Solar hot water, solar electricity and supplemental heating

FOOTPRINT HOMES Tasmania
Sustainable design and build

Water in any dark-coloured pot will soon become warm when left in a sheltered and sunny spot. Using sunlight to heat water is an ancient technology.

The use of modern, roof-mounted, solar hot water systems dates back to the 1950's and although the design of these systems has improved, the basic concept remains the same.

With the careful selection of both the system and its position, modern 'evacuated tube' solar collectors can provide much or all of a family's hot water requirements without the need for any energy input other that sunlight.

Another common sight on rooves these days are photovoltaic panels, groups of glazed solar cells which convert sunlight directly to electricity.

As with solar hot water systems, the direction these panels face, together with their angle of inclination, is critical to their performance.

Most family homes use more electricity at night than during the daytime when the sun's energy is available. To provide for night-time needs, some form of storage will be required.

If photovoltaic panels are connected to a 'stand alone' system, electricity will be stored in batteries. However, the majority of the systems installed in Tasmania supplement a connection to the main power supply. An 'inverter' is used to convert the 'direct current' (DC) from the panels to the alternating current (AC) of the mains supply. Any excess energy generated during the day, is 'fed in' to the system, in effect using the grid as a battery. The operator of the grid then pays for, or offsets (using the 'feed in tariff') the value of this energy contribution against the owner's power bill.

The simple techniques of Passive Solar Design can usually provide a warm and healthy environment through most of Tasmania's winter. There are always exceptions however and

after several sunless days or perhaps when a sick child or elderly parent needs extra comfort most families enjoy some form of supplemental heating.

Traditional solutions such as a wood heater or even a well-designed and properly-built fireplace can still have a role in a sustainable house where there is a reliable source of fuel but more sophisticated and efficient solutions are becoming more common.

Hydronic heating, using heated water to warm either radiators or a concrete slab, may be worthy of consideration in larger homes. Water may be heated by a wood or gas furnace, a large solar hot water system, a form of heat pump or a combination of more than one heat source. Heat pumps have become a popular in small to medium homes and in some cases, can provide the household's hot water supply.

Although heat pumps rely on electricity they are far more efficient than any other form of electrical heating because they don't use electricity to generate heat but to simply move it from one place (outside) to another (inside).

Regardless of which form of supplemental heating best suits you, the site, the landscape and the style of house you hope to build, the priority should always be to reduce your home's reliance on external heat sources through proper design, careful insulation and the balanced use of North facing glass and thermal mass.

For free advice about these important issues, call us today on (03) 6227 9633.

3 Lewisham Scenic Drive, Lewisham TAS 7173
P / 03 6227 9633 M / 0498 078 224 F / 03 6227 9644
E / footprinthomes@bigpond.com
W / www.footprinthomes.com.au
ABN / 18 160 577 060

HIA GreenSmart® PROFESSIONAL