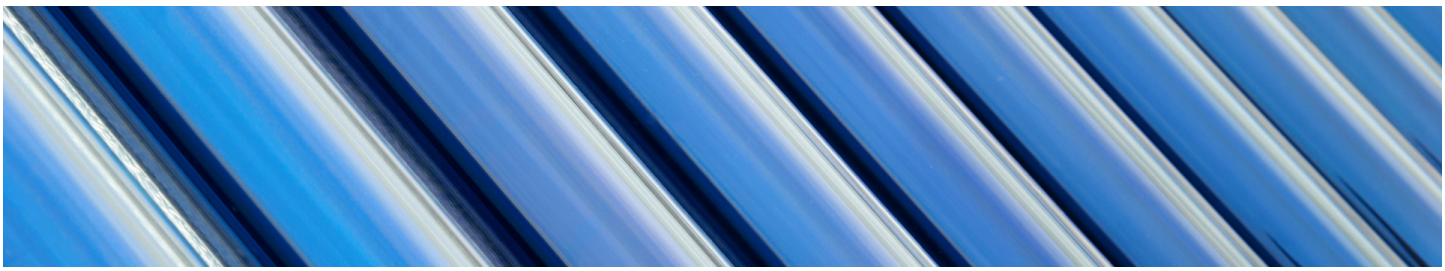
(/)

The more stars the more savings!



Information for Consumers

(http://www.energyrating.gov.au/wp-content/uploads/2013/05/adobe-page.gif)Factsheet: Hot Water Systems – what you need to know (PDF 315 kB) (http://www.energyrating.gov.au/wp-content/uploads/Energy_Rating_Documents/Library/Water_Heating/Factsheet-HWS-what-you-need-to-know.pdf)

(http://www.energyrating.gov.au/wp-content/uploads/2013/05/adobe-page.gif) Factsheet: Low Emission Water Heating Technologies (PDF 3.3 MB) (http://www.energyrating.gov.au/wp-content/uploads/Energy_Rating_Documents/Library/Water_Heating/Factsheet-low-emission-water-heating-technologies.pdf)

(http://www.energyrating.gov.au/wp-content/uploads/2013/05/adobe-page.gif) Checklist: Buying a hot water heater – Things to consider (PDF 1.3 MB) (http://www.energyrating.gov.au/wp-content/uploads/Energy_Rating_Documents/Library/Water_Heating/Checklist-buying-a-HWS-things-to-consider.pdf)

How does it work?

- Solar water heaters use a tank to store water that has been heated by the sun.
- Cold water flows from the tank to the solar collector, usually positioned

on your roof. In a split system, cold water is pumped up to the collector. In a thermosiphon system, with the tank above the collectors on the roof, cold water flows naturally into the collector because it is heavier than hot water.

- The solar collector is made of materials that absorb the sun's heat very efficiently. The cold water travels through the collector and the heat in the collector heats up the water, which returns to the tank.
- Hot water floats to the top of the tank and colder water is taken from the bottom and returned to the solar collector. When you need hot water, it is taken from the top of the tank where the water is hottest.

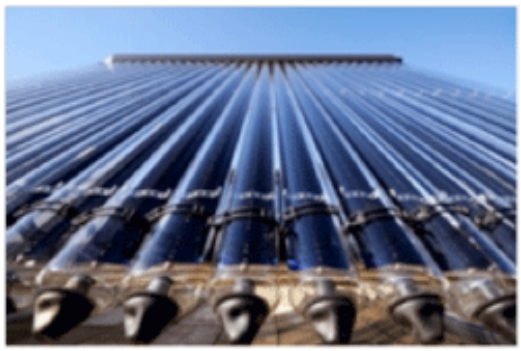
Types of solar water heaters

There are many different solar water heaters available. It is important to select the hot water system that is most suitable for your family size, climate, house type, roof characteristics, water quality, available space and aesthetic preferences.

Solar collector options

The two main types of solar collectors are flat plates and evacuated tubes. Flat plates have been used for around 40 years and are commonly installed in Australia. They operate at maximum efficiency when the sun is directly overhead at midday but are less efficient at other times of the day when the sun's rays hit the panels at different angles.

(http://www.energyrating.gov.au/wp-content/uploads/2013/05/solar1.gif)



(http://www.energyrating.gov.au/wp-content/uploads/2013/05/solar2.gif)

Figure 1 – Flat plates (L) and evacuated tubes (R)

Evacuated tubes use an array of glass tubes that insulate in a similar way to a thermos flask, where the heat energy is retained in the tube. Evacuated tubes can be more efficient than flat plate panels in some conditions, such as cold climates. The technology was invented in Australia in the late 1980s and the collectors have been fully commercialised in the last decade.

Storage tank options

Storage tanks are made of different materials and the material you choose will be dependent on your water quality and whether you are connected to mains water supply or tank water.

Vitreous enamel (glass) lined steel tanks:

- Require a sacrificial anode that needs replacing to avoid corrosion, particularly in areas with hard water
- Have a glass-like coating inside which protects the steel from corrosion
- May corrode from the outside

Stainless steel tanks:

- Are less prone to corrosion
- Do not require a sacrificial anode
- Are low maintenance
- Are not recommended in areas with poor water quality

Copper tanks:

- Are very long lasting and resistant to corrosion
- Are typically used in homes where water is supplied from a gravity feed system in the roof rather than mains water

Boosting

A solar water heater can use the sun's energy to meet most of your household's hot water needs. However, on days when it is cloudy or raining, or if hot water usage is higher than usual, water stored in your tank may need an additional boost to maintain the required water temperature. Boosters use an alternative source of energy, such as electricity or gas, to heat the water.

The booster heating unit will only activate when the water temperature is below the thermostat setting and will automatically turn off when the temperature of the water reaches the thermostat setting.

Consider the option of a manual on/off booster switch so that you can control the level of boosting to your system. Timers can also be used to ensure that the booster is used as little as possible and the maximum solar contribution is achieved.

Installation

As well as considering the purchase cost of your solar hot water system, you will also want to consider the installation cost of the system. If your roof requires reinforcement to support the solar panels, or tilt frames for the collector, it may significantly increase the cost of installation.

If you are installing an electric boosted system ask your installer which electricity tariff you will be connected to, especially if you are currently on an off-peak tariff.

It is a good idea to also consider the warranties on the system components. Look for systems with a longer warranty.

Where can you locate your hot water tank?

You have the option of locating your tank either on your roof, on the ground or in a roof cavity.

Roof mounted tanks are generally located horizontally above your collectors, although they can also be located inside the roof cavity. This is called a thermosiphon system. It does not require pumps or controllers and leaves your ground space free. As roof mounted tanks can be quite heavy (300 to 700 kg), you will need to make sure your roof is strong enough to support this added weight. Roof reinforcing may only be needed for older buildings, and is not usually an issue for new housing. If in doubt contact a structural engineer for an assessment.

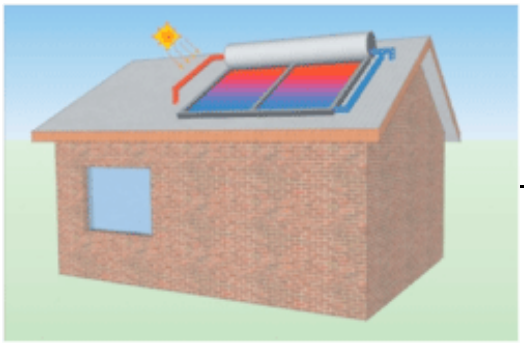
 (http://www.energyrating.gov.au/wp-content/uploads/2013/05/solar3.gif)

Figure 2 – Thermosiphon solar water heater

Split systems generally have your tank located at ground level, but can also be in your roof cavity, and require a pump for circulating the water to your collectors. The pump will need electricity to power it and will require maintenance. For this type of arrangement, it is best to locate your tank close to where hot water is used the most, such as near your bathroom or kitchen, to maximise efficiency.

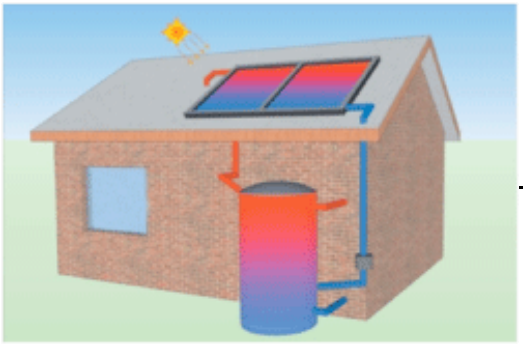
 (http://www.energyrating.gov.au/wp-content/uploads/2013/05/solar4.gif)

Figure 3 – Split system solar water heater

You can also place your tank in a space inside your house such as in a spare cupboard. However, for inside tank installations, you will need to ensure that there is adequate drainage and that an overflow pipe is fitted to avoid flooding.

Retrofitting an existing system?

If you have an electric water heater that is less than five years old, you may want to consider retrofitting your system, as it may be cheaper for you to not purchase a new tank. You can couple new solar collectors with your existing tank but you will need to install a five way valve in your tank. Ask your supplier or plumber for more information.

You are unable to claim government rebates or Small-scale Technology Certificates for retrofitted systems.

A joint initiative of
Australian, State and Territory and New Zealand Governments

Comments to **energyrating@industry.gov.au (mailto:energyrating@industry.gov.au)**