

# CHOOSING THE RIGHT MODEL

Our patented Thermecro solar panel heater is the most efficient solar harvesting device on the market and is designed for easy installation into any small to medium sized pools, including:



The following table illustrates the average daily ambient temperature of 16°C and a desired water temperature of 28°C. The Thermecro will increase the water temperature by 2°C (MAX. TEMP LIFT), and is equivalent to the expected daily heat loss of a side insulated and covered pool.

MODEL	MAX. OUTPUT (kW)	POOL SIZE (AVG 1.2m DEPTH)	MAX. TEMP LIFT	MINIMUM OPERATION PRESSURE	SYSTEM FLOW RATE	TOTAL WEIGHT DURING OPERATION*
<b>16 Tube</b>	1.5	10m <sup>3</sup>	2°C	0.4 Bar	1m <sup>3</sup> /hr	72kg
<b>32 Tube</b>	3	20m <sup>3</sup>	2°C	0.4 Bar	2m <sup>3</sup> /hr	128kg
<b>48 Tube</b>	4.5	30m <sup>3</sup>	2°C	0.4 Bar	3m <sup>3</sup> /hr	166kg

\*Complete system

16 Tube (1128mm)      32 Tube (2148mm)

48 Tube (3180mm)

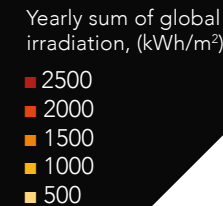
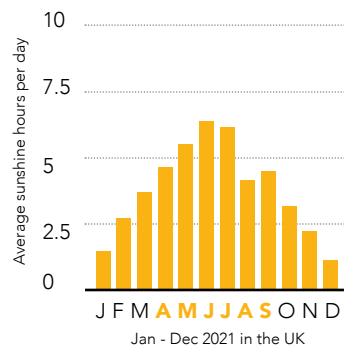


# RETURN ON INVESTMENT

The following table illustrates the return on investment based on the average electricity cost in 2022 and the average number of direct sunshine hours\*\* in the UK.

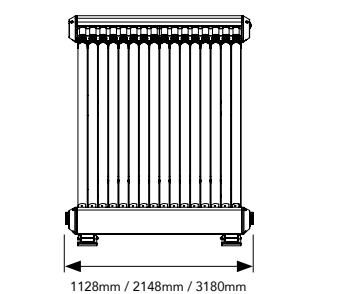
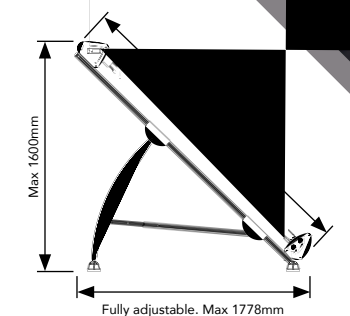
MODEL	MAX. OUTPUT (kW)	AVERAGE PRICE PER kW/h (GBP)	AVG. HRS SUNLIGHT APRIL - SEPT	SAVINGS GBP (UP TO)	AVG. HRS SUNLIGHT JAN - DEC	SAVINGS GBP (UP TO)
<b>16 Tube</b>	1.5	0.28	1000	420.00	1500	630.00
<b>32 Tube</b>	3	0.28	1000	840.00	1500	1,260.00
<b>48 Tube</b>	4.5	0.28	1000	1,260.00	1500	1,890.00

\*\*Statistics taken from 2021



## MODELS

MAX. POOL VOL (m <sup>3</sup> )	DESCRIPTION	WIDTH (mm)	NET WEIGHT (kg)	WATER MASS (kg)	GROSS WEIGHT (kg)	VOLUME (m <sup>3</sup> )	PRODUCT CODE
10	16 Tube solar array only	1128	47.00	+2.00	52.00	1.81	SR-AO-16
20	32 Tube solar array only	2148	97.00	+4.00	108.00	2.43	SR-AO-32
30	48 Tube solar array only	3180	137.00	+6.00	148.00	4.25	SR-AO-48
10	16 Tube solar complete system	1128	70.00	+2.00	78.00	1.88	SRC-16
20	32 Tube solar complete system	2148	124.00	+4.00	134.00	2.50	SRC-32
30	48 Tube solar complete system	3180	160.00	+6.00	174.00	4.32	SRC-48



\* Included in the complete system with codes SRC-16, SRC-32 and SRC-48

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Elecro Engineering, 11 Gunnels Wood Park, Gunnels Wood Road, Stevenage, Hertfordshire SG1 2BH, UK +44 (0) 1438 749 474 sales@elecro.co.uk

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# WHAT IS THERMECRO?

Thermecro is a patented solar heating system that uses renewable energy from the sun and converts 92% of solar radiation that strikes it into thermal energy to heat the water of residential pools, spas and aquatic installations. Thermecro is the most cost-effective solution to maintaining the desired temperature of any small to medium sized pool and is ideally recommended as a secondary heating device. Using an electric heater, heat pump or heat exchanger as the primary heat source, the water temperature rises to the desired level, and when reached, the Thermecro system switches on, maintaining the temperature by compensating for the pool heat loss. Thermecro is sea and salt chlorinated water compatible.

# WHAT WE KNOW...

Unlike other solar heaters, Thermecro is not reliant on outside temperatures but can work optimally in all weather conditions, temperatures, and locations. However, for maximum efficiency, the system is most effective following long periods of exposure to the sun.

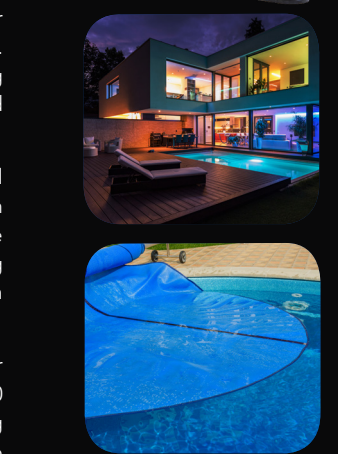
In the UK, the average number of hours of sunshine during the year is 1,500, whilst during the swimming season, from April to September, the average number is 1,000 hours. The Thermecro solar heater will deliver 100% of the power output, during these sunnier months.

Since solar heating systems only work during the day, it is recommended to raise the

water temperature of your Thermecro solar heating system by two or three degrees. This will compensate for the heat loss during the night, enabling you to enjoy the desired temperature at any time.

It is also recommended to insulate the pool wherever possible to reduce evaporation and heat loss. This can include insulating the sides of an above-ground pool, insulating pipework and using a pool cover for when the pool is not in use.

To further increase exposure, the solar panel can be adjusted between 20 and 60 degrees using the solar rig adjustment leg kit supplied with the complete Thermecro system.



# HOW IT WORKS

It is very important that the Thermecro solar heater is positioned after the pump/filter units to prevent any debris entering the system.

The water passes through a pool interface valve where some of the flow will be redirected to the 16, 32 or 48 tube models. A minimum pressure of 0.4 bar is required on the manometer of the pool interface valve to deliver the required flow rate up to 3m<sup>3</sup>/h to the panels. If the pressure drops below 0.4 bar, the Thermecro's performance will be reduced as not all tubes will be fully operational.

From the pool interface valve, water is fed to the inlet manifold located at the bottom of the solar panel and distributed equally to all 16, 32 or 48 glass tubes simultaneously.

Each evacuated (vacuum) tube consists of a thick glass outer tube and a thinner glass inner tube known as a 'twin-glass' or 'thermos-flask' tube. The tubes are made from borosilicate glass, a strong, low reflective material that will withstand extreme temperature changes without cracking, and covered with a special selective coating that absorbs 92% of solar energy and prevents any loss of heat.

Heat produced from the hottest parts of the solar tube is transferred via the aluminium fins to the U-shape titanium capillary tube where the pool water is circulating.

The insulation properties of the vacuum are so great that while the inner tube temperature may be as high as 250°C, the outer tube will always remain cool to the touch. This means that the evacuated tube solar collector performs extremely well and heats the water to an adequately high temperature even in overcast conditions, unlike capillary matting or flat plate collectors. (See fig. 1)

The system itself is fully protected - Each vacuum tube has spring loaded action which pushes and locks the tube into the manifold. This also acts as a pressure release mechanism that prevents any damage to the glass tubes or internals, in the case of a sudden pressure increase. Any non-working tubes, caused by cracks or loss of vacuum can be easily identified from its chrome coloured tip. When a tube needs replacing, the barium getter (vacuum indicator) will change colour from silver to white.

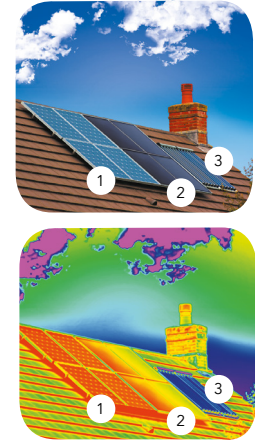
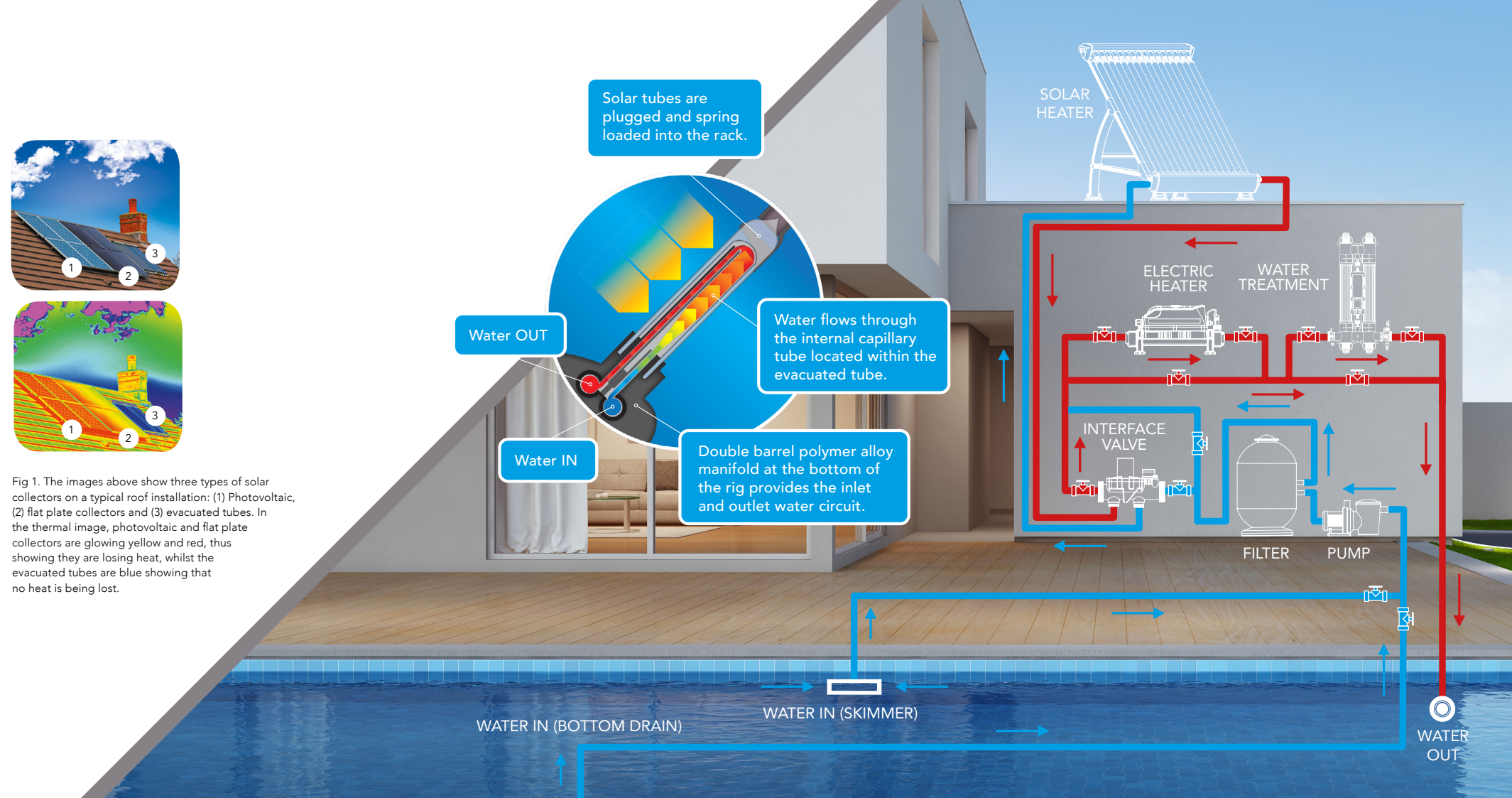


Fig 1. The images above show three types of solar collectors on a typical roof installation: (1) Photovoltaic, (2) flat plate collectors and (3) evacuated tubes. In the thermal image, photovoltaic and flat plate collectors are glowing yellow and red, thus showing they are losing heat, whilst the evacuated tubes are blue showing that no heat is being lost.



The system will only work during daylight hours and its maximum efficiency will be achieved during sunny periods with clear skies. The Thermecro complete system includes a digital controller (displaying the solar and pool water temperatures) and a pool interface valve to optimise operation. It is important to remember that setting the value to 2 or 3 degrees above the desired temperature during the day will compensate for any heat loss during the night.

The controller will operate the swimming pool circulation pump and the motorised ball valve connected to the pool interface. This will override the current working cycle of the circulation pump and switch the pump and valve ON and OFF only when necessary. This is defined by the ON differential which can be adjusted between 2°C and 60°C in the settings of the controller.

When heat is generated by the solar (set point + ON differential is achieved), the pump will start, a temperature reading will be taken, and the valve will open to redirect water to the tubes to extract the heat and return it to the pool. In most cases, the pump will

be working throughout the day since the solar temperature will be around 30°C to 120°C depending on the weather conditions and water flow rate. As soon as the temperature drops to below the differential point, the valve will close preventing any water from entering the solar panel when the pump is ON during its normal circulation running time and when there is no heat present inside the tubes.

For this reason, we always recommend using our controller and pool interface valve with our Thermecro solar heater. In cases where these are not used, Elecro cannot guarantee optimum performance. This is because without the ON/OFF control system, the water could still be circulating through the tubes during the night or on cloudy/rainy days where there is no sunlight. This will have the reverse effect of cooling the pool water instead of heating it.

During the Winter months we advise draining the entire system and closing off all valves connected to the Thermecro until the following season.

