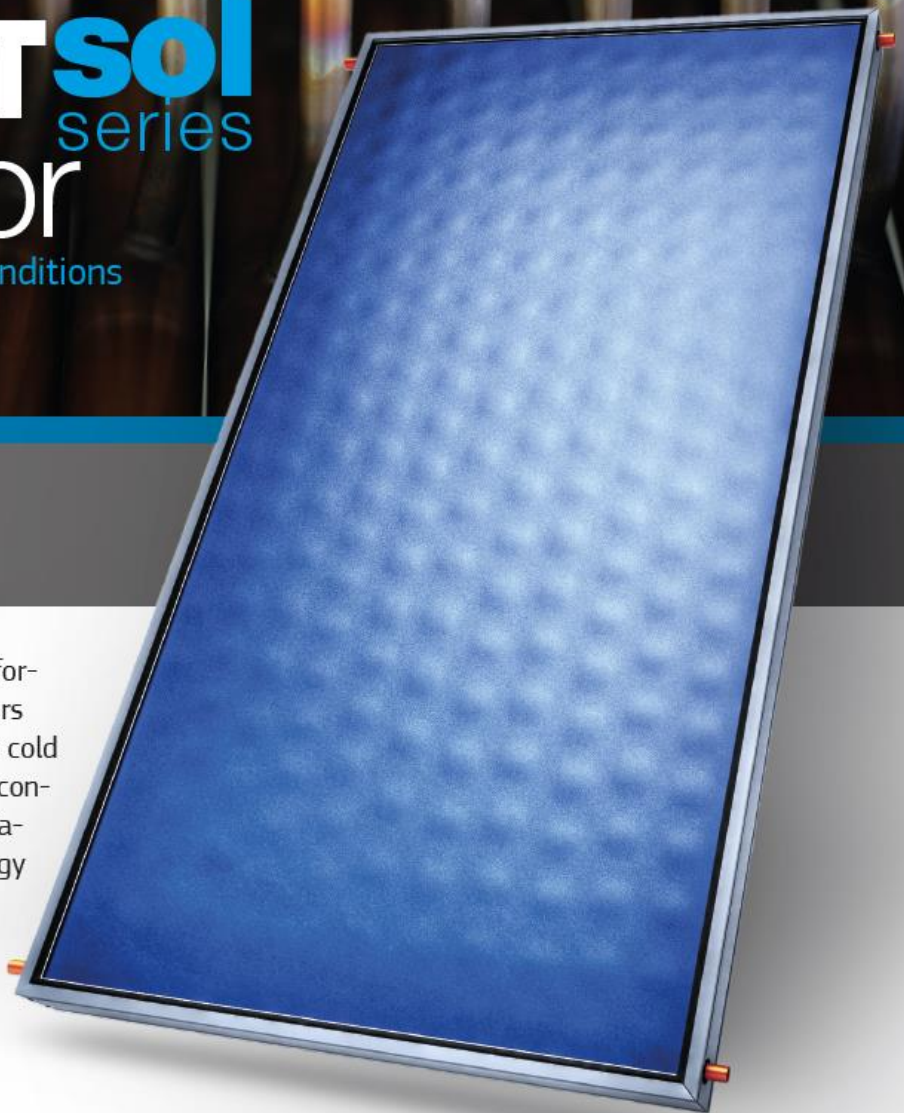


SMARTsol collector

for extreme weather conditions

SMARTsol
collector

Manufactured with high performance excellence. A collectors series, designed to meet the cold continental climate and the conditions of reduced solar radiation, is able to meet its energy needs in the most extreme weather conditions.



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SOLAR THERMAL INDUSTRY

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TEL.: (+30) 2106715510 Whatsapp: (+30) 6940889459 FAX: (+30) 2106542877

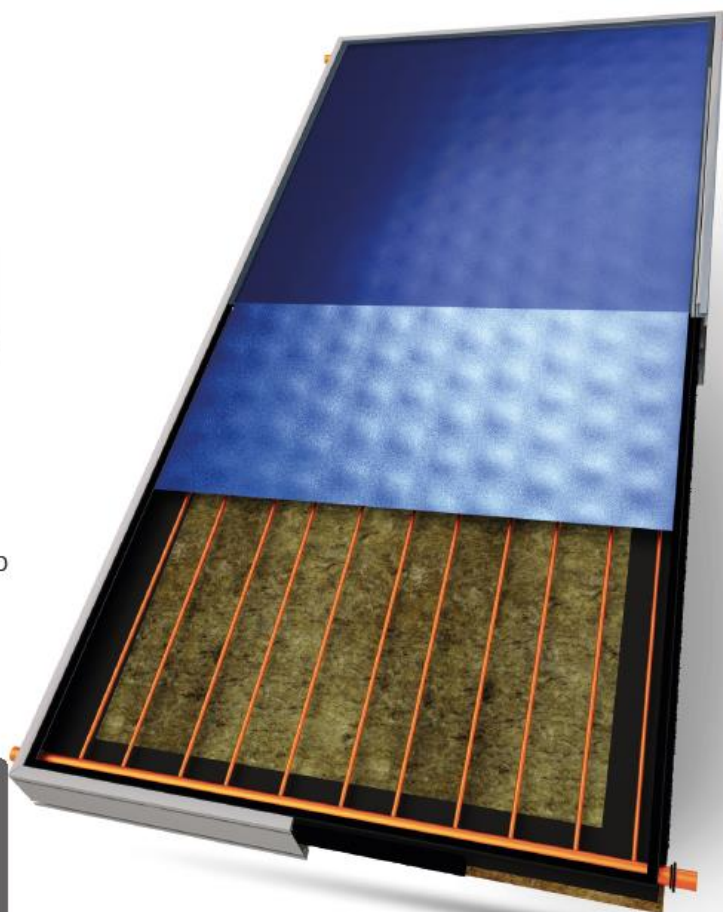
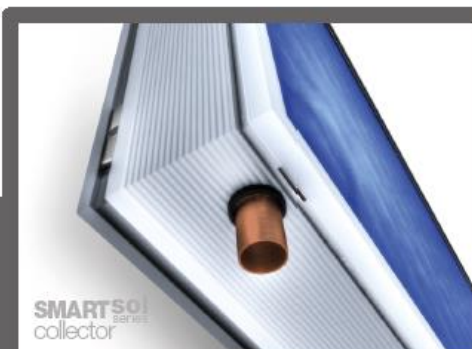
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SMARTsol^{series} collector

SMART SOL

- Absorptive aluminum surface with blue selective PVD coating technology.
- Ø8mm Risers.



- 8 available sizes range from 1.5 m² to 2.9 m².
- Global installation system with internal movable parts
- Lightweight for easy transport and installation.
- One-piece anodized profile, non-corrosion technology for ultimate seal against moisture and air micro-particles.
- Safety glass with high permeability.
- Back and Side rock-wool insulation .
- HARP type absorber (headers and risers) welded with **Laser** technology
- x4 stainless hidden vents.
- Vertically or horizontally mounting possibility
- x2 or x4 outlets Cu D22.

Technical Data		SMART SOL			
Type	SI	S 20	S 23	S 25	S 29
Overall Area	m ²	2.02	2.25	2.52	2.92
Absorber Area	m ²	1.83	2.03	2.33	2.71
Length Width Height	mm	2006	1893	2006	2006
		1007	1183	1257	1457
		103	103	103	103
Weight (Dry)	Kg	31	37	44	50
Absorber Volume Capacity	Ltr.	1.6	1.8	1.9	2.1

Max Operating Pressure: 10 bar



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Enameled Tanks for Hot Water Production 160lt-1000lt

GLASS – with enamel coating with 1 / 2 built-in heat exchangers

Model	Dimensions (mm x mm)		Capacity (lt)	Weight (kg)
	Diameter	Height		
ECO 160 - OP	600	1070	170	53
ECO 200 - OP	600	1460	212	58
ECO 300 - OP	630	1800	320	87
ECO 500 - OP	760	1800	520	117
ECO 800 - OP	1050	1800	830	170
ECO 1000 - OP	1050	2000	1040	195



- Inner tank from low carbon steel double enameled
- Cathodic Protection with magnesium rod at both of the Flanges
- Maximum Working Pressure of tank 10 bar
- Maximum Working Temperature of tank 95°C
- Insulation from expanded ecological (CFC free) polyurethane 60 mm thick with density 52 kg/m³ for models 160 – 500lt
- Insulation from soft CFC free polyurethane (foam) 100 mm thick for the models of 800- 1000lt
- Heat Exchanger (coil) from enameled steel-pipe (1")
- Maximum Working Pressure of the exchanger 16 bar
- Maximum Working Temperature of the exchanger 130°C

Enameled Tanks for Hot Water Production 1500lt-3000lt

GLASS – with enamel coating with 1 / 2 built-in heat exchangers

Model	Dimensions (mm x mm)		Capacity (lt)	Weight (kg)
	Diameter	Height		
ECO 1500 - 1P	1120	2300	1500	380
ECO 2000 - 1P	1260	2230	2000	594
ECO 3000 - 1P	1460	2560	3000	840



- Inner tank from low carbon steel double enameled
- Cathodic Protection with magnesium rod at both of the Flanges
- Maximum Working Pressure of tank 10 bar
- Maximum Working Temperature of tank 95°C
- Insulation from expanded ecological (CFC free) polyurethane 60 mm thick with density 52 kg/m³ for models 160 – 500lt
- Insulation from soft CFC free polyurethane (foam) 100 mm thick for the models of 800- 1000lt
- Heat Exchanger (coil) from enameled steel-pipe (1")
- Maximum Working Pressure of the exchanger 16 bar
- Maximum Working Temperature of the exchanger 130°C

Big Volume tanks with epoxy resin for Hot Water Production 750lt-9000lt

with 2 flanges / with 1 extractible heat exchanger and 1 flange/
with 2 extractible heat exchangers

Model	Dimensions (mm x mm)		Capacity (lt)
	Diameter	Height	
1500lt - ECO 150/0	1300	2000	1480
2000lt - ECO 200/0	1400	2000	1940
3000lt - ECO 300/0	1500	2500	2940
4000lt - ECO 400/0	1700	2650	3960
5000lt - ECO 500/0	1800	2750	4700
7000lt - ECO 700/0	2000	3200	6950
9000lt - ECO 900/0	2200	3300	8960

Model	Dimensions (mm x mm)		Capacity (lt)	Heat ex- changer (m2)
	Diameter	Height		
750lt - ECO 750D/3.2	1000	1800	757	3.2
1000lt - ECO 100D/3.2	1000	2000	890	3.2
1500lt - ECO 150D/3.2	1300	2000	1480	3.2
2000lt - ECO 200D/3.2	1400	2000	1940	3.2
2000lt - ECO 200D/5.4				5.4
3000lt - ECO 300D/3.2	1500	2500	2940	3.2
3000lt - ECO 300D/5.4				
4000lt - ECO 400T/10.8	1700	2650	3960	5.4 X 2
5000lt - ECO 500D/5.4	1800	2750	4700	5.4 X 2
7000lt - ECO 700D/15.6	2000	3200	6950	7.8 X 2
9000lt - ECO 900D/7.8	2000	3300	8960	7.8 X 2

Model	Dimensions (mm x mm)		Capacity (lt)	Heat ex- changer (m2)
	Diameter	Height		
750lt - ECO 75T/6.4	1000	1800	757	3.2 X 2
1000lt - ECO 100T/6.4	1000	2000	890	3.2 X 2
1500lt - ECO 150T/6.4	1300	2000	1480	3.2 X 2
1500lt - ECO 150T/10.8				5.4 X 2
2000lt - ECO 200T/6.4	1400	2000	1940	3.2 X 2
2000lt - ECO 200T/10.8				5.4 X 2
3000lt - ECO 300T/6.4	1500	2500	2940	3.2 X 2
3000lt - ECO 300T/10.8				
4000lt - ECO 400T/10.8	1700	2650	3960	5.4 X 2
5000lt - ECO 500D/5.4	1800	2750	4700	5.4 X 2
7000lt - ECO 700D/15.6	2000	3200	6950	7.8 X 2
9000lt - ECO 900D/7.8	2000	3300	8960	7.8 X 2

smart Sol

for more efficiency.



Differential Temperature Controller for Solar Thermal Plants

for drinking water heating and heating support

DIGITAL DIFFERENTIAL CONTROLLERS OF EMZ – HANAUER GERMANY
FOR SOLAR INSTALLATIONS AND SOLAR THERMAL PLANTS

smart Sol nano



smart Sol



smart Sol plus



smart Sol nano

DIGITAL DIFFERENTIAL CONTROLLERS FOR SIMPLE SOLAR INSTALLATIONS

SMART SOL NANO BASIC : Max number of inputs 3

SMART SOL NANO ADVANCE : Max number of inputs 3/
Number relay outputs/Max 1A for boiler

SMART SOL NANO SPECIAL: Max number of inputs 3
-Number high current relay outputs/Max 15A for immersion heater, boiler

smart Sol

**DIGITAL DIFFERENTIAL CONTROLLERS FOR SOLAR INSTALLATIONS OF
MEDIUM COMPLEXITY AND POWER**

SMART SOL COMFORT : Max number of inputs 4
Number relay outputs for pumps, valves, boiler
Inputs for impeller flow sensors

SMART SOL ACCESS : - Max number of inputs 4
-Number relay outputs for pumps, valves, boiler
-Inputs for impeller flow sensors & vortex flow sensors
-USB port for access to SD card or PC, for data logging, upload of hydraulic systems incl. settings

SMART SOL TOP: - Max number of inputs 6
-Number relay outputs for pumps, valves, boiler
-Inputs for impeller flow sensors & vortex flow sensors
-USB port for access to SD card or PC, for data logging, upload of hydraulic systems incl. settings & Smart Box for remote access

smart Sol plus

DIGITAL DIFFERENTIAL CONTROLLERS FOR COMPLEX SOLAR INSTALLATIONS

SMART SOL PLUS EXCELLENCE: Max number of inputs 8
-Number relay outputs for pumps, valves, boiler
-Inputs for impeller flow sensors & vortex flow sensors
-USB port for access to SD card or PC, for data logging, upload of hydraulic systems incl. settings
-Smart Box for remote access

SMART SOL PLUS PREMIUM: - Max number of inputs 10
-Number relay outputs for pumps, valves, boiler
-Inputs for impeller flow sensors & vortex flow sensors
-USB port for access to SD card or PC, for data logging, upload of hydraulic systems incl. settings & Smart Box for remote access

smart Box



smartEcon Cloud

CONVENIENT REMOTE ACCESS TO YOUR emz HEAT CONTROL



SMART BOX

Gateway to smart Sol Top and Smart Sol plus Premium
 Remote access of solar installations via internet with various LAN- and WiFi-capable devices, e. g. PCs, tablet PCs, smartphones, netbooks
 Animated display of the current hydraulic plant system
 Evaluation and graphic visualization of the installation
 Online operation and registration of controller at the EMZ-HANAUER central server
 End user license & maintenance fees

smartEcon



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HEATING SYSTEM CONTROLLER FOR HEAT GENERATION AND DISTRIBUTION

System controller for up to 2 heat generators, 3 heating circuits and domestic hot water preparation with integration of solar thermal, solid fuel boiler and/or circulation pump
 User interface with integrated ports for installation into the boiler control panel or wall-mounting with integrated ports

CUSTOMER BENEFITS

- ✚ Full graphic display for clear and logical visualization overview of the entire heating system
- ✚ Display of the current temperatures and animated icons for heat generator, pumps, mixers and other loads
- ✚ Innovative operation concept for easy handling simple and intuitive operation via symbol-supported plain-text display
- ✚ Smart and time-saving wiring concept
- ✚ Installation wizard for safe commissioning
- ✚ Service wizard for targeted and quick customer service
- ✚ Numerous operation, protective as well as monitoring, service functions and permanent safety thanks to active error signaling feature
- ✚ Convenient remote access and visualization to the smart Econ Cloud via the integrated Ethernet port:
- ✚ Integrated activation of high-efficiency pumps via PWM/0-10V

SOLAR STATION INVERTER



Solar Station for solar plants with GRUNDFOS SOLAR PM2 circulator pump. Remotely speed-controlled High-Efficiency pump fitted with electronically commutated motor (ECM), controlled via digital pulse-width modulation (PWM) low-voltage signal. On the solar station's cover there is an opening at which the EMZ differential controllers are perfectly suited. Dimensions: 420 x 300 x 150 mm

SMART BOX - SMART ECON CLOUD

Gateway to smart Sol Top and Smart Sol plus Premium
Remote access of solar installations via internet with various LAN- and Wi-Fi-capable devices, e. g. PCs, tablet PCs, smartphones, netbooks
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smartEcon Cloud

