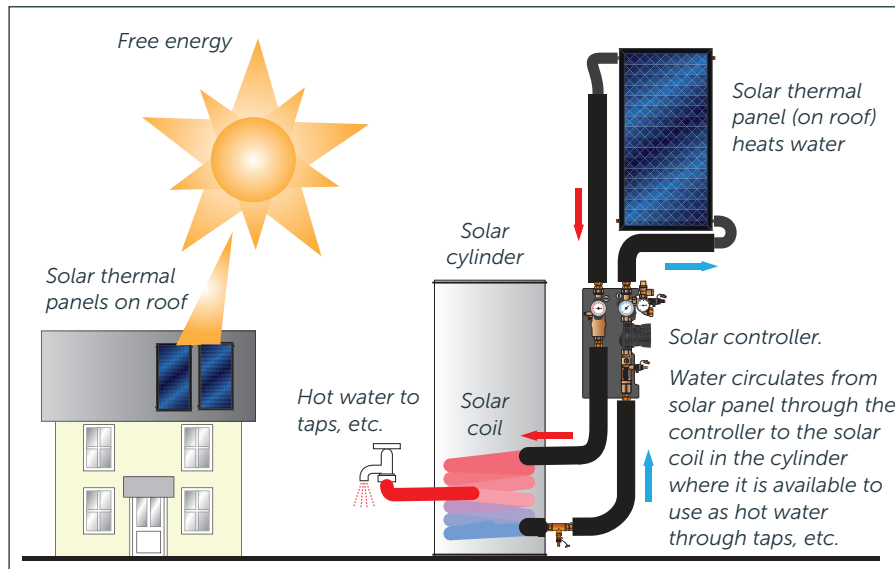


How do solar thermal panels work?



Installer contact details:

HOW DOES SOLAR THERMAL WORK?

A solar thermal system utilises FREE solar energy which is used to heat water to provide Domestic Hot Water (DHW). A well designed and installed solar thermal system should average 50-60% of a domestic property DHW needs over 12 months. This can rise to 100% during the summer months.

A fluid (water with added glycol to prevent the system freezing in winter), is pumped around a closed loop, through the solar collectors, through a pump, to a heat exchanger or coil in the bottom of a solar cylinder. The fluid is heated via solar energy on the solar collector. When the fluid in the collector is around 7-8 °C higher than the fluid at the bottom of the cylinder, the solar pump is activated, moving the warmer fluid down to the cylinder. Temperature sensors on the roof and at the bottom of the cylinder are sent to the solar differential controller, which switches the pump on and off, according to temperatures and settings.

WHERE CAN IT BE USED?

Solar thermal is ideal for properties with high hot water consumption and/or no access to the mains gas grid. Space will be needed for solar collectors and the

solar cylinder.

Collectors can be located on a roof or floor mounted in a southerly orientation (for maximum gain). Panels should not be shaded by trees or adjacent buildings and can either be in roof (integrated and flush with roof covering), on roof (mounted above the roof plain) or flat roof (A frame mounting). Fittings can be supplied for various standard roof types such as slate or tile – specialist roof types may need bespoke fittings. There must be adequate clearance around the collectors for wind loadings, and the structural condition of the roof must be assessed.

COMPONENTS

Specialist solar cylinders have an additional solar coil located at the bottom of the cylinder. The coil at the top of the cylinder is sized depending on the primary heating source, which is usually a boiler or heat pump. Solar cylinders are available in a range of sizes from 250 to 500 litres. They also have an electric immersion as a back up heat source.

The solar pump station comprises a solar rated pump wired to a controller, flow and return temperature gauges, air vent and air scrubber, pressure gauge, flow setting valve, plus filling and flushing

connections for changing the fluid and initial commissioning.

PIPEWORK

The pipework from the collectors, through the pump station to the cylinder has to be adequately sized for the number of collectors and should use solar-rated solder and components due to the high temperatures experienced by solar thermal. Specialist flexible pipework is available; this comprises corrugated flow and return pipes with a cable for connecting the temperature sensor sheathed in an insulation, which makes for easy and quick installation.

SAFETY

Safety items include a solar rated discharge vessel, which in the event that the solar fluid becomes too hot, it would expand and have somewhere to go to. Also an expansion vessel must be fitted on the system to allow the fluid to expand as it gets hot, to prevent damage to the cylinder, collectors and pipework. An Anti scald mixing valve must be fitted on the DHW hot water outlet to ensure delivery to taps does not exceed 55-60°C. All primary pipework should be insulated to prevent scalding and decrease heat loss.