

Solar hot water



Using the sun's energy to heat water can reduce your household hot water bills by more than 65% each year. This could add up to thousands of dollars saved over the lifetime of the system. Solar hot water systems also help conserve our natural resources and the environment.

HOW DOES A SOLAR HOT WATER SYSTEM WORK?

Solar hot water systems use the sun's energy to directly heat water, in much the same way as water in a hose left on the lawn gets hot on a sunny day.

Water is heated as it circulates through flat, glazed panels (solar collectors), located on the roof of a house. The heated water is stored in an insulated storage tank. An auxiliary heater is included in the system to boost water temperature on days when solar energy may be insufficient to meet all your hot water requirements. Boosters may be run on 'off-peak electricity', gas (natural or LPG) or solid fuel. Solid fuel cannot be used in mains pressure systems.

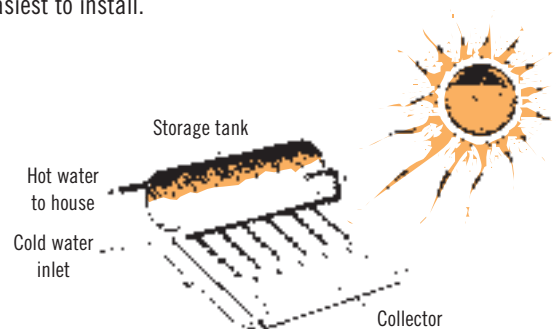
A RANGE OF SYSTEMS ARE AVAILABLE

Solar hot water systems come in a variety of capacities to suit different households. Most conventional hot water systems can have solar panels

added. However, if your system is more than seven years old, it will have a limited life left – it may be better to wait until it fails and install a complete new solar hot water system.

Close-Coupled Thermosyphon

This system consists of roof mounted solar collectors, combined with a horizontal roof mounted storage tank, working off mains pressure, which is located immediately above the collectors. It is the cheapest to buy and the easiest to install.



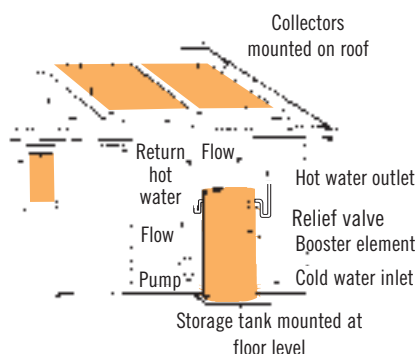
Close-Coupled Thermosyphon flow

Remote Thermosyphon System

This system works on the same principle as the system above, except the storage tank is located within the roof space and supplies hot water by constant pressure (gravity feed) rather than mains pressure. The base of the tank must be situated at least 300mm above the collectors.

Forced Circulation System

With this system, the tank is located below the level of the collectors, usually at ground-level. Water is pumped from the tank to the collectors and back, by a thermostatically controlled pump. Pumps are not expensive to run, costing between one and two cents per hour.



Forced circulation (pumped) system

HEAT PUMP WATER HEATERS

These energy efficient systems work like a refrigerator in reverse, pumping heat from the surrounding environment into the hot water tank. Heat is extracted from the atmosphere using a refrigerant gas and a compressor and used to heat water stored in a tank at ground level. Heat pumps operate during the day, night and even in freezing weather and only use a small amount of electricity to run.

WHAT TYPE OF TANK SHOULD I PURCHASE?

Storage tanks for solar hot water systems are generally made from either stainless steel or mild steel with a coating of vitreous enamel (mains pressure) or copper (low pressure systems only). Vitreous enamel lined tanks have a 'sacrificial anode', which is designed to reduce corrosion of the tank. These anodes require periodic checking and replacement every 5-7 years on average.

What size system will I need?

Number of persons served	Capacity (litres)	Collector area (m ²)
1 – 2	160 – 200	2
3 – 4	300 – 370	4
5 – 6	440	6

Consult your supplier for specific size recommendations

HOW MUCH DOES IT COST?

A typical solar or heat pump system for a family of five will cost between \$1700-\$4500 fully installed.

You may be eligible for Renewable Energy Certificates (RECS), which equate to a discount on the system. Contact your local distributor, the Energy Smart Information Centre or visit www.orer.gov.au for more information on how you can benefit from RECS.

A solar or heat pump hot water system can pay for itself in between 5-10 years depending on your household's water consumption. This period will be shortened if gas and electricity tariffs rise. Bear in mind that solar or heat pump systems have longer life expectancies than most conventional systems, which further reduces their overall payback period. A shorter pay-back period can be expected in areas with more sunny days per year, for example, Western NSW.

GETTING THE MOST OUT OF YOUR SOLAR HOT WATER SYSTEM

- The structural strength of the roof should be assessed by the installer to ensure that it can support the weight of the solar system.
- Collectors should be positioned on an un-shaded north-facing roof (no more than 20° east or west of north) at an angle between 15° and 50° (standard roof pitch is usually sufficient).
- Ensure the storage tank and solar collectors are close together to reduce the length of the connecting pipes (in gravity feed and split systems).
- Ensure that all components, including pipes, are well insulated.
- Include frost protection if you live in a frost-prone area.
- All plumbing and electrical work should be done by a licensed contractor.
- Doing jobs requiring hot water early in the day allows the water remaining in the tank to be reheated by the sun and reduces the booster heating period.
- Install an override switch for the thermostat (or install a timer on the booster) to prevent boosting when there is sunshine available.
- Conserve hot water by using it efficiently (for example, install a AAA rated showerhead).
- Follow the manufacturer's recommendations for maintenance of the solar hot water system.

FURTHER INFORMATION

Telephone the Energy Smart Information Centre: 1300 138 638

or 02 8281 7777 (callers outside NSW)

Monday to Friday 9am-5pm

Visit www.energysmart.com.au

The Energy Smart Information Centre is a free advisory service provided by the NSW Government. Energy experts can provide information on a wide range of topics.