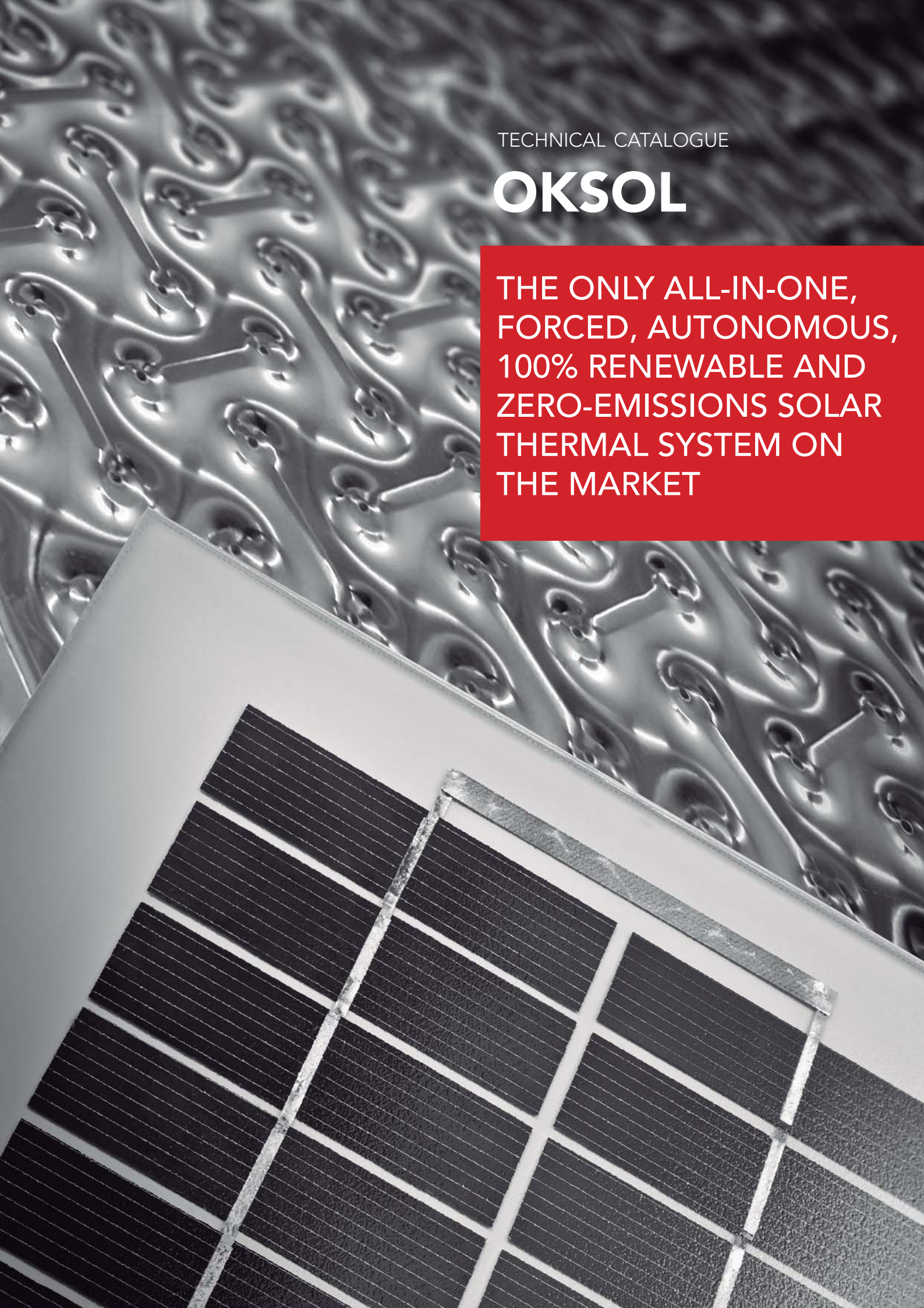


TECHNICAL CATALOGUE

OKSOL

THE ONLY ALL-IN-ONE, FORCED, AUTONOMOUS, 100% RENEWABLE AND ZERO-EMISSIONS SOLAR THERMAL SYSTEM ON THE MARKET

THE ORKLI PROMISE

ORKLI Group is one of Europe's leading manufacturers of electrical appliance components, creating innovative products that sell around the world.

The company is committed to environmental sustainability and is focused on the development of products that enhance energy efficiency and reduce carbon emissions, using manufacturing processes that minimize resource consumption and waste.

Orkli has also been awarded most demanding certifications covering quality, safety and occupational health and safety, as well as protection and respect for the environment. The company's innovative philosophy continues to reinforce its international presence.

In the Comfort/Heating sector, Orkli focuses its commitment to renewable energy on the development of solutions for central heating, underfloor heating and solar heating installations.

OKSOL is one such innovation.

Solar system

OKSOL

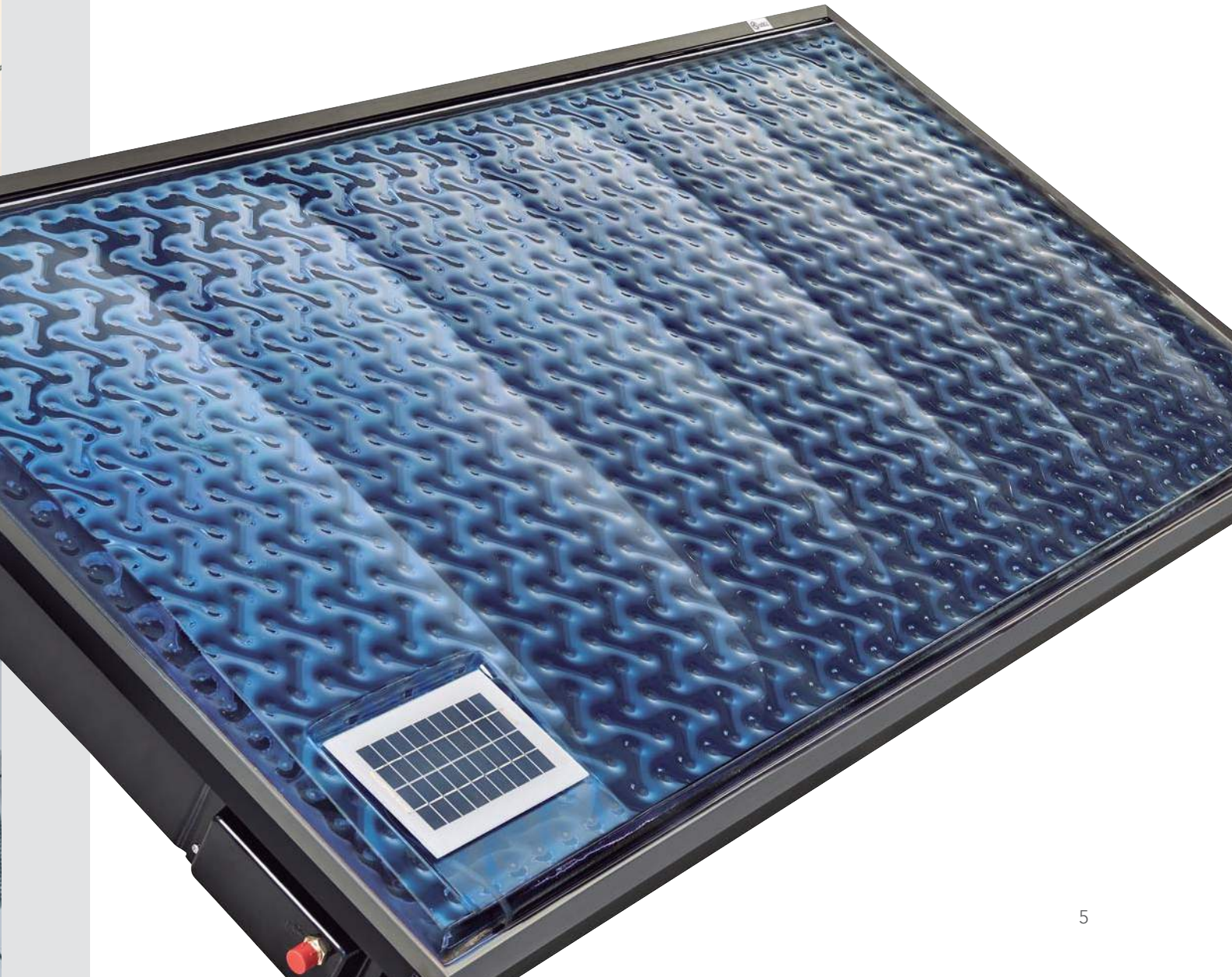

DKSOL 4.0

INTRODUCTION

WELCOME TO THE WORLD'S ONLY **ALL-IN-ONE, FORCED, AUTONOMOUS AND 100% RENEWABLE SOLAR DOMESTIC HOT WATER SYSTEM**

OKSOL is an innovative, technologically-advanced solar thermal domestic hot water system, uniquely integrating every component to create the world's first all-in-one solution.

The system is completely autonomous, powered only by solar energy (no need for external electrical source), combining a photovoltaic panel, radiant heat absorber, forced recirculation system, pump, heat exchanger and 150 litre tank in one holistic design.



HARNESSING THE POWER OF SOLAR ENERGY

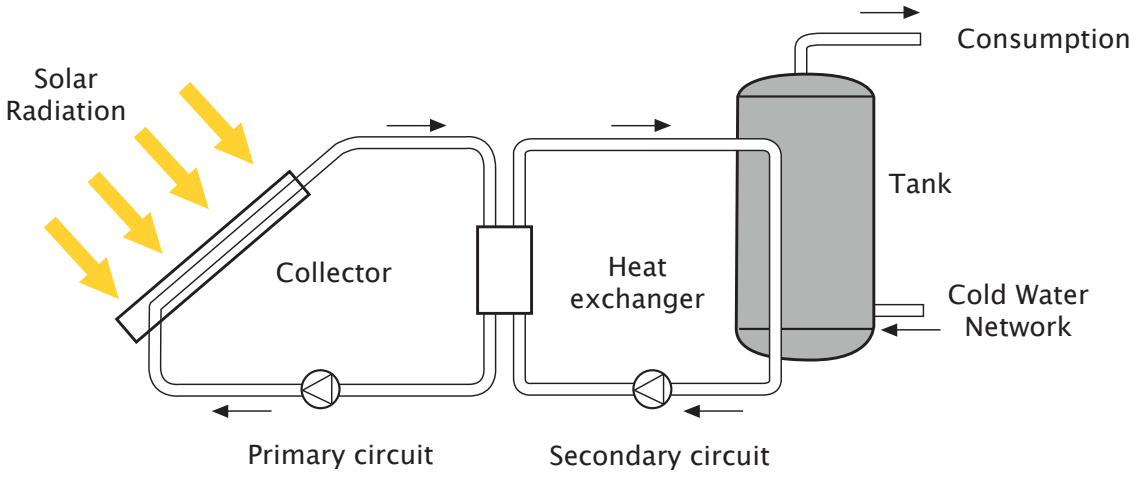
Every second, the sun burns around 700 million tons of hydrogen, creating energy that equates to the output of 170 million 1000mW nuclear reactors. It's an energy source that is plentiful, free, practically time unlimited and accessible to all.

Solar power is being embraced around the world to help address the challenges of climate change and carbon emissions. It is a key contributor to the strategy in Europe to achieve a 20% increase in the use of renewable energies, a **20% reduction in primary energy consumption, and a 20% reduction in greenhouse gas emissions... all** by 2020.

Innovations such as the development and application of low-temperature solar thermal energy systems to generate domestic hot water are important contributors to improving overall energy efficiency in homes and lowering carbon footprints.

A typical solar installation

A typical low-temperature solar thermal system captures and absorbs solar energy to produce domestic hot water. This energy heats fluid inside a primary circuit, which is pumped to a heat exchanger to transfer the heat energy to a secondary circuit. This circuit heats the domestic hot water supply, which is stored in tanks or inter-tanks ready for consumption.



REDEFINING SOLAR PERFORMANCE WITH OKSOL 150

OKSOL 150 is a fully self-contained and autonomous solar system, designed to generate and store domestic hot water without the need for any external electrical power source.

It is the only forced and completely self-contained system on the market, integrating a **solar panel**, energy absorber, primary circuit, **heat exchanger, 150-litre hot water tank**, and circulation pump in one holistic solution. It also incorporates a dissipation system that cuts water wastage and reduces maintenance costs.

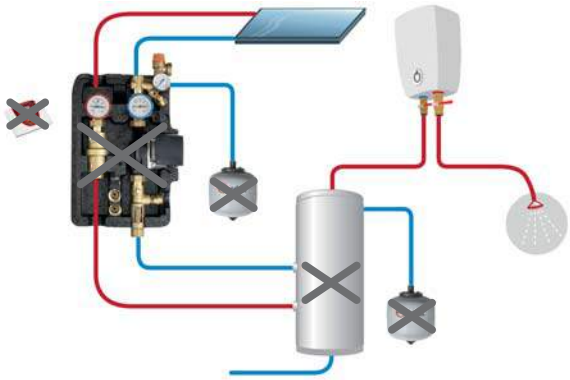
No external electricity supply is needed, because **OKSOL 150** receives the operating power for its pump from the integral photovoltaic panel.

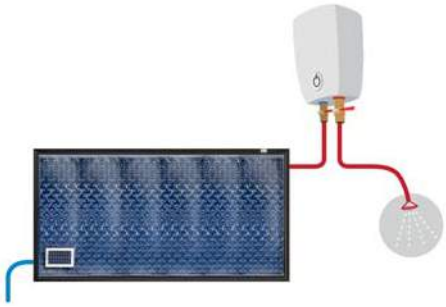
As a result, this world-first innovation helps to reduce both grid-generated energy consumption and greenhouse gas emissions. A true heating system innovation that treads more lightly on the planet.

CONVENTIONAL SOLAR SYSTEM

=

SYSTEM OKSOL





orkli

www.oksol.orkli.com

15 FACTS ABOUT OKSOL, THE ONLY ALL-IN-ONE, FORCED, AUTONOMOUS SOLAR SYSTEM ON THE MARKET

1 100% RENEWABLE

ORKLI Group is committed to developing sustainable, renewable energy solutions.

2 AUTONOMY

No external electrical connection needed, thanks to the embedded photovoltaic panel powering the pump.

3 SUSTAINABLE AND ZERO CO_2 EMISSIONS

No electricity used, plus no water wastage.

OKSOL contributes to the 2020 European targets

- 20% increase in the use of renewable energies
- 20% reduction in primary energy consumption
- 20% reduction in greenhouse gas emissions

ZERO emissions & beyond

4 EASY TO INSTALL

Easy to fit, no hydraulic or electronic regulation required; simply connect to the water inlet and outlet.

5 EASY TO MAINTAIN

Four easy access points for fast and simple maintenance of key elements of the systems.

6 ENERGY EFFICIENCY

The pump efficiently modulates its speed based on solar radiation intensity. Minimized losses due to optimized pipping.

7 PERFORMANCE & RELIABILITY

Not subject to potential power outage nor human error (because of fully integrated design, no handling by inexperienced people).

8 FUNCTIONAL & ATTRACTIVE DESIGN

All-in-one, functional, robust design with high performance materials. Attractive design to match building style, including roof-integrated system or flat or sloped roof mounting options.

9 DURABILITY & HIGH RESISTANCE

No overheat in primary system thanks to an integrated heatsink. Shock-proofed material. Long life cycle.

10 WARRANTY

Three years.

11 CERTIFICATION & COMMITTED QUALITY

Keymark 011-7S1479A. Performance/quality test of 100% OKSOL in solar radiation chamber.

12 LOWER TCO (TOTAL COST OF OWNERSHIP)

Reduced capital costs

- Shorter installation time due to ease of installation
- Fewer components

Reduced operating costs

- Shorter maintenance time due to ease of access
- Higher efficiency and durability …

13 SAVES SPACE AT HOME

The 150-liter capacity and corrosion-resistant internal tank saves valuable space inside the building.

14 ALL KIND OF BUILDINGS

Suited to every type of residential and commercial building thanks to improved energy performance, lower TCO and lower environmental impact.

Single-family housing · Housing blocks · Shopping centres · Schools · Museums · Offices · Industrial areas

15 MAXIMUM COMFORT

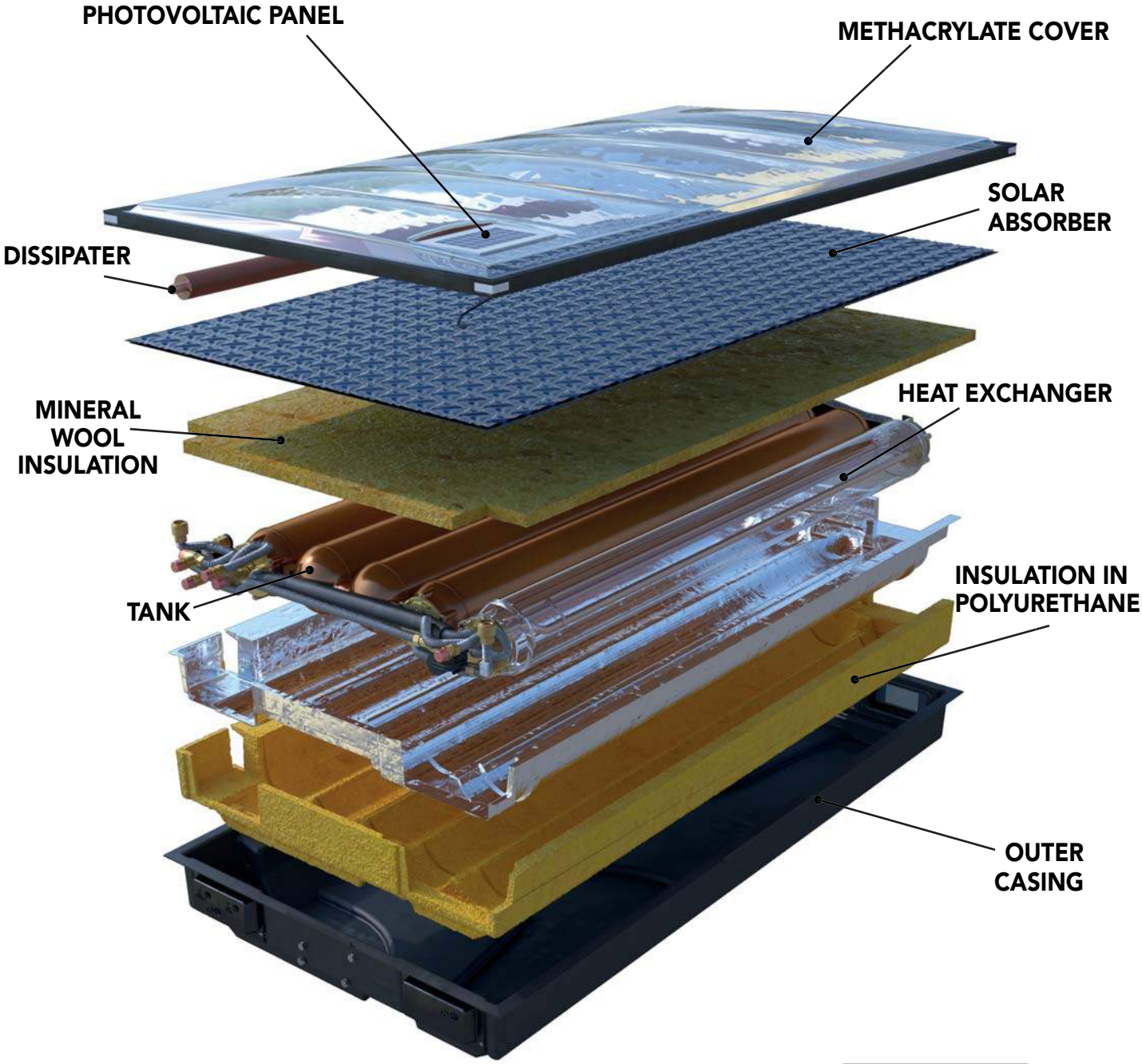
The patented thermal energy stratification system guarantees immediate availability of hot water for the user. No circulation pump noise in living areas.

OKSOL-150: UP TO ~63%* REDUCTION IN INSTALLATION TIME

COMPONENTS TO INSTALL A SOLAR SYSTEM		COMPONENTS	DRAIN BACK	OKSOL
MATERIAL	Collector	●	●	●
	Hydraulic group	●	●	
	Tank	●	●	
	Solar tube	●	●	
	Secondary tube	●	●	●
ACCESSORIES	Structure 45°	●	●	●
	Expansion tank	●		
	Sanitary solar fluid	●	●	
	Drain valves	●		
ELECTRIC INSTALLATION	Electrical legalization	●	●	
	Material and labor	●	●	
INSTALLATION TIME		**25.5 h.**	**15.5 h.**	**9.5 h.**

* Figures are based on estimations by third party market experts and may depend on conditions and circumstances of the installation. Orkli does not accept responsibility nor liability for this information.

OKSOL COMPONENTS AND CHARACTERISTICS



View the **3D video** from **OKSOL**

INTER-TANK

Space saving

Integrated into the system, 150-liter capacity and corrosion-resistant.

STATIC DISSIPATER

Safety and durability

Protects the system from unexpected high temperatures and from overheating.

SOLAR COLLECTOR

Maximum performance

2 m² in stainless steel, with selective PVD treatment and double the heat-transfer liquid of a traditional solar collector (4 litres)

FLUE IN STRATIFICATION

Autonomy and efficiency

Allows water to be kept hot at the top, ready for use.

PRIMARY CIRCUIT PUMP

Autonomy and efficiency

The DC pump adapts its speed according to the level of solar radiation.

PHOTOVOLTAIC PANEL

Autonomy and saving

Feeds the recirculation pump - no need for an external energy source.

3-WAY THERMOSTATIC VALVE

Autonomy and safety

Directs the primary flow towards the heat exchanger of the DHW tank or towards the heat dissipater.

SAFETY ELEMENTS

PRESSURE AND TEMPERATURE VALVE

Controls and ensures the pressure and temperature in the DHW tank.

SAFETY VALVE

Controls and ensures the pressure in the primary circuit.

Option:

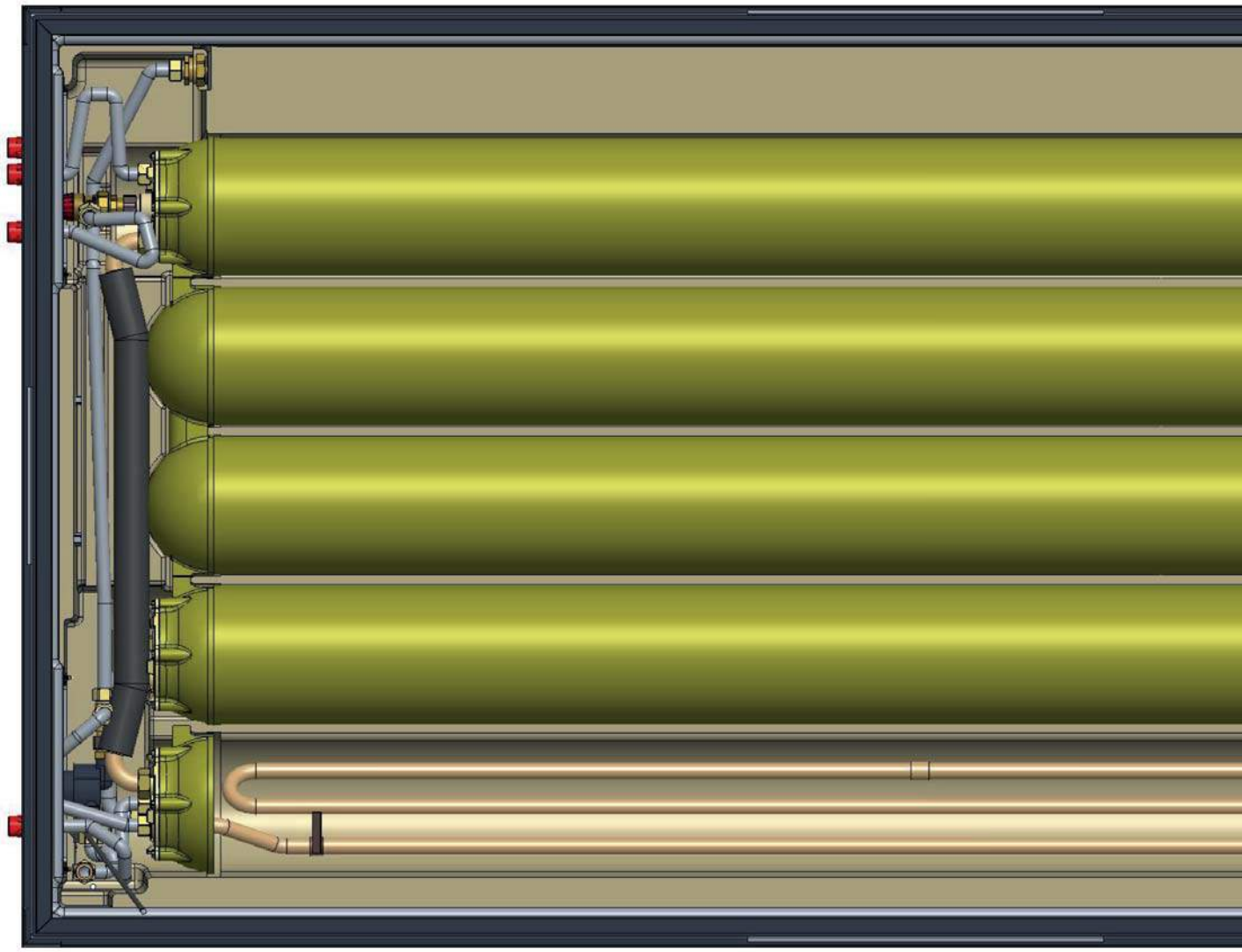
ELECTRICAL HEATING ELEMENT

CHARACTERISTICS

- *Pump supplied by photovoltaic cell.*
- *Tank capacity:* ***150 litres.***
- *Active absorber surface:* ***2 m².***
- *Heat exchanger surface:* ***0.29 m².***
- *External dimensions: Length: 2031 mm., width: 1060 mm., height: 290 mm. Empty weight: 95 kg.*
- *Structure on floor or flat terrace, for integration on flat roof or on sloping roof.*
- *Solar* ***Keymark Certification*** *(EN 12976).*

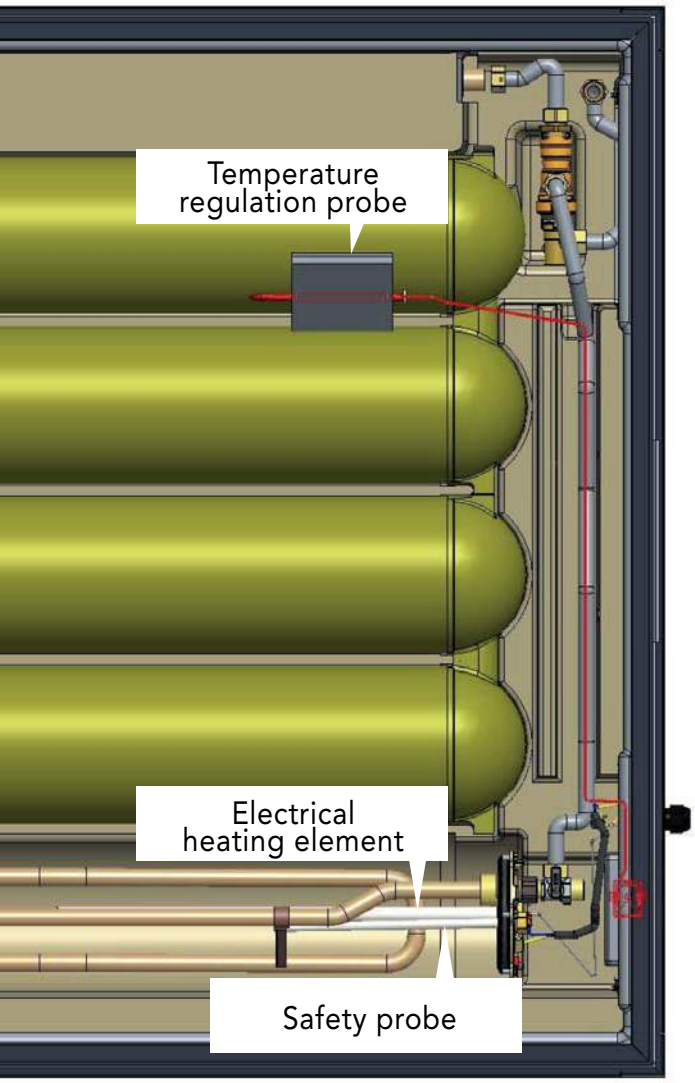
OKSOL-150-R:
Pre-assembled electrical heating element

CONNECTION DIAGRAM:



SPECIFICATIONS

- *Electrical heating element = 1200 W.*
- *230 V.*
- *Regulation probe temperature = 45°C.*
- *Safety probe temperature = 100°C.*



COMPONENTS

Unit composed of:

- **Temperature regulation probe.**
- **Safety probe.**
- **Heating element connection cable.**
- **Network connection cable.**

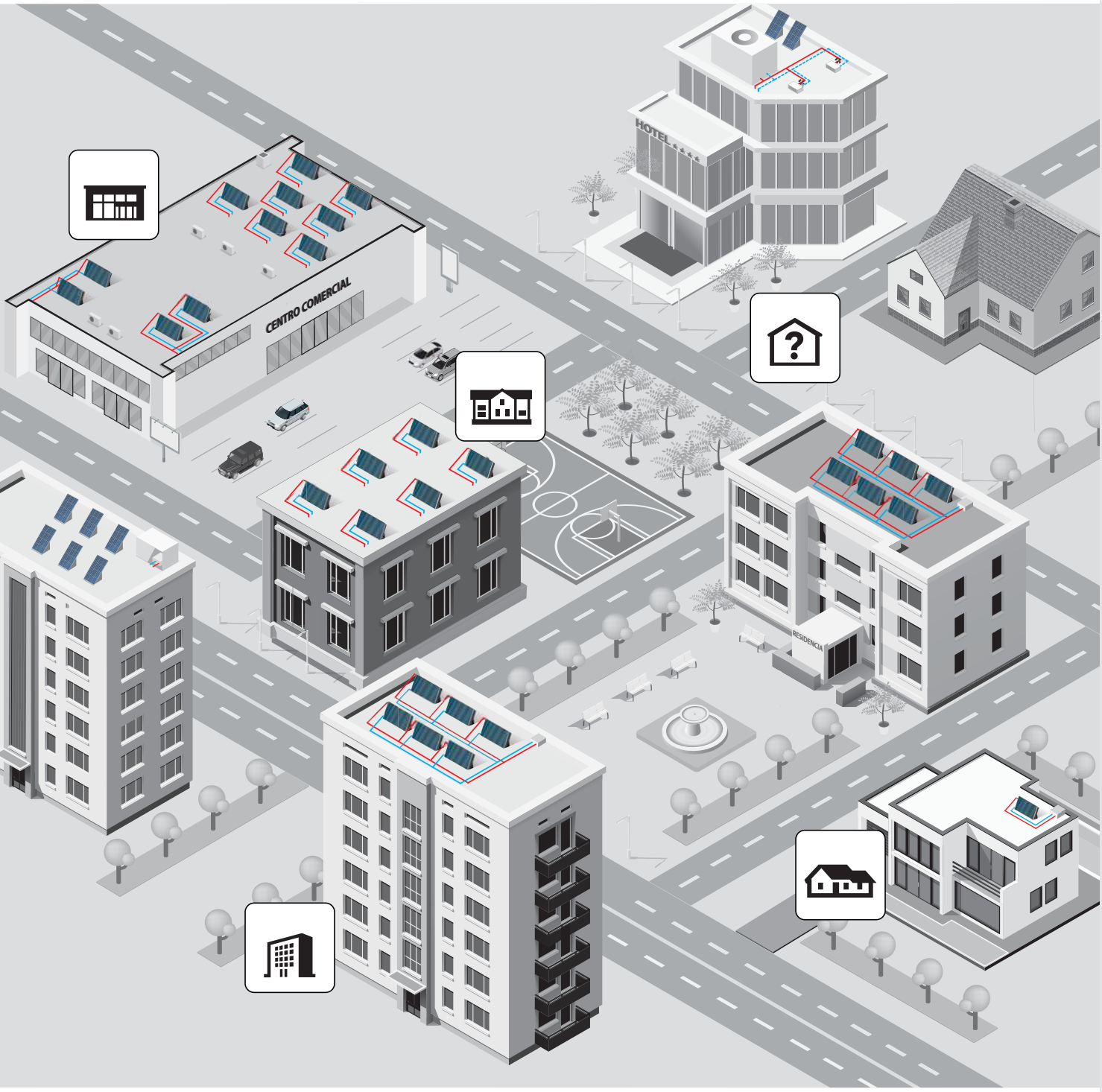
Sheath for safety probe.

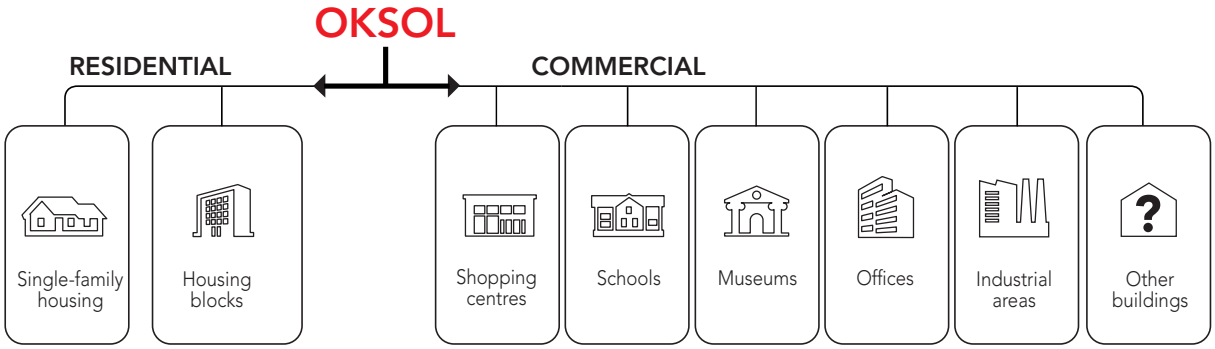
Sheath for electrical heating element.

Electrical heating element.

Sheath for temperature regulation probe.

MULTIPLE APPLICATIONS





The unique characteristics of the **OKSOL solar system from ORKLI** provide a sustainable solar thermal hot water solution for a wide range of residential, educational, leisure and commercial premises, ideally suited to **new build or retro-fit** projects.

OKSOL delivers:

- *BETTER ENERGY PERFORMANCE.*
- *BETTER RETURN FOR INVESTMENT.*
- *EASY AND SPACE SAVING INSTALLATION WITH LOW MAINTENANCE.*
- *ZERO CARBON EMISSIONS.*

Unlike traditional hot water systems, OKSOL 150 is always 'on', ready to supply pre-heated water for storage whenever there is solar radiation.

One of the main advantages of OKSOL 150 is its high performance solar sensor, which optimises energy capture per square metre, while the full integration of its primary circuit ensures no heat loss. And with all the elements contained within one design – including a static dissipater to protect the system from unexpected high temperatures and from overheating - there's no need for any long secondary circuit pipe runs or for any external associated components, such as tanks or pumps.

Not only does OKSOL 150 offer advantages over conventional installations from a performance, economic and functional point of view, it also consumes no primary energy (the pump is powered by the PV cell). In short, it is an innovative, zero CO2 emissions solution perfectly in tune with 21st century values.

Below are some examples of applications.

INDIVIDUAL HOMES BUNGALOWS – MOBILE HOMES

With its compact design, the OKSOL 150 provides the perfect solution for homes where space is at a premium. Architects often struggle to accommodate traditional thermal hot water systems into bungalows and mobile homes – particularly the positioning inter-tanks and pumps - but because every component is factory-installed in the OSKOL 150, **roof installation is straightforward**. It also means **space is freed-up** elsewhere in the home.

This integrated design also makes handling simple, reducing the potential for leakage. And, of course, the use of solar energy delivers a significant financial benefit over directly-powered hot water systems.

SHARED BUILDINGS

For apartment blocks and shared buildings, OKSOL 150 does away with the need for additional separate components (pumps, long secondary pipe runs, dissipaters) associated with traditional solar thermal systems. Two types of installation are available, dependent upon the building characteristics.

INDIVIDUAL HOME INSTALLATION

Normally, only one system will be needed per home. Installation involves connecting the cold water supply for each home to a corresponding OKSOL 150 system on the roof. A return pipe carries the pre-heated water back to the auxiliary water heater where it can be heated further or run through, dependent upon the desired temperature. **Residents maintain sole ownership** of the system, with responsibility for maintenance and performance.

CENTRALIZED INSTALLATION

For apartment buildings requiring a centralised system, OKSOL 150's completely integrated solution means it can be installed without the need for additional external components, optimising available space (no need of machinery room). This offers a significant advantage over conventional solar thermal systems, which require multiple separate components and long pipe runs as part of system designs that are often extremely complex.

In a centralised installation, multiple OKSOL 150 units are connected in parallel, taking into account the need to hydraulically balance all systems (using valves or inverted return piping).

Once the system has been connected, a pipe carrying pre-heated water is connected to each dwelling's auxiliary water heater, enabling the water to be heated further or to pass through if at the desired temperature. Consumption is monitored via a water meters at the entrance of each dwelling. From the upper floor to the roof, the loop is completed by a pumped return circuit.

It is also possible to install OKSOL as an indirect solar thermal system, using a double circulator with a corresponding expansion vessel and safety valve for the secondary circuit (the OKSOL). The piping layout is similar to an individual home set-up (though a different piping material could be used, as steel, since water in the pipes is not sanitary), but with the addition of an indirect heat exchange kit that allows heat from the secondary circuit to diffuse into the cold water of the dwelling and then pass through the boiler, heating it or letting it run through according to the desired temperature.

SHOPPING CENTRES

Typically, centralised solar thermal systems in shopping centres face significant challenges:

- High installation costs.
- Long primary and secondary circuit pipe runs.
- Costly full maintenance contracts.
- Complex apportionment of maintenance costs.
- Installation and reading of multiple meters covering the entire estate.
- Allocation of pre-heated water costs according to consumption.
- Whole system ownership and long-term responsibility.
- OKSOL 150 provides a completely new solution.

With OKSOL 150, each area benefits from its own system, meaning that every hot water consumption source (retail spaces, toilets and changing rooms/showers) can be **served and managed independently**.

In retail and catering areas, cold water is pipped to the roof for connection to the corresponding OKSOL 150 unit. The pre-heated water is then piped back to the user (usually to an electric water heater), where the water can be heated further or run through.
For centre owners, the OKSOL 150 system delivers significant benefits:

- No overall solar thermal system ownership and long-term responsibility.
- Individual solar thermal systems for each retailer, along with associated maintenance and repair responsibilities.
- Separate systems for toilets and washrooms – no need for complex expenses allocation associated with centralised systems.
- No heat meter installations and no management of consumption allocations.

SCHOOLS

OKSOL 150 provides schools with a completely new approach to solar thermal systems, offering a better return on investment, greater energy efficiency and ease of installation.

Usually, school building design results in considerable distances between the boiler room and the distributed hot water consumption cores. Schools with a centralized solar thermal system usually connect a boiler to the solar system inter-tank to top up temperatures and then carry the water in long pipe runs, with a corresponding return line network. This results in continuous and significant heat losses, and unnecessary additional running costs.

Installation of OKSOL 150 in strategic locations around the school close to the point of hot water consumption – combined with small electric heaters or boilers - can provide a more energy efficient solution, taking account of the entire thermal needs of the school.

System elements:

- OKSOL 150 units are located on the school roof as near to the point of consumption as possible, minimising secondary system pipework and significantly reducing heat loses
- Gas or oil-fired boiler and any inter-tanks are replaced with small electric water heaters placed in each core area, topping up the pre-heated water if needed.

This system design eliminates long pipe runs and the corresponding return network, replacing the large capital outlay of a boiler with lower cost water heaters, and delivering a **more energy efficient and cost effective installation for the school.**

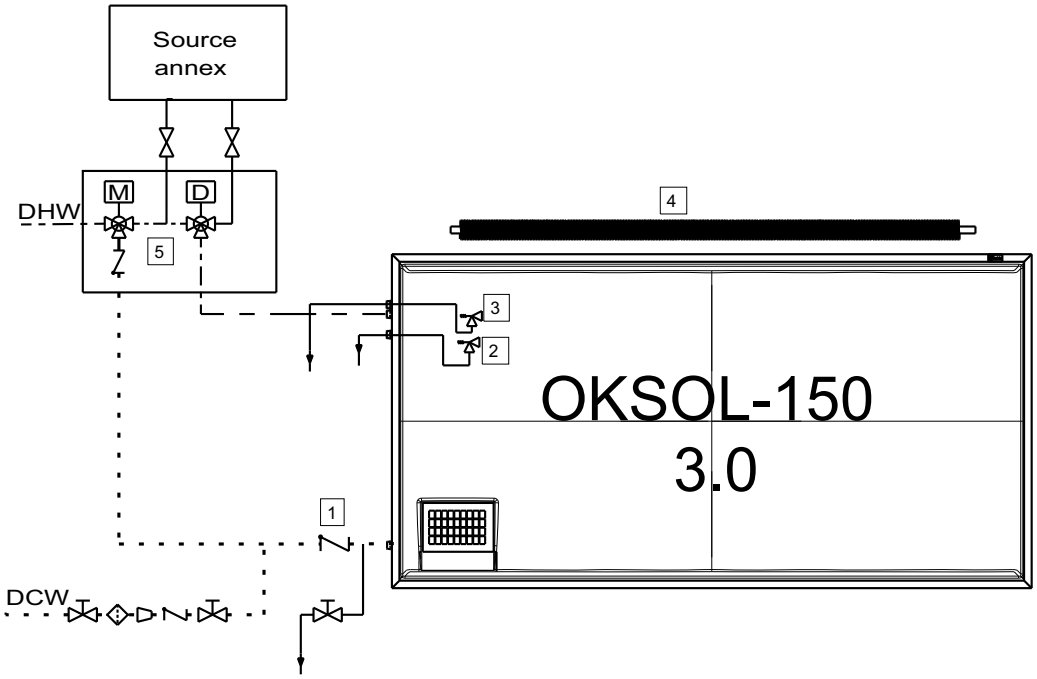
OTHER BUILDINGS

OKSOL 150 provides the perfect pathway to an easy-to-install, fully integrated solar thermal system for buildings with minimal hot water requirements.

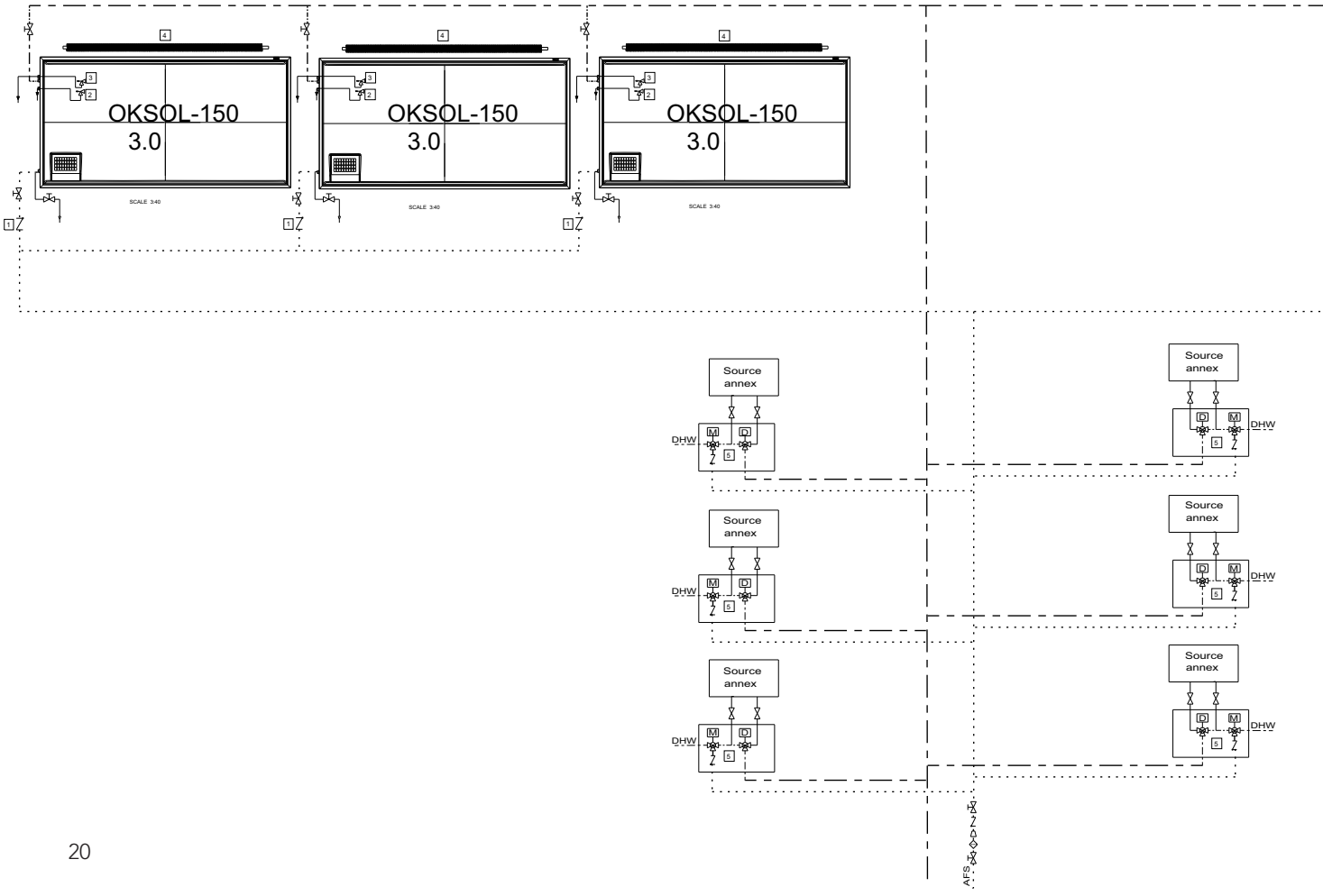
From clinics, health centres and hotels to campsites, workshops or gyms, the OKSOL 150 forced solar solution reduces running costs compared to conventional systems, improves energy efficiency and significantly reduces environmental impact through zero carbon emissions..

And because the OKSOL 150 is completely self-contained, with no need for an external power source, and fully self-adjusting in day-to-day operation, maintenance is easy and total cost of ownership is lower than conventional boiler-based systems.

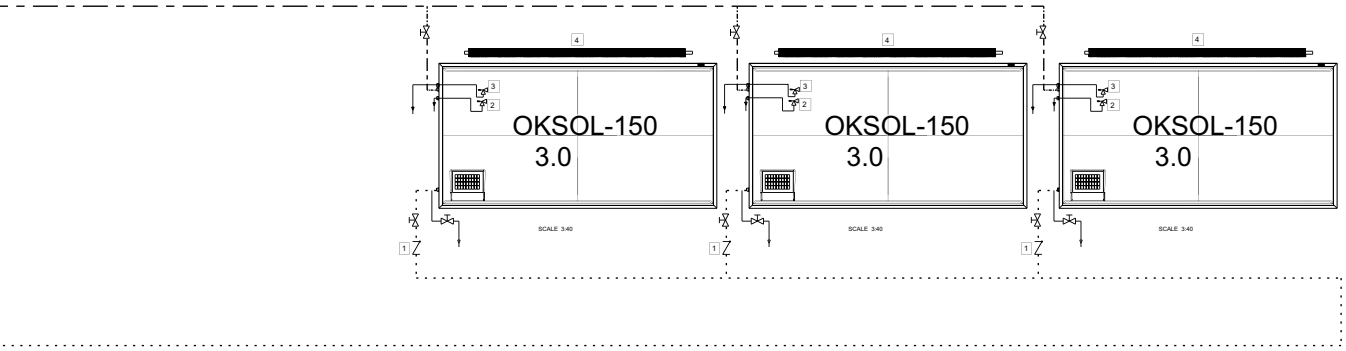
INDIVIDUAL FITTING



PARALLEL FITTING



SYMBOLS	NAME	DRAWING No.	CONNECTOR
– DCW	Domestic cold water inlet		
DHW	Domestic hot water outlet		
	Pressure reducer		
	Stopcock		
	Check valve	1	G 1/2" Female
	Tank safety valve	2	G 1/2" Male
	Primary safety valve	3	G 1/2" Male
	Dissipater	4	
M D	ORKLI SOLAR KIT	5	G 1/2" Male



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M D	ORKLI SOLAR KIT	5	G 1/2" Male

NOTE: **INSTALLATION WITH INVERTED RETURN**

THE OKSOL ADVANTAGES

Better Energy Efficiency:

- Significant heat transfer gains, thanks to co-locating the one metre primary circuit piping with the inter-tank in one integrated design.
- **3-5% saving** on heat loss over conventional systems, result from the position of the inter-tank and placement of the coil inside.
- **Significant decrease** in **heat loss** in secondary circuit pipes, thanks to very short, small diameter secondary pipes, which do not require a domestic hot water return circuit.
- **No direct electricity consumption.** A photovoltaic cell powers the pump, unlike conventional solar thermal systems, which require an external power source for pumps and dissipaters.

Better Return on Investment

- No large copper or stainless steel primary circuit pipes and associated weatherproof accessories and insulation.
- Short small diameter secondary circuit pipe-runs replace large-diameter long-run secondary circuits (with accessories, insulation and fasteners).
- Completely integrated system - no exterior tanks, plate heat exchanger, pumps, automatic filling units or their corresponding fittings, piping and insulation.
- No electrical dissipater on the roof.
- No direct electrical connection.
- Cold water meter consumption measurement.
- Holistic design, easy to install.
- Space saving.

Better Operational Performance

- Completely **autonomous** and fully integrated operation.
- Fully **self-adjusting** system.
- **Very flexible design**, adaptable to the needs of each building.

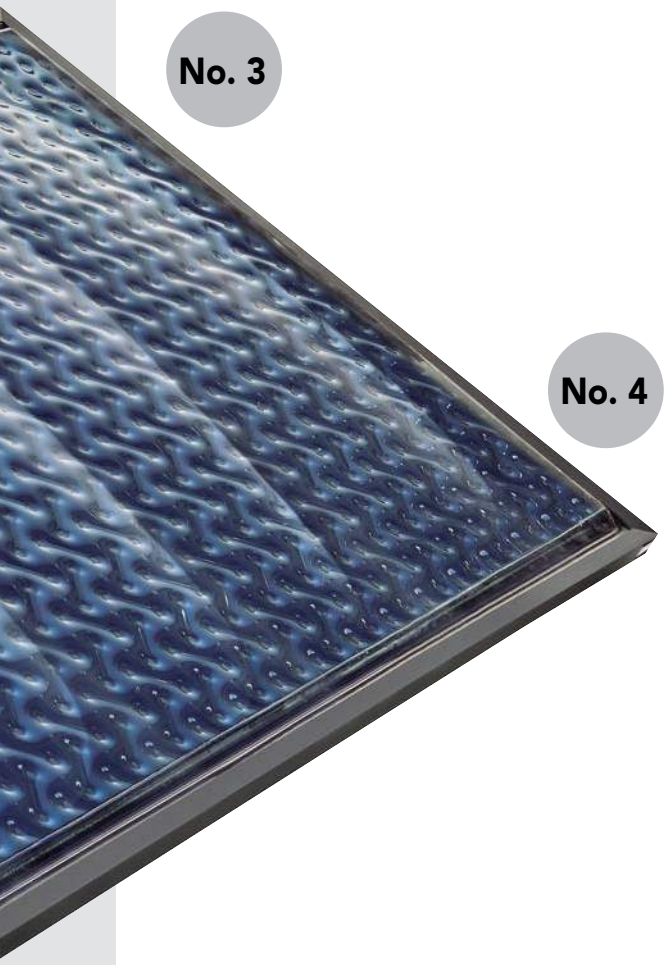
Better for the Environment

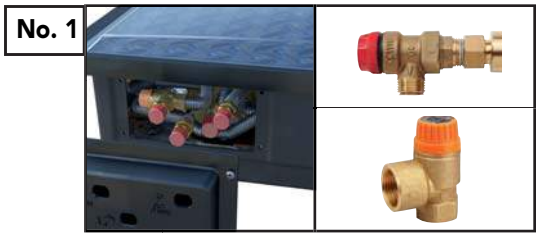
- Solar thermal forced system with **zero CO_2 emissions**.

MAINTENANCE

The OKSOL 150 solar system requires minimal periodic maintenance. Since the OKSOL 150 is a fully integrated and compact system, the tasks detailed in the monitoring plan (visual inspection) and the preventive maintenance plan (visual inspection and functional testing of the elements) are simple.

Thanks to its four easy access points, the OKSOL 150 enables fast and efficient inspection, maintenance and handling of each system element: the sensor, the primary circuit and the secondary circuit.



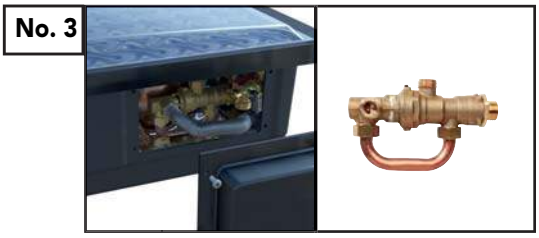


Items located at access point number 1:

- Domestic hot water outlet
- Primary circuit safety valve (outlet)
- Tank safety valve (outlet)

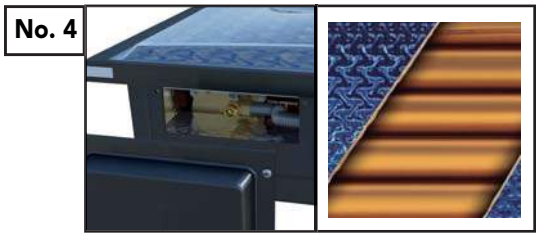
Items located at access point number 2:

- Domestic cold water inlet (G ½" male)
- Primary circuit pump



Items located at access point number 3:

- Thermostatic 3-way valve
- Access to tap 1 filling/draining of the primary circuit



Items located at access point number 4:

- Access to tap 2 filling/draining of the primary circuit

EQUIPMENT MAINTENANCE

CLEANING THE INSIDE OF THE TANK

When cleaning the inside of the water tank for domestic use, take care with any appliances and cleaning products used.

DRAINING THE TANK

Follow these steps for correct drainage of the tank:

1. Turn off the collector inlet shut-off tap. LEAVE THE OUTLET TAP OPEN and the highest hot water point in the system (tap) to purge and completely drain the hot water system by draining the tank.

   If the system is the top point, simply operate the safety valve of the tank by removing the cover of the drainage outlets.

2. Open the drainage tap.

3. The water drainage line must be OPEN. The installer should clearly identify it in the user manual.

4. When the water stops coming out, close the drainage valve and turn off the hot water tap or safety valve.

Warning! The water coming out of the taps/drain line can reach high temperatures.

FILLING THE TANK

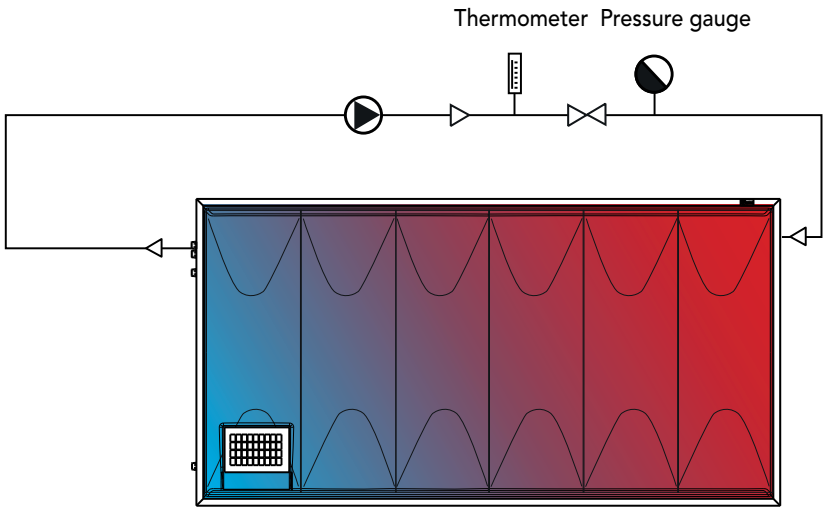
1. Either open a consumption point or the tank safety valve must be opened to act as a purge.

2. Turn on the system inlet shut-off tap.

3. As soon as the water comes out of the consumption point or the valve discharge line, leave it for a few minutes to remove all impurities and completely purge the installation.

IMPORTANT!!

COVER THE SYSTEM WITH AN OPAQUE TARP TO ENSURE THAT THE SOLAR CIRCUIT FLUID DOES NOT REACH HIGH TEMPERATURES AND THAT THE PUMP DOES NOT CIRCULATE IT.
Before proceeding with the previous step it is advisable to use up the hot water in the tank in order to replace it with cold water and to cool the solar circuit through the heat exchanger to obtain a suitable primary circuit temperature for filling up with fluid again (25°C).



Draining the solar circuit

1. Disconnect the cold water connection from the system.
2. Remove the cold water inlet cover. The solar circuit filling tap can be found in the compartment.
3. Remove the cover from the safety valves. The valve of the primary circuit is identifiable by its orange color.
4. Connect a drainage line to the solar circuit tap (3/8") to store the fluid in the system.
5. Open the safety valve of the solar circuit identifiable by its orange color (without completing the step). If you complete this step, you will hear a click.
6. Turn on the filling tap.
7. Allow the fluid to drain.

Filling the solar circuit

1. Start the filling circuit (filling pump and connections) to prevent air from entering the solar circuit.
2. Connect the recirculation pump to the inlet valve (3/8").
3. Connect the drainage line (return) of the solar circuit to the solar circuit safety valve (orange) 1/2".
4. Open the valve (without completing the step). If you complete this step, you will hear a click.
5. Turn on the shut-off tap. Turn on the filling tap.
6. Connect the recirculation pump (it is advisable to ensure a dynamic pressure of 2 bar).
7. Recirculate for at least 15 minutes. If in the air bubble sight the fluid is not intense in color (without air), continue the recirculation until this result is obtained. Take the Ta value of the return fluid before proceeding to the next step.
8. Close the safety valve by completing the step. After closing the valve, make sure that the pump pressure does not exceed 3 bar, otherwise the system may be damaged.
9. Turn off the shut-off tap and the filling tap. The reading of the pressure gauge must be greater than the corresponding value in the "Load pressure" table. For each Ta of fluid, load the corresponding pressure.
10. Carefully open the safety valve to reduce the pressure indicated on the pressure gauge to the value indicated in the "P fluid" box.
11. After reaching the pressure required in the circuit, turn off the filling tap.
12. Remove the connections, fit the insulation of the covers (mineral wool) and screw on the covers.

OKSOL

• TECHNICAL DATA

SOLAR ABSORBER

TYPE	PVD
ABSORPTION SURFACE	2.00 m^2
ABSORPTIVITY	0.95
EMISSIVITY	0.05
CAPACITY	4 litres
MAX. OPERATING PRESSURE	3 bars

COVER

TYPE	Methacrylate PMMA
THICKNESS	3.5 mm
TRANSMITTANCE	0.92
MAX. ADMISSIBLE NEGATIVE PRESSURE	3,000 Pa

BASE INSULATION

TYPE	Expanded PU
THICKNESS	45 mm
DENSITY	45 kg/m^3
CONDUCTIVITY	0.023 W/m^2K

INSULATION BETWEEN TANK AND ABSORBER

TYPE	Rock wool
THICKNESS	25 mm
DENSITY	70 kg/m^3
CONDUCTIVITY	0.036 W/m^2K

EXTERNAL DIMENSIONS

TOTAL SURFACE AREA	2.12 m^2
LENGTH	2,031 mm
WIDTH	1,060 mm
HEIGHT	290 mm

STORAGE TANK

TYPE	PPSU
CAPACITY	150 litres
MAX. SERVICE PRESSURE	5 bars

OTHER DATA

WEIGHT (INCLUDING PRIMARY FLUID)	95 Kg
WARRANTY	3 years
PRIMARY FLUID CONTENT	7 litres

• COMPONENTS CHARACTERISTICS

CIRCULATION PUMP

TYPE	Magnetic, brushless
FLOW RATE	2.4 - 3 l/mm*
RATED POWER	2.8 W
VOLTAGE (DC)	12 V

**800-1000 w/m²*

PHOTOVOLTAIC PANEL

TYPE	Polycrystalline silicon
RATED POWER	3 W
RATED VOLTAGE	9 V

SAFETY VALVES

	Primary	Secondary
MAX. SERVICE PRESSURE	3 bars	5 bars
MAX. OPERATING TEMPERATURE	-	90°C
MAX. TEMPERATURE	160°C	121°C
DESCRIPTION	1/2" F-M	1/2" M-M

HEATSINK

RATED POWER	800 W (@ 70°C)
MAX. SERVICE PRESSURE	6 bars

• SYSTEM OUTPUT INDICATORS

ANNUAL RESULTS

AREA	LITRES DRAWN DAILY (litres/day)											
	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d	110 l/d	140 l/d	170 l/d
	Q_d kWh/y			Q_L kWh/y			f_{sol} %			Q_{par}		
Stockholm, SE	1,706	2,171	2,636	793	898	969	46.5	41.4	36.7	-	-	-
Würzburg, DE	1,635	2,082	2,528	811	943	1,033	49.6	45.3	40.9	-	-	-
Davos, CH	1,850	2,355	2,860	1,154	1,305	1,400	62.3	55.4	49.0	-	-	-
Athens, GR	1,271	1,617	1,964	1,011	1,200	1,355	79.6	74.2	69.0	-	-	-

Performance indicators: Qd (MJ/y; annual heat demand for DHW); QL (MJ/y; system output: annual heat energy delivered by solar system); fsol (%; QL/Qd; solar fraction); Qpar (MJ/y; annual parasitic energy: electricity for pumps/controllers)

				STOCKHOLM, SE	WÜRZBURG, DE	DAVOS, CH	ATENAS, GR
CONDITIONS OF REFERENCE	G	kWh/m²	Annual irradiation South	1,113	1,230	1,684	1,718
	Ta	°C	Annual mean air temperature	6.9	9.0	3.2	18.5
	Tc	°C	Annual mean cold water temperature	8.5	10.0	5.4	17.8
	ΔTc	°C	Seasonal variation of Tc	2.1 - 14.9	7.0 - 13.0	4.6 - 6.2	10.4 - 25.2

Th 45°C: desired (mixing valve) temperature

• CERTIFICATIONS

· KEYMARK N° 011-7S1479A
· INDUSTRIA SST-415
· CSTBAT
· ANTICYCLONE
· ANTICORROSION

MOUNTING STRUCTURES

ROOF-INTEGRATION MOUNTING

WALL MOUNTING

FLAT MOUNTING

PROTECTIVE AWNING MOUNTING

SLOPED-ROOF MOUNTING

TILE-SAVER FOR SLOPED-ROOF MOUNTING*

* non-perforating

SOLAR RANGE

SOLAR DOMESTIC WATER KIT

ZONE VALVES

INDIRECT EXCHANGE KIT

DRAIN UNIT

HYDRAULIC GROUPS

OKSOL

FULL TEST IN IN-HOUSE RADIATION CHAMBER

PERFORMANCE / QUALITY TEST OF 100% OKSOL UNITS IN SOLAR RADIATION CHAMBER

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