



# Low Carbon Technology Guide

## Solar water heating

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# 1. What is it?

Solar water heating (also referred to as solar thermal) is a renewable energy technology that uses the energy from the sun to provide hot water for your home. It consists of solar panels (collectors) installed on the roof and pipes that connect them to a hot water cylinder in your home. When the sun shines, a mixture of water and glycol (antifreeze) is heated up by the collectors. The antifreeze is then pumped into the hot water cylinder, where it raises the temperature of the water stored inside the cylinder. The hot water from the cylinder can then be used for bathing, showering and hot taps.

There are two main types of solar collectors available:

- **Evacuated tubes** – An array of glass tubes that are mounted onto a roof.
- **Flat plate collectors** – Flat boxes that contain a mesh of pipe. These can either be fitted onto the roof or integrated into it.

Generally, flat plate collectors are a simpler and cheaper technology, but they also tend to be less efficient than the evacuated tubes meaning that you would need a larger area for flat plate collectors than evacuated tubes to provide the same amount of heat.

## **2. What should be considered before installation?**

### **2.1 NEED FOR ADDITIONAL WATER HEATING SYSTEM**

Even though the solar water heating system works all year round, it is more effective in the summer, during which it would typically provide ~90% of your home's hot water requirements, compared to ~25% in the wintertime. To make up for this difference, the system requires a traditional gas boiler or an immersion heater (an immersion heater uses electricity instead of gas to heat up the water).

### **2.2 HOT WATER CYLINDER**

Most solar thermal systems require a hot water cylinder to operate. If you do not have one already, you will likely need to have one installed. In some cases, even if you have a hot water cylinder, it might be too small or incompatible with the solar thermal system and would need to be changed. Alternatively, you can install a dedicated solar hot water cylinder, assuming you have the space to install it. A qualified installer would be able to advise if your current central heating system is compatible with solar thermal technology.

### **2.3 POSITIONING OF THE COLLECTORS AND ROOF SPACE**

Solar collectors are normally installed on the roof, where they usually require between two to five square meters of space.

For maximum efficiency, the collectors should be positioned on a predominantly south-facing roof with as little shading as possible from other buildings, chimneys or trees, as any shading would reduce the performance of the collectors. The collectors can also be quite heavy, so the roof must be strong enough to support their weight.

### **3. How much does it cost?**

According to the Energy Saving Trust, typical costs of solar thermal systems are between £2,000 and £5,000 and would depend on several factors, such as the size, type and the number of collectors installed. The price will also be higher if you need to replace or add a new hot water cylinder for the system. It is generally recommended to get quotes from at least three installers to get a good idea of how much the system would cost you.

### **4. What is the maintenance like?**

Solar thermal systems usually require little maintenance after the installation, and most systems come with a five or 10-year warranty. Most installers recommend annual service checks of the system and thorough maintenance every three to five years, which usually involves replacing the antifreeze in the system. Installers should also leave written details of any maintenance checks that you can perform yourself to ensure that the system is operating normally.

## 5. How can I get it?

Solar thermal systems require technical knowledge to be installed properly and should only be carried out by a qualified installer.

The Microgeneration Certification Scheme (MCS) is currently the standard and quality assurance organisation for renewable heat technologies. Their website provides the most up to date list of accredited installers in the UK.

## 6. What funding help is available?

### 6.1 HOME ENERGY SCOTLAND LOAN

If you live in Scotland and considering a solar water heating system for your property, you could be eligible for an interest-free Home Energy Scotland Loan of up to £5,000.

### 6.2 ADDITIONAL FUNDING INFORMATION

Depending on where you live, below are some organisations that can advise you on the funding options that could be available to you.

**England and Wales:** Simple Energy Advice

**Scotland:** Home Energy Scotland

## 7. Useful websites

For more information on the solar water heating systems, please visit the following websites.

[Energy Saving Trust](#)

[Which? Guide](#)