Using Solar Hot Water Systems All Year Round - Frequently Asked Questions

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SUMMARY

A solar thermal hot water system is not only good for the environment but has financial benefits too. With a basic understanding of how they work it will be possible to maximise these benefits throughout the whole of a year.

INTRODUCTION

A solar hot water panel consists of a series of vacuum tubes which concentrate the sun's energy to the manifold at the top of the collector. A controller continuously compares the temperature in the manifold against that in the hot water cylinder. When the water temperature in the manifold is hotter than the water in the cylinder, a pump circulates water through the manifold, down well insulated pipe-work and through a second heat-exchange coil in your hot water cylinder (referred to as a solar cylinder or twin-coil cylinder). The water and antifreeze mixture flowing around the solar thermal system is used to heat the water in the cylinder indirectly. No water in the solar heating system will come into contact with water in your cylinder. The heat is transferred, not the water. The slightly cooled water then returns to the solar panel. As long as the water in the hot water cylinder is at the required temperature, your existing boiler will not switch on. You will be saving money and not wasting energy.

Does the solar water heating system contribute to the central heating in winter?

In most installations the system is designed for water heating. This reduces the load on the central heating boiler. Towel rails can be added to system. However, winter space heating is not a recommended application. The reason for this is that when the energy demand is at its peak (e.g. cold long winter evenings) the supply of solar energy is at a minimum.

I have a swimming pool. Will I benefit from this system?

Swimming pools are a very good application for solar heating. Our collectors can be roof-mounted or pool-side. It is possible to design a system that will provide hot water for your home as well as your pool. Heating a pool using conventional fuels can be very expensive. Solar will make significant energy savings and enable you to maximize the season.

Is there enough sunshine in the UK for it to work?

Modern hi-tech panels work brilliantly in the UK climate. They work best in direct sunlight, but still work effectively on diffused solar radiation, and hence contribute well to water heating even on cloudy days. They are more efficient than conventional flat panel solar systems, and hence can provide more of a contribution to water heating outside of the peak summer season. For the level of solar insolation in your locality check a solar map.

Will the system freeze in winter?

No, the manifold assembly is well insulated, and the solar heating circuit is filled with 40% antifreeze, specifically made for solar installations.

Will the system overheat in summer?

In mid summer the panel(s) will be absorbing a great deal of energy. If the system is in use this presents no problem. If the system is left unattended (for instance if you go for a 2 week holiday) and the weather at home is fantastic, the panel will heat the cylinder up to a hot temperature. If this were left to compound over several days, with no safety system to keep the temperature in check, the cylinder might overheat. The options available to protect the system are:

1. Use the recycling "holiday programme" on your controller. The controller detects when the cylinder reaches a certain temperature and runs the pump at night to dissipate excess heat. This brings the cylinder temperature down and prevents overheating. This feature is available on more advanced controllers.

2. Use a heat dump circuit. At its simplest this involves installing a radiator or towel radiator in parallel with the solar circuit. An electrically actuated solenoid valve can be used to switch the radiator on if the cylinder reaches a certain temperature. Alternatively you can simply use a manual valve and turn it on when leaving the system unattended for any length of time.

3. Covering the panel when leaving the system unattended is another basic option. This is often used in systems where the panels are used primarily for heating (i.e. they are not required during summer).

CONCLUSION

A solar hot water system is a great way to reduce energy bills and energy emissions. With a few simple precautions such a system can benefit you throughout a whole year.