



UK SDA – Solar Hot Water

Industry Briefing Note provided by Mark Group

... a solar hot water system can provide up to 70% of annual domestic water heating virtually free and reduce a home's carbon emissions by more than 5%; in summer the system can provide nearly all the hot water required, and provide around 50% of the requirement throughout the remainder of the year ...

UK Sustainable Development Association

1st January 2009

How it works ...

Solar hot water systems convert light into heat which in turn creates hot water. Systems require only daylight to generate heat so they still generate heat even on a cloudy day.

There are three main components in domestic systems:

- ☀ Solar panels to collect heat from ambient daylight and transfer it to a solar fluid (usually a glycol/water solution)
- ☀ A plumbing system to pump the solar fluid around the system to heat the water
- ☀ A hot water cylinder that stores the hot water for domestic use

In summer the hot water supplied by the system is likely to be sufficient for most householders needs; at other times of year, a supplementary heat source such as a boiler or immersion heater will be required.

Benefits ...

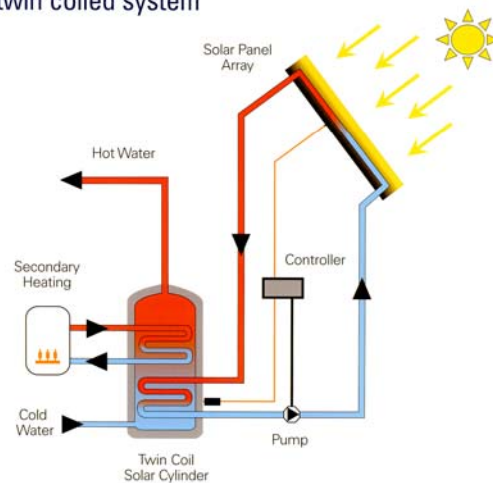
A solar hot water system is one of the most cost-effective and environmentally friendly renewable resources, with modern systems providing a greater selection of equipment available to meet user requirements. Systems can be tailored for domestic use, through to larger applications such as commercial buildings and the heating of swimming pools.

A domestic system can provide up to 70% of a home's water heating requirements each year, meeting virtually all the hot water requirements during the summer months. The systems therefore reduce fuel bills and the impact of the house on the environment, reducing its carbon emissions by around 325-kgs each year.

Practical implications ...

Solar hot water systems can be installed on the majority of buildings, directly onto a pitched roof or on frames in the case of flat roofs. However, they do require a roof that ideally faces south or south-west, and is not overshadowed by trees or adjacent properties. They are suitable for all types of roofing

Solar layout for conventional twin coiled system



materials and most, but not all, boiler systems. Although planning permission may not be necessary, this should be checked, particularly in conservation areas or on listed buildings.

A typical installation will take between one and two days to complete, with work taking place both inside and outside the property. Once installed, very little ongoing maintenance is required, comprising a monthly visual inspection to confirm that the panels are remaining clean, and the integrity of the glycol within the system being tested every 2 to 3-years.



Costs & payback ...

Payback periods vary depending upon the capital costs incurred during the installation and factors such as the type of fuel being displaced and the amount of hot water used.

The capital cost of a system will vary according to its size which is dictated by a combination of hot water usage requirements and domestic hot water storage capacity; most systems usually include two or three solar panels, coupled with a 200 to 300-litre hot water cylinder. Such systems typically cost between £3,500 and £6,000, with the householder sometimes being eligible for a supporting grant.

System in operation ...

In order to obtain maximum benefit from a solar hot water system, domestic hot water should continue to be used in the normal way.

During the months of the year when additional heating is required, this should be set to come on towards the end of the day. This will enable the system to put as much heat as possible into the domestic hot water cylinder and minimise the need to make any other system adjustments.

Further information ...

Further information on this technology may be obtained from UK-SDA member company Mark Group (see www.markgroup.co.uk or ring 0116-236-6523)