



## Renewable Energy: The facts.

### Solar Water Heating (Solar Thermal)

Solar Water Heating (SWH) must not be confused with *photovoltaics* (solar electricity). Solar Water Heating is a different and much simpler technology.

#### How does it work?

The basic principle behind every solar water heating panel (or *collector*) is that DARK COLOURS ABSORB HEAT.

A metal back-plate is used to collect the sun's heat and transfer it to water (or, in the UK, more usually a water/anti-freeze mix – plain water will freeze on a roof) within the panel.

#### What sort of panels exist?

A basic solar water heating panel, with a network of pipes running over a black back-plate, is known as a '*flat plate*' panel (or *collector*)

A higher-tech type of solar water heater is the 'evacuated tube', in which a small 'slice' of tube and back-plate is encased in a glass tube with a vacuum inside. A number of tubes (often 20 – 30) are connected in a manifold and mounted on the roof. In winter conditions (with sun but very cold ambient temperatures) a flat-plate panel may be losing heat through convection almost as quickly as it is gaining it. The use of a vacuum limits this heat-loss via convection, and enhances the winter performance.

In most cases the water heated by the panel is passed by a pump through a *heat exchanger* to heat the water in a hot water cylinder.

#### How big a panel will I need?

Usually a minimum of 2.5 square metres, up to, say, 4 square metres for a 4–5-person household.

#### Is my house suitable for solar water heating?

The ideal orientation is due South, but anywhere between South East and South West will only cause a slight loss of efficiency.

Likewise, although ideal tilt angles can be calculated, significant variations from the ideal cause only a relatively minor loss of efficiency.

#### What can I expect from a SWH system?

A 2.5-4 sq m panel can be expected to provide about 50-60% of a household's hot water over a year, and displace between 1200 and 1600 kWh per year of some other heating fuel. If that other fuel is on-peak electricity, you will save up to around £240 per annum. If your other form of water heating is a high efficiency condensing gas

boiler, your savings will be much less. However, with the price of gas and electricity set to continue rising, the savings will increase still further.

### **How much will it cost?**

A good flat-plate solar water-heating system will normally cost around £3,500 installed. V.A.T. on installations is chargeable at only 5%. An evacuated tube system may cost £3,800 - £4,500. Sadly there are some much higher prices around for similar kit:

### **ALWAYS get at least 2 quotations.**

### **Will I need planning permission?**

Installation is generally allowed as 'Permitted Development', unless you live in a listed building or within a conservation area, but always check with your local planning office first! Retrospective planning permission can be hard to obtain!

### **Can I get a grant?**

Sadly no. The low Carbon Buildings Programme finally closed on 24<sup>th</sup> May 2010.

Local schemes offering further discounts may also exist. Contact your local Energy Saving Trust Advice Centre on 0800 512012.

### **\*Hot news\*!**

**The Department of Energy and Climate Change has issued a consultation document on the 'Renewable Heat Initiative' (RHI). This will mean that you could be paid for renewably-generated heat from April 2011. The figure in the consultation paper is 18p per kWh for SWH, but debate suggests that all RHI tariffs could well reduce in the light of national expenditure cuts. As we update this fact-sheet (Nov 2010) an announcement is awaited See:**

**<http://www.decc.gov.uk/en/content/cms/consultations/rhi/rhi.aspx>. Such installations must be done with Microgeneration Certification Scheme (MCS)-approved equipment by an MCS-approved installer.**

### **Can I install solar water heating myself?**

Yes. If you are confident with plumbing and roof work, you should find no problems with solar water heating. Energy Saving Trust or other advice centres may be able to help with any problems you may have.

Unfortunately, no grants or incentives are available for D.I.Y. installations, however proficient you are, and though installed systems only attract 5% V.A.T, 17.5% is payable for D.I.Y systems. You would not benefit from the Renewable Heat Incentive unless you are an MCS-registered contractor yourself.

**For further advice on this and other renewable energy technologies contact SYEC on 0114 258 4574 or [info@syec.co.uk](mailto:info@syec.co.uk)**