

### What are Solar heating Panels?

Solar heating panels or solar “collectors” come in two principal forms - evacuated tubes and flat plate collectors. The system is connected to the hot water system. Solar water heating systems can provide over half of a household's hot water requirements over the year in UK conditions.

### How does it work?

Solar water flat plate collectors in their simplest form are made from a sheet of metal painted black which absorbs the sun's energy. Water is fed through the panel in pipes attached to the metal sheet and picks up the heat in the metal. For the UK climate the pipe work contains non-toxic anti-freeze. The pipes are often made of copper for better conduction. The metal sheet is embedded in an insulated box and covered with glass or clear plastic on the front. The system is usually installed on the roof. The evacuated tube system is a series of glass heat tubes grouped together. The tubes are highly insulated, achieved by a vacuum inside the glass.

The collectors convert the ultra violet rays of sunlight to heat which is then transferred through a closed water system to a hot water tank. Solar heating is only applicable to hot water heating and not for space heating, although the heat can be utilised through a heat exchanger to a space heating system. The greater the sunshine the more heat is produced. The water will not always be able to heat water to normal domestic hot water temperature (60°), and so a secondary heating system is needed to top up the solar heat.



### Where will it work?

Solar collectors should be mounted on roofs or similar mounts and will need 3 to 4 sq m with ideally a southern aspect (including south east and south west). Clearly there wants to be no overshadowing by trees or other properties as this will reduce the potential efficiency of the collector.

A typical installation in the UK has a panel of 3m<sup>2</sup> to 4m<sup>2</sup> with a storage tank of 150- 200L (2m<sup>2</sup> for evacuated tubes). However, the optimum size will depend on actual hot water use. This can be calculated using software to simulate system performance throughout the year.

### Regulations

The installation of solar collectors will have to comply with Building Regulations, and be installed by an approved installer. Planning permission is not normally required for domestic installations, although Listed Building Consent and or Conservation Area Consent will be required if applicable.

### Income/Savings

Solar water heating system can provide about a third of your hot water needs, reducing your water heating bill by between £55 and £95 per year.

**Feed-in Tariffs  
Renewable Heat Incentive**

The scheme, to be introduced on 1<sup>st</sup> April 2011 provides for payments not dissimilar to FITs (Feed-in Tariffs) for electricity. The scheme will create a significant shift in the cost/benefit of smaller scale schemes with additional income now being generated from green power generation. Examples of proposed tariffs are shown below. For the smaller and medium installations (up to 350kW) the tariff will be paid on the deemed amount of heat that is used rather than using metering. For more information see the RHI Fact Sheet.

Table of RHI tariff Technology	Scale	Proposed tariff (p/kWh)	Years
Solar Thermal	≤20kW	18	20
Solar Thermal	20- 100kW	17	20

**Capital Costs**

In addition to the collector itself you will probably need a new hot water cylinder which has a dual coil system. There are methods available of converting conventional cylinders to dual coil systems, but not current for high pressure systems. Replacement of cylinders clearly adds to capital costs.

The cost of installing a solar hot water system ranges from approximately £500-£1500 for a DIY system, to £2000-£5000 for a commercially installed system. These prices however, are dependent on the size of the system.

The useful life of an installation is approximately 25 years

**Grants**

Grants for domestic installations are available through the Low Carbons Building Programme. In some situations grant may be available through the Rural Development Programme for England (RDPE)

**Partners**

We are pleased to be working with a number of partners regarding installation. We are therefore able with our partners able to offer a complete package including feasibility assessment, planning, installation and commissioning of Solar Panels.



**Scoping**                      **Feasibility**                      **Project Management**                      **Planning**  
**Environmental Compliance**                      **Design**                      **Funding**                      **Delivery**

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