



"Reliable Family Run (Husband & Wife Formed)"

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What is Solar Thermal Water Heating?

Solar thermal hot water systems (SHW) are one of the simplest and most widely installed of the renewable energy systems in place today. They transfer the abundant energy from the Sun into hot water in your hot water cylinder. SHW will even produce heat in the winter, but will require being topped up to the required temperature by a secondary heating source, such as your existing boiler or immersion heater. In this way, SHW complements your existing hot water system rather than replacing it outright.

For the average domestic dwelling in the UK, daily water heating consumes approximately 5-11 kWh of energy, but this varies considerably with household occupancy and lifestyle.

Space heating from solar thermal is less commonly practiced in the UK. This is because a prohibitively large and expensive system would be required. Also when the energy for space heating is most needed (during the winter period) the least amount of solar energy is available, whereas hot water is used throughout the year.

Common types of solar thermal water heating (SHW)

There are two main types of collector available, each with its own characteristics:

- Flat Plate/Flat Panel
- Evacuated Tube with either Direct Flow or Heat Pipes

How does solar panel works?

Solar energy is absorbed by solar collectors, usually mounted on the roof of a building. When exposed to sunlight the solar collector's heat up to temperatures significantly above the ambient air temperature, and once they are several degrees Celsius warmer than the water in your hot water cylinder, heat will be transferred to the cylinder

The panels themselves usually remain closed (indirect) system filled with an antifreeze mixture (heat transfer fluid) which is circulated around the system. This takes the heat absorbed by the collectors and offloads it into the hot water cylinder via a heat exchanger in the same way as a conventional boiler. No mixing between the water in the cylinder and the antifreeze mixture occurs.

Some installers provide equipment that does not necessarily require the replacement of your current, single coil hot water cylinder, although these are not as common. Direct drain back systems often allow this as the fluid flowing through the collector may be the same water that eventually flows from you hot water tap.

Other systems require a twin coil hot water cylinder (solar cylinder) to be installed, in which the heat exchange coil for the solar water heating system is sited below that of the conventional heating system in the hot water tank. This designates the solar thermal system as the primary water heating source, preventing the conventional boiler from firing unnecessarily.

Flat panels are the simpler of the two collector technologies, and consequently are of lower cost and efficiency. Essentially they consist of a rectangular flat sheet of metal coated with a special absorbent paint. In contact with the back of the metal sheet are a series of pipes through which the antifreeze mixture flows, removing heat from the panel and transporting it to the hot water cylinder. This is encased in an insulated unit and glazed to the front. The flat panels look very similar to Velux windows when installed on the roof.

Evacuated tube collectors are more advanced, containing discreet, parallel rows of evacuated tubes containing a heat pipe, with either a 'dry' or 'wet' connection. Heat trapped within the tubes is prevented from escaping by a partial vacuum and so are more efficient, particularly in colder weather. The heat is transferred from the collector to a manifold, through which the heat transfer fluid flows; taking the heat energy generated to the hot water cylinder.

Once the heat has been delivered to the hot water cylinder, the cooled heat transfer fluid then circulates back to the collector so that it can reheat and begin the process all over again.

Solar Hot Water

Reduce your energy bills up to 70% by installing **solar hot water** system to your home. Solar Hot water systems are the most cost effective solution to installing **solar home energy**

Given the fact that these Solar Panels work all round in the UK climate conditions, as they produce energy from the Sun's natural UV Radiation. What the Panel does is heat a chemically bonded coating on glass, either through a flat glazed unit or evacuated or tube, that in turn heats a non toxic fluid. The fluid is pressurised and pumped around a small pipe that carries the fluid into a coil inside a cylinder tank. The system has to be pressurised because of the temperature generated inside the tubes of the Solar Panel collector. Modern solar panel systems are very efficient and require minimal maintenance.

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