

Vacuum Tube Solar Collectors (HP)



Solar energy is free and can be harvested very effectively to produce the majority of your hot water needs.

There are three basic types of solar collector; the Flat Plate type, the Direct heated Vacuum tube and the Heat pipe Vacuum tube types. This data sheet will look at the last of these.

Although it is possible for solar collectors to be used to produce enough hot water for space heating systems the surface area of collectors and the capacity of the storage vessel required means the system would be grossly over-sized during the summer conditions when heat is not required. It is therefore not recommended, either technically or economically to do this.

The more common use for these systems in the UK is to provide a stored capacity of domestic hot water (DHW) for washing.

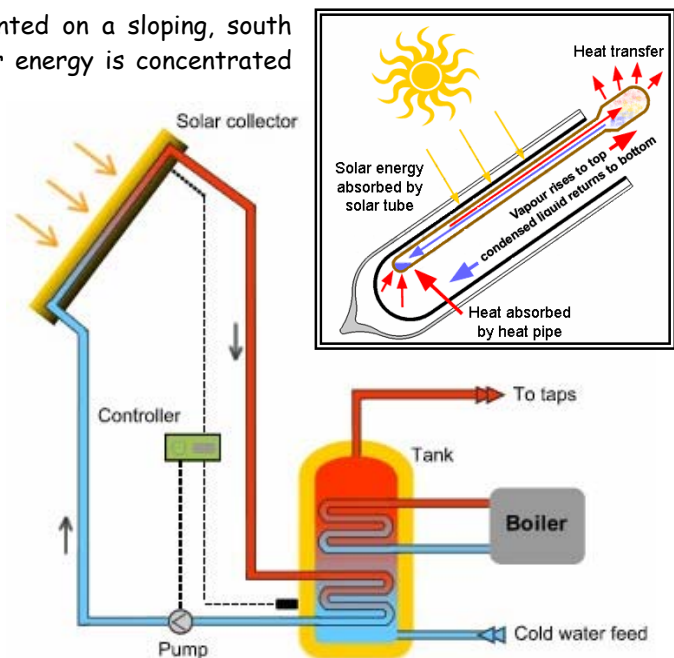
Systems are normally sized to meet the DHW demand during the summer conditions when collection efficiency is at its highest. In Spring and Autumn a suitably sized system would be expected to produce about 80-85% of the demand and in winter this could fall to 30-50%, hence a secondary heating input will be needed from the boiler.

A typical system comprises a solar collector mounted on a sloping, south facing roof through which water is pumped. Solar energy is concentrated inside the vertically arranged vacuum tubes and heats a refrigerant in the heat pipe. Heat is transported to a bulb in the water flow. A heat transfer fluid is pumped through the manifold transferring the solar gained heat to a thermal storage tank where the DHW is to be stored.

Sensors at the solar collector and in the tank inform the controller of the temperatures, which controls the pump to draw heat from the collector whenever it is available and to bring the boiler on only when required.

Heat-pipe collector systems can achieve up to 71-82% solar conversion efficiency depending on manufacturer and ambient conditions. They will reduce energy bills and carbon dioxide emissions. They can enhance the value of your property and help to obtain a high efficiency rating whilst providing some protection against uncertain energy prices and shortages in the future.

The specially designed thermal store is highly insulated and designed to be held at an elevated temperature of up to 90°C, so as to maximize collection of the available solar energy every day. Solar systems have a life expectancy of at least 30 years and require almost no maintenance. We provide a full design and installation service using equipment of the highest quality installed by fully accredited Solar Trade Association teams that qualify for the proposed renewable heat incentive RHI, to be unveiled in April 2011



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