



DATASHEET

System Overview

The use of the sun's energy to heat water for washing and bathing is a simple and effective way to save both energy and money.

The principle is straight forward.

When there is enough light, water is pumped through the solar collector and is heated by the sun's energy. This heated water then flows through a heat exchanger, warming the water stored in a solar hot water cylinder, in the same way as a boiler. The hot water in the cylinder can then be used for washing and bathing as required, with your boiler providing backup heating.

In the summer the water in the cylinder can reach a temperature of 80°C within a day, and the insulated cylinder will keep the water warm overnight. Typically, the solar hot water system can reduce your domestic hot water bill by 50%.

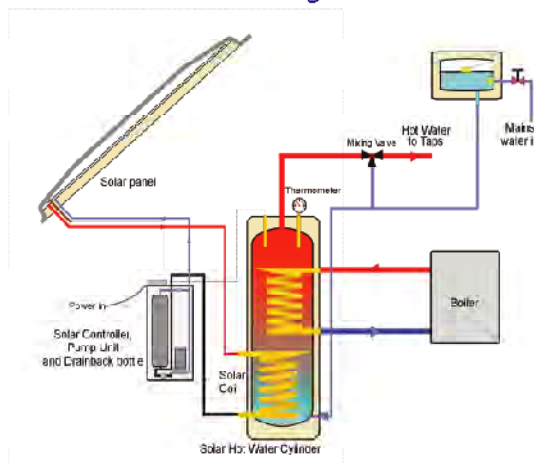


ISL System Description

The systems sold by Imagination Solar (ISL) have four main components:

- A 2.7m² solar collector (more if required)
- A pre-assembled unit comprising a pump and drain back vessel
- A hot water cylinder with solar heat exchange coil
- A control system

These components are plumbed together using insulated microbore copper pipe, before filling the solar system with water; and are normally set up in conjunction with the existing boiler.



The Low Flow System

A characteristic feature is the low flow rate, pumping around 40 litres of water per hour through the solar collector. The advantages of low-flow rate are that the pump is only 3 watts instead of the usual 50 watts used on a full flow-system, keeping electricity costs for the pump very low. Typically less than one pound per year, or free with the PV option (see 'Technical Datasheet:PV')

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For further information see 'Datasheet: Collector'.

The Solar Collector

The ISL solar collector is designed for roof integration. This means that it is normally recessed into the roof, much like a roof window such as a Velux. Installing the collector into the roof is very simple and can be done in a day. The tiles are removed, the collector is laid on the roof battens and the tiles are put back to the edge of the collector in a water tight fashion.

There are also kits available for installing the collectors over the roof, at an angle on flat roofs, and other specialist mountings.

The Drain Back System

To remove some of the installation and maintenance problems of pressurised systems, the ISL system is based on the drainback principle. When there is not enough sunlight or when the water in the vessel has reached the maximum temperature (e.g.80°C), the pump will switch off. When this happens, water inside the solar collector drains back into the small plastic vessel by means of gravity siphon effect that is started by a difference in heads of water. As no water is left in the collector or pipework when the pump off, the system is protected against damage due to boiling and freezing in a simple, maintenance free way.

For further information see 'Datasheet: Drainback Unit'.

The Control System

The pump will start when there is enough sunlight. The signal is interpreted by a microprocessor controller, which also controls the safety functions and a time delay.

How much energy will the system produce?

Netherlands (where much of this system is manufactured and designed) solar systems are tested under the Dutch TNO scheme. The ISL system received one of the highest ratings in its category.

The Hot Water Cylinder

Various sizes of hot water cylinder are available depending upon your requirements and specialist designs or sizes can also be quoted for. All have at least 50mm of CFC-free insulation and are designed to optimise solar low flow technology by incorporating a microbore pipe heat exchanger. For safety, especially with children, we recommend the installation of a mixing valve with the hot water cylinder, to limit the out going water temperature.

For further information please see 'Datasheet: Cylinders'.

Maintenance

A drain back system requires no planned maintenance.

Combi Boilers

To benefit from a solar system, a combi boiler must be able to accept pre-heated hotwater. However, most combi boilers, both old and new, will only work with a cold mains supply. Therefore, as 60% of new boilers installed are combi boilers, we have come up with solutions that allow solar to work with combis.

For further information please see 'Datasheet: Combination Boilers'.

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