

Solar Water Heater - install for best return on investment (ROI).

Using solar energy to heat water is currently the best utilisation of this free energy resource. There is a much higher conversion efficiency of solar energy by heating water, than generating electricity with photovoltaic panels, as hot water is commonly a large component of the household energy budget. The previous statements must be accompanied with, 'WHEN DONE CORRECTLY'.

For maximum return on this significant investment, you need to achieve a low (preferable no) requirement for additional booster input, and a long system life expectancy (more than 20 years). The product is intended to save expenditure and energy.

Solar water heater collectors should face due North. Another equally important factor to maximise efficiency (and ROI) is the tilt angle. For aesthetic and initial cost reasons, most installations are fitted directly on the roof. This can result in two penalties; increased or excessive booster requirement during winter, reduced life expectancy of system.

There is significantly more hot water used during the colder months than during hotter months (mainly for showers and dish washing). The system should therefore be installed to maximise input when it is mostly used, or the booster will do the majority of the work. No matter how incorrectly a solar water heater is installed, it would be extremely rare to require booster input during summer. However, if you don't use the hot water at this time of year (when the Sun's intensity and daylight hours is greatest), it can put thermal/chemical stresses on the system, which is what shortens the system's life expectancy.

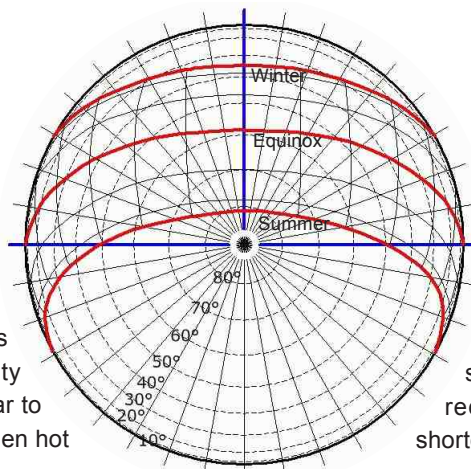
There are two main factors effecting how well the system functions for you; the amount of hot water required at a particular time of year, and the sun path at that time in relation to the collector surface (which can be assessed using basic geometry and logic).

Winter

Sun intensity about
0.9 kW /m²
10 daylight hours

Summer

Sun intensity about
1.2 kW /m²
14 daylight hours

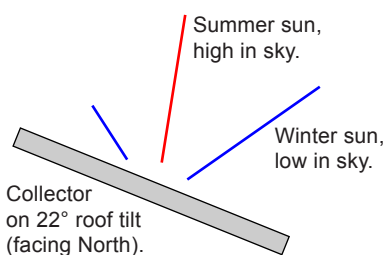


Most common installation!

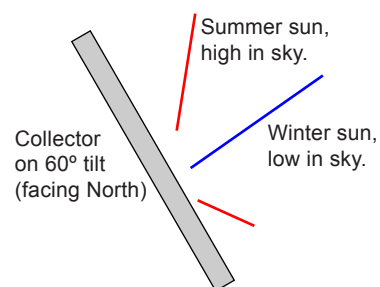
A water heating collector set at a low tilt (flush with roof) will receive the majority of input during summer when the sun is highest, daylight is longest and intensity greatest. The sun is close to perpendicular to the collector surface, maximising input when hot water is least used.

Recommended!

A water heating collector set on a steep tilt will receive more input during winter as the sun is closer to perpendicular to the surface. Maximising input and reducing requirement for the booster, despite the shorter daylight hours.



In winter the sun intensity and altitude is lowest, and daylight hours are shortest. The low angle the sun hits the collector surface causes increased reflection, reduced area and input.



In summer when the sun intensity, altitude and daylight hours is greatest, the input is reduced as the sun angle on the surface reduces its area, with losses by reflection.

By installing to maximise winter input you reduce (and possibly remove) the requirement to purchase additional booster energy. It also minimises stress on the system during summer, allowing it to function well into the future. By both reducing additional energy purchases and having a system that functions for 20 years (or more) you can expect the best return on investment.

Incorrect installation (purely aesthetic) will result in; ongoing purchases of 'booster' energy during winter, and the system will most likely expire prematurely. With energy costs increasing, you may never get a return on investment.

Is the purchase an aesthetic exercise, or would you prefer a return on your investment. The choice is yours!

For more information call: Steve 0410 946 356