

# Solar Hot Water Panels



Solar hot water panels are great because:

- You can get more than half your hot water from one or two panels on your roof
- Sunlight is free and soon you will be able to earn extra money from the RHI
- Using solar hot water panels will lower your carbon emissions

## What are solar hot water panels and how do they compare with PV (photovoltaic)?

Solar thermal panels absorb heat from sunlight. Typically this can be used to provide domestic hot water.

Solar thermal panels are generally cheaper to install, and produce more energy than photovoltaic panels which generate electricity of the same size. However, hot water cannot be exported to a 'grid' as electricity energy can, therefore it is only sensible to generate as much as a household can reasonably use.

## What are the benefits?

You benefit financially in two ways: firstly through a significant reduction to your fuel bills; secondly, via the government's Renewable Heat Incentive, (RHI).

Plus you will be benefiting the environment by burning less fossil fuel.



*These panels are evacuated tubes behind glass (Vaillant)*

## Do I need to change the way I use hot water?

To get the most benefit you should time your heating system to top up the water temperature in the early evening, after the sun has done what it can. If you use hot water in the morning, for showering, the water should still be hot enough provided your cylinder and pipes are well insulated. You don't need water at 60C

<http://www.transitioncambridge.org/energy>

or even 50C to run a shower or bath.

## What types of panel are available?

**Flat plates** are generally considered aesthetically pleasing, looking a bit like dormer windows. A glass panel at the front traps the sun's rays to heat a working fluid (typically, water with antifreeze) circulating through pipes behind the glass. This fluid is pumped through one coil of your water cylinder, transferring its heat to the water.

**Evacuated tubes** comprise an array of glass tubes, evacuated to improve thermal insulation. Inside each tube is a heat pipe, which transfers the solar energy to a heat exchanger at the top of the array. The hot fluid from the heat exchanger is pumped to your cylinder, as for the flat panel type.

You can also get evacuated tubes hidden by flat glass, as shown in the picture.

## Can I use solar heating alongside conventional heating?

A solar thermal installation is unlikely to meet the total domestic hot water need, especially in the winter; therefore it is more normal to combine it with a conventional (e.g. gas fired) heating system.

If you have a conventional (not combi boiler)

- Your hot water cylinder needs dual coils – but most suppliers can also provide a suitable replacement cylinder.
- Some solar thermal systems require a vented hot water system. If your existing system is pressurised, check for compatibility with your supplier.

If you have a combi boiler:

- Your combi boiler must accept pre-heated water (check with the manufacturer)
- You will need to add a hot water cylinder for the panels to heat up.

Adding solar heating to a conventional boiler will reduce the fuel usage to the extent that during the

summer, many users find that they do not need to use their boilers at all.

### **Can I use it to heat my house?**

Solar thermal is not generally recommended for space heating, as it doesn't work well in winter or when it is cloudy.

### **What temperature will it heat the water to?**

On a sunny day, it's theoretically possible to get 95°C but the control system will limit the output to a safe temperature.

Evacuated tubes will have a built-in thermal isolator to prevent the water from boiling.

### **How much roof-space do I need?**

For a house with a south facing roof, 2-3 square metres should be a rule of thumb. This should provide 100% of an average family's hot water requirement during the summer, and maybe 60% averaged over the year. You can of course choose a smaller or bigger installation depending on your need.

### **What if I don't have a south-facing roof?**

If your roof does not face south you will need more panel space to give a similar amount of heat. For example, some houses have panels on both East and West facing roofs (in such cases, each panel will be pumped independently so that the heat collected on the sunward side is not simply re-radiated on the cold side).

More generally, the efficiency of the panels varies with orientation, in much the same way as for photovoltaic panels. Our PV FAQ contains graphs showing this effect.

### **Can the panels go on a walls or flat roof?**

Ideally (in England) they should be mounted on a 40 degree slope; deviation from the ideal angle will result in less heat being collected. Many suppliers can provide brackets for mounting at this angle on flat or vertical surfaces.

### **Can I install it DIY?**

To receive any RHI or other benefits, installation should be done by an MCS certified installer.

### **Do I need planning permission?**

Solar panels are normally a permitted development if you are putting them on your roof, even in a conservation area. But if your house is listed, check

with your local authority.

### **How long will the system last?**

Systems should carry a warranty of at least 10 years.

### **What maintenance is required?**

Occasional topping up of anti-freeze should be the only thing required on most systems.

### **Evacuated tubes look rather delicate; what happens if they break?**

Breakages are rare, but each tube is self-contained so if it does break, the rest of the system can still function. Replacement of a broken tube is easy.

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

For a normal semi-detached house, you can expect to pay about £3000 to £5000. Although this may be a large outlay, the RHI (see below) is expected to make it a sound financial investment.

### **Renewable Heat Incentive (RHI)?**

The Renewable Heat Incentive (RHI) is a government scheme to encourage people to invest in renewable heat technologies such as solar hot water panels, heat pumps and biomass boilers. The RHI will give you a guaranteed income independent of fuel prices. At the moment it is only for industrial and commercial heat users – the current timetable is to extend to domestic customers in spring 2014.

You don't have to delay your installation in order to qualify for the RHI. Any systems installed (by an MCS accredited installer) now will qualify as if they were installed on the start date of the scheme.

For the latest information go to [www.decc.gov.uk](http://www.decc.gov.uk).

### **Who are the local suppliers?**

Here is a list of some of the local companies that can supply and install solar thermal systems in the Cambridgeshire area:

- Viridian Solar: [www.viridiansolar.co.uk/](http://www.viridiansolar.co.uk/) (based in Papworth)
- Bowler Group: [www.bowler.co.uk](http://www.bowler.co.uk) (based in Harston)
- Solarworks Ltd: [www.solarworks.co.uk](http://www.solarworks.co.uk) (Lavenham, Suffolk)

Also we have a personal recommendation for an installation/maintenance engineer: Roland Parker 01206 853460