Rinnai

COMMERCIAL

Solar Pre-heat Systems

Experience Our Innovation

Save on CO2 Emissions and Save $$

Solar hot water has proven benefits in domestic applications, lowering both energy costs and carbon dioxide emissions due to the reduction in electricity or gas that is required. These same benefits are available on a much larger scale in commercial applications. Using solar energy to pre-heat commercial hot water systems allows lower energy costs, less operating stress on the water heater as well as significantly reducing the CO2 footprint. These factors in combination with government incentives (where available) make solar pre-heating a valuable investment.

Rinnai Solar Pre-heat

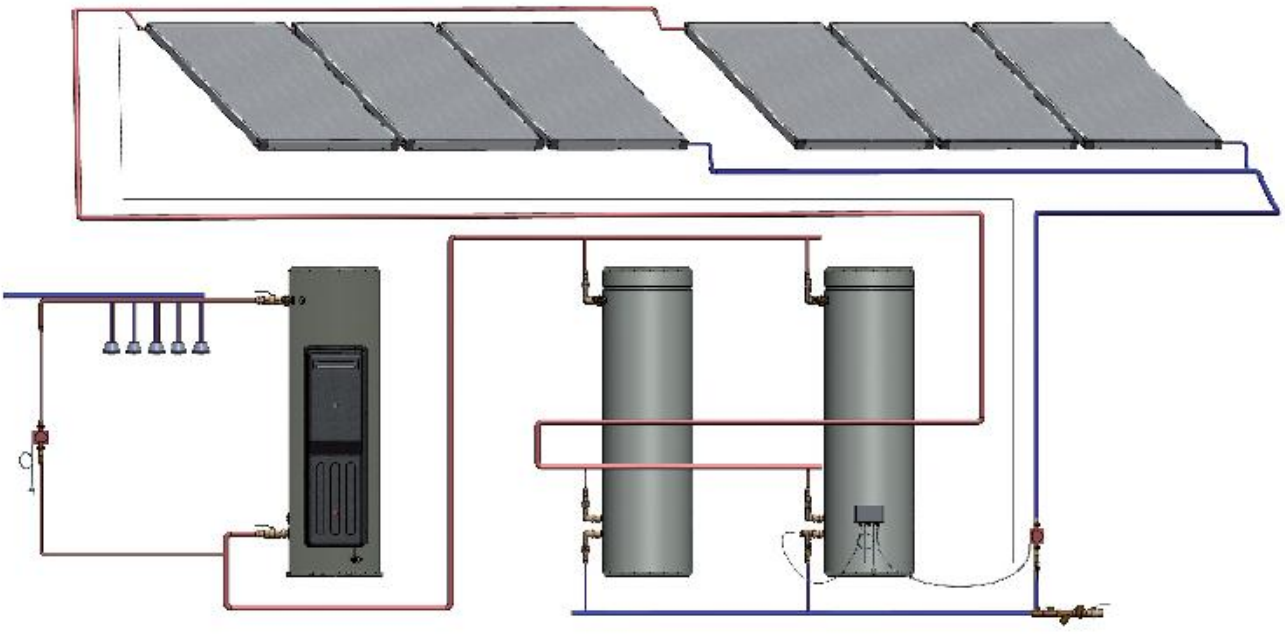
The Rinnai Solar Pre-heat is a solar thermal water heater designed to pre-heat the incoming cold water that supplies a booster hot water system. This consequently reduces the booster energy required to heat the water, reducing the running costs as well as helping the environment.

Commercial hot water installations require a booster system to ensure hot water availability during peak demand periods, winter and when full solar contribution is not available.

Rinnai Solar Pre-heat systems are installed in conjunction with a Rinnai Demand Duo or Manifold Pack system, combining the energy from the sun with high efficiency gas water heating – the best of both worlds!

Rinnai high-efficiency solar collectors are installed on a roof aligned to face the sun and pitched at around the same angle as the latitude in order to maximise the solar energy collected. Frost Tolerant Collectors (FTC) are also available to minimise potential damage in frost prone areas.

High efficiency solar collectors in conjunction with low heat loss storage tanks, provides for an overall high performance solar pre-heat system. This is reflected in the high Small-Scale Technology Certificates (STCs) available.



Demand Duo

Pre-heat Storage

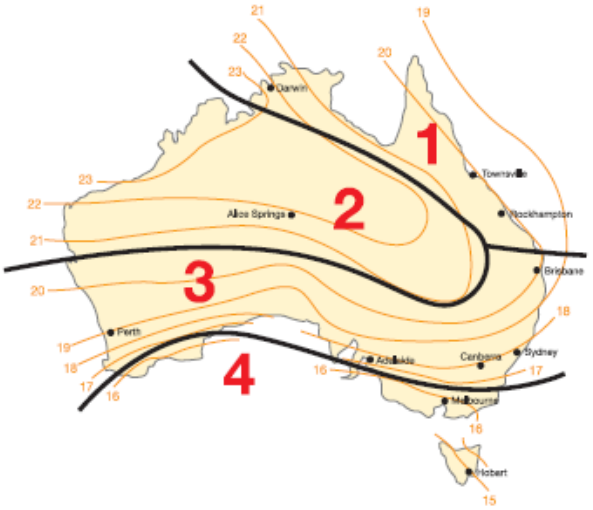
System Sizing

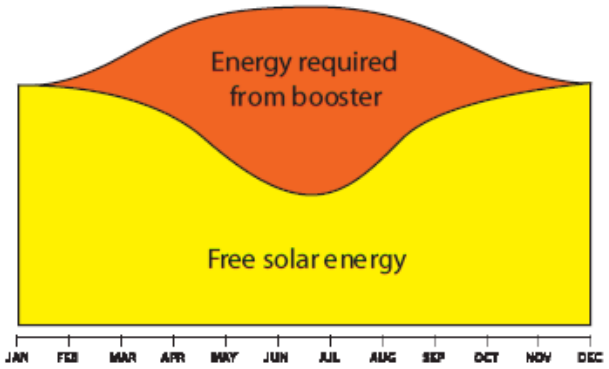
Common practice is to select a solar pre-heat system to contribute around 50% of the annual energy required to heat an average day's hot water. This is close to full solar contribution in Summer (depending on solar zone) and is commercially feasible.

Selection of a Solar Pre-heat system is based on the average daily hot water consumption. Selection of the booster is on the worst case peak demand to guarantee year round hot water delivery. This is also the most economical way to specify a system without compromising performance.

It should be noted that hot water demand is higher in the winter months when solar radiation and gain is at its lowest. Gas boosting must be sized to cope with this.

In order to be eligible for STCs, Commercial Pre-heat Systems must store at least 700 litres of hot water. Modules of solar collectors, storage tanks and a solar controller and pump are utilised to achieve the required size. The insert sheet shows typical selections available and their current STC values.





This graph is for illustration purposes only

Selection of solar collectors and tanks to make a system

The insert pages to this brochure select the number of solar collectors and the number of tanks required to achieve an annual solar contribution of approximately 50% (exact savings value is shown).

The tables can also be used to select solar systems based on other values.

For example, if the selection for an expected daily demand of 5000 litres is 36 collectors and 12 tanks delivering 52% solar savings, you can perform the following calculations:

To calculate a lower solar contribution

$$\frac{\text{36 collectors x 25\% required solar contribution}}{\text{52\% solar contribution}} = \text{18 collectors}$$

To calculate the solar contribution from the number of collectors

$$\frac{\text{52\% solar contribution x 24 collectors (due to roof space)}}{\text{36 collectors}} = \text{35\% solar contribution}$$

To calculate the solar contribution with a different daily demand

$$\frac{\text{52\% solar contribution x 5000 litres (from the tables)}}{\text{5250 litres actual daily demand}} = \text{49.5\% solar contribution}$$

Key:

Black = Original Selection
Blue = Required Input
Green = The Answer

How much can be saved?

Each Rinnai Solar System is independently tested to determine its solar contribution. The Australian Greenhouse Office awards Small-Scale Technology Certificates more commonly known as "STCs" according to how much energy each system saves compared to a conventional electric tank water heater.

STCs Rebate Savings

Rebates are often available for commercial solar installations. It is always advisable to check the current legislation at **www.ret.cleanenergyregulator.gov.au**

The STCs awarded to any system can be traded/sold on the open market to registered agents at a price which fluctuates according to supply and demand. Rinnai is a registered agent and we can arrange the payment of any applicable rebate at the market rate at that time less a small admin fee. Alternatively, you can speculate on the market value and sell them at a later stage either to us or another authorised trader – also listed on the above website.

Running Cost Savings

Each STC awarded is equivalent to the saving of 1000 kilowatt-hours (kWh) of electricity over a 10 year period. By multiplying the number of STCs awarded to a system by 100 you can determine the actual energy savings in kWh per year.

Example:	Daily hot water load:	5000 Litres
	Solar pre-heat system:	36 Enduro (FTC) panels and 12 x 250 or 315 litre tanks
	STCs awarded:	492 (as per selection table on page 3)
	kWh savings per year:	492 x 100 = 49,200 kWh
	kWh savings per day:	134.8 kWh (average)

To estimate the financial savings you will need to consult your energy supplier to ascertain current tariffs/rates.

Installation of collectors

The performance of any solar hot water system is determined by the way that the system is installed. In Australia, the solar collectors should ideally face the equator (North). Where this orientation is not practical, collectors facing within 45 degrees from North (between North-East and North-West) are acceptable and will only reduce efficiency slightly.

The inclination of the solar collectors should also be considered and ideally be the same as the local latitude angle. However, if the installation is on a flat roof a frame is available to suit 1, 2 or 3 collector modules.

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