

Solar

How solar works and benefits



Solar Water Heating

"A solar water heater so efficient it can serve a weather station in Antarctica has been shortlisted for this year's £50,000 Royal Academy of Engineering Mac Robert Award, the UK's most coveted prize for engineering innovation"

- Solar collectors – fitted to the roof collecting the sun's heat.
- controller – with variable speed electric pump.
- Pump station – this pumps cold water via the insulated pipes from the bottom of our K2 Twin Coil Water Cylinder to the heat transfer system.
- Water heats here.
- Then water passes back to the cylinder.

The Benefits- lots?

- Adds Value to your property.
- Requires little maintenance due to the shape of the glass and the quality.
- Eco Friendly
- Solar tubes have been proven by the department of trade and industry to be more efficient during winter time than flat plate collectors.
- Designed for the UK climate, allowing heat to be collected regardless of external air temp.
- Provides almost all of your hot water during the summer months and an average 50 per cent year round.
- Domestic system typically reduces carbon dioxide emissions by 0.4-0.75 tonnes (or 400-750kg) per year, depending on the fuel replaced.
- System will save you on average between £50-£300 per year, depending on your water usage.

Suitable for my project?

- Solar water heating can be used in the home or larger applications-such as swimming pools, commercial buildings, office blocks ect....
- For a domestic application you will require a surface area of 2-3 sq meters of southeast to southwest facing roof.
- Additional space required for K2 Cylinder if required.
- Listed buildings and areas of interest may need special planning permission.

Installation and Maintenance-quick and professional?

- Installation cost for a domestic system is £3,000 – £4,500
- Installation time Approx 1-2 days
- A yearly check by the householder and a professional installer every 4 years.
- Low carbons building programme provides grants with the cost of installing.
- 5-10 year warranty

TETON SYSTEM SOLAR HOT

Solar collectors mounted on a roof are connected to pipes containing a heating fluid mixture of water and antifreeze. When the sun heats up the solar collectors the hot fluid is pumped through the pipes to a heat exchange coil in the new solar hot water cylinder. Here the captured solar energy is transferred from the hot fluid in the coil to the household's hot water supply. The hot water in the cylinder is connected to the taps, shower, washing machine, etc in the usual way.

In order for the solar water heating system to run safely and efficiently, a range of valves are installed in the heating fluid circuit. A series of temperature sensors are connected to a digital solar controller to switch the system on or off according to the solar energy available.

On days of limited sunlight, solar energy alone may not be sufficient to heat the household's water to a usable temperature. In this case your conventional boiler or your immersion heater (if fitted) can be used to further boost the temperature of the solar heated water.

Choosing the right system

As with all technologies there are good and not so good solar water heating systems. When choosing solar water heating system there are a number of points to consider:

Size and quantity of solar collectors

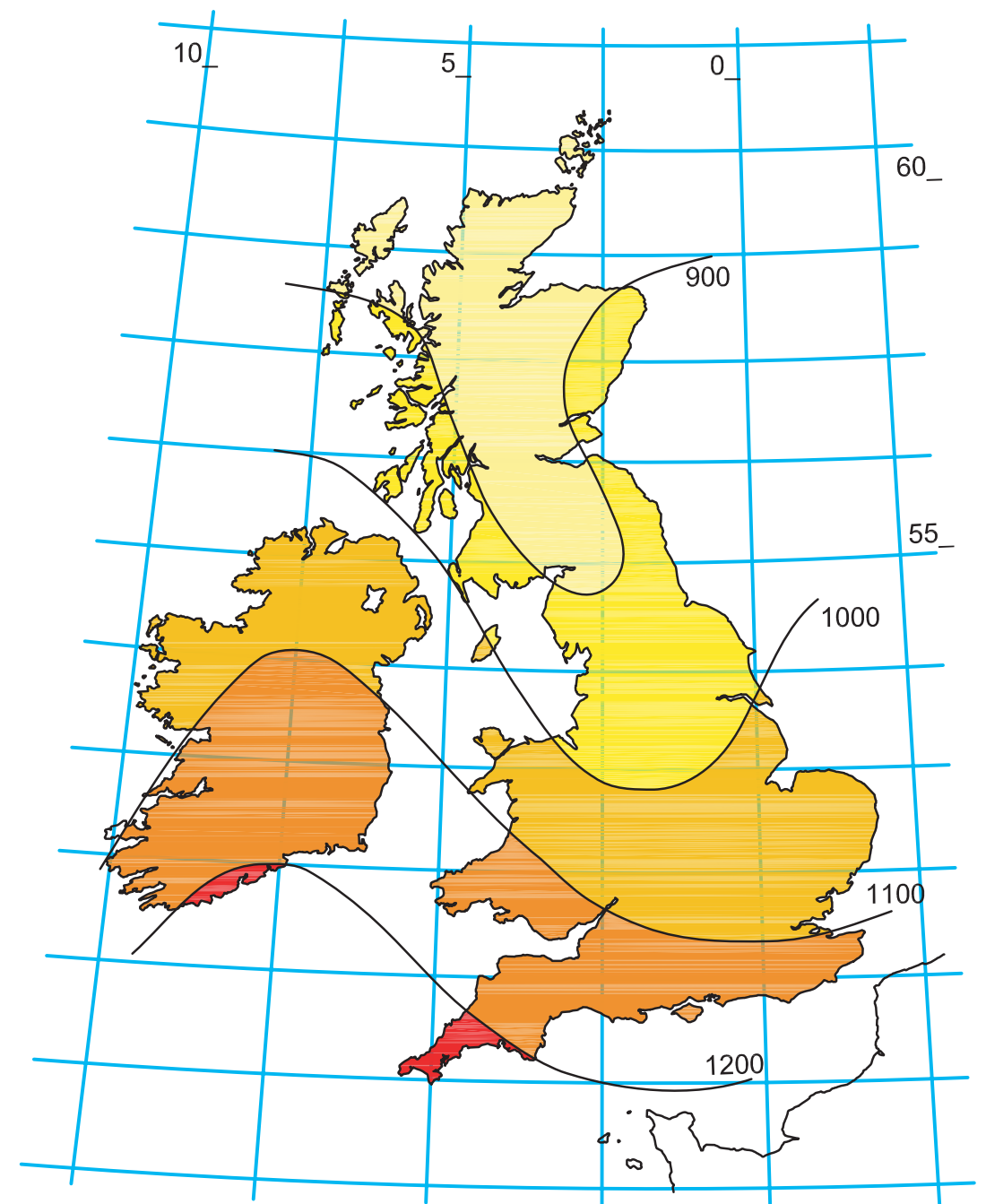
Allow around one square metre of collector surface area for every 75 litres of hot water to be stored.

Position of solar collector

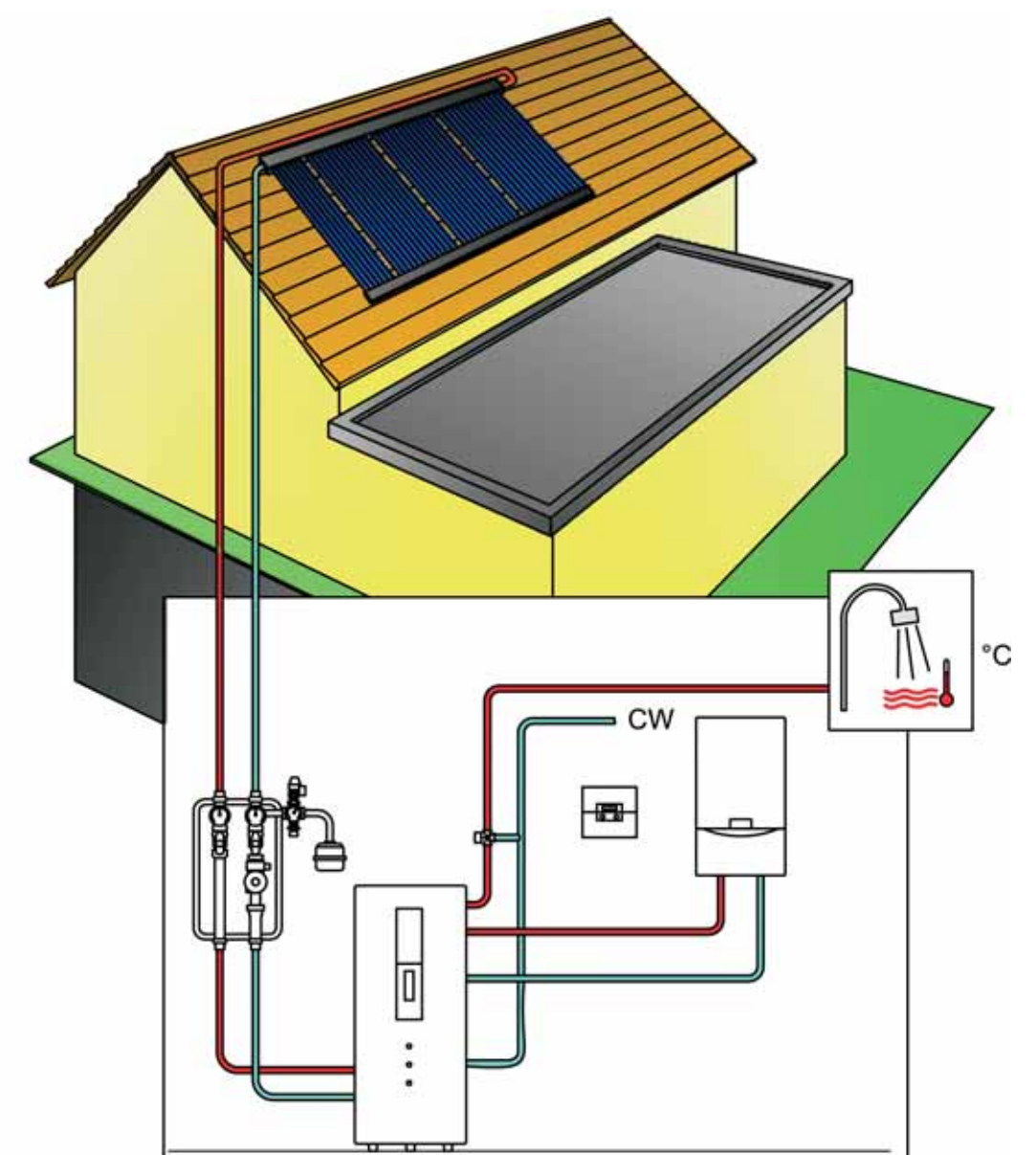
Collectors in the UK work best when facing south and at an angle of around 35 degrees from the horizontal.

Durability

A well designed and constructed solar water heating system should provide many years of good service with little maintenance



**UK solar irradiation
Annual total kWh/m²**



Schematic showing typical solar domestic hot water and auxiliary cylinder heating system