

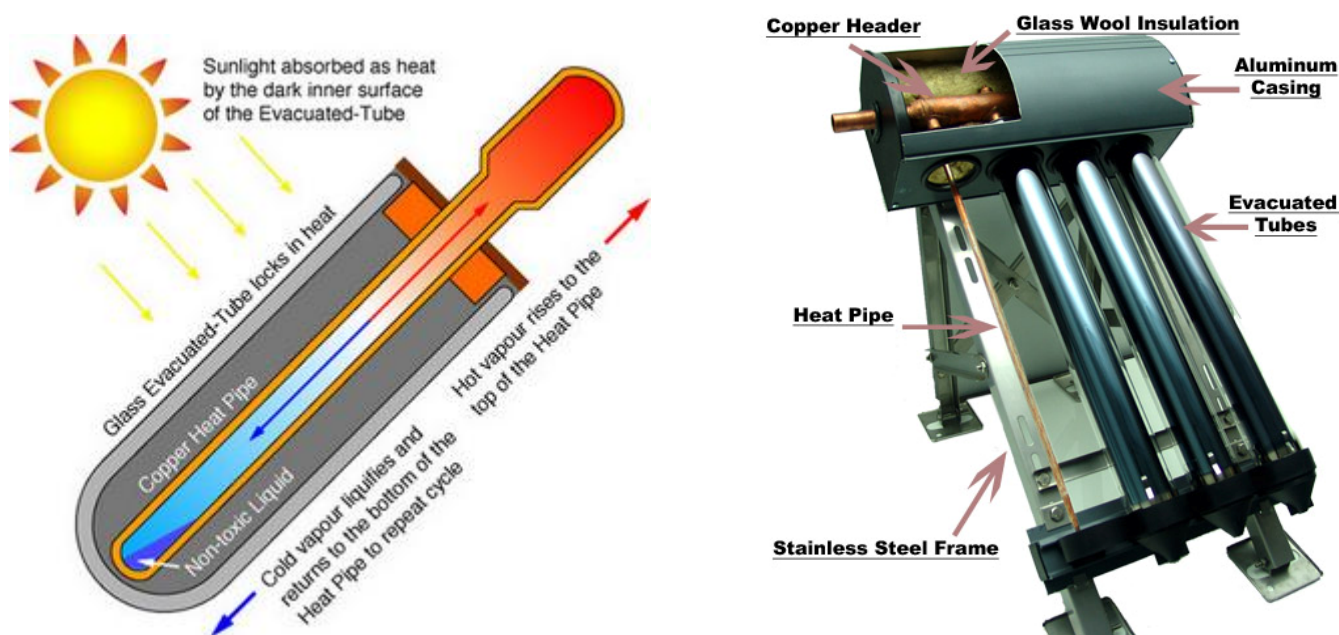
Apricus Evacuated Tube - Hot Water System

How the system works

Apricus solar collectors can be installed in many different configurations depending on your requirements, and type of house. The basic principal for all systems is the same.

1. The collector produces heat
2. A circulation pump pushes water through the collector, carrying away the heat.
3. The heat is transported to a storage tank, directly, or via a heat exchanger (internal or external).

Below is a simple animated diagram of the collector operation. This diagram shows the tube where the water in the copper pipe gets heated and the hot vapour rises to the top of the Heat Pipe. This is connected, along with the other pipes to the manifold which runs along the top and houses the water. This is then sent to the tank and cooler water recirculates back to this manifold to be heated again.



Save Money using Apricus Collectors



With the rising prices of electricity, gas and fuel for your car, saving energy is become a real concern for everybody. There are many ways to reduce your energy bills without compromising your lifestyle. Hot water is something we just can't do without, as there is nothing like a good, hot shower. Hot water, however, requires lots of energy, as much as 15kWh for an average family of four. That can equate to more than half of your household's energy consumption and, therefore, your energy bill. Space heating is also another luxury that uses enormous amounts of energy.

Fortunately thermal solar collectors, like Apricus, can greatly contribute to the energy required for hot water and heating, cutting usage of traditional energy sources. This means a reduction in an average household's hot water bills from 60% to 80%, a saving of around \$300 to \$500 each year. Furthermore, the money spent on your solar collector is actually an investment that will provide long term returns. In addition the generous rebates that are available provide further savings on the overall cost of an Apricus solar hot water system.

Apricus Advantage –why choose Apricus?

At Apricus we are passionate to ensure our Solar Hot Water Systems are right for you. Through our research and development and focus on the highest quality of customer service we believe Apricus Australia is the first choice for Solar Hot Water.

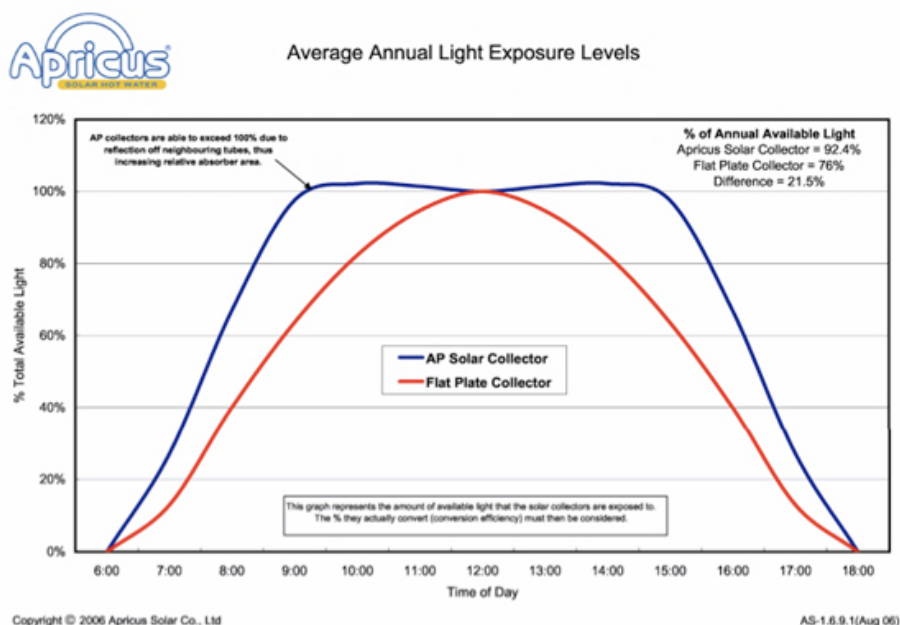


Excellent cold weather performance

Apricus collectors can perform well even in freezing conditions thanks to thick glass-wool insulation within the manifold and vacuum insulated evacuated tubes.

Passive tracking of the sun

Apricus collectors are designed with a round surface that can passively track the sun through the day. See the graphs showing the annual light exposure of an Apricus Evacuated Tube System versus a Flat Plate System



Lightweight and durable design

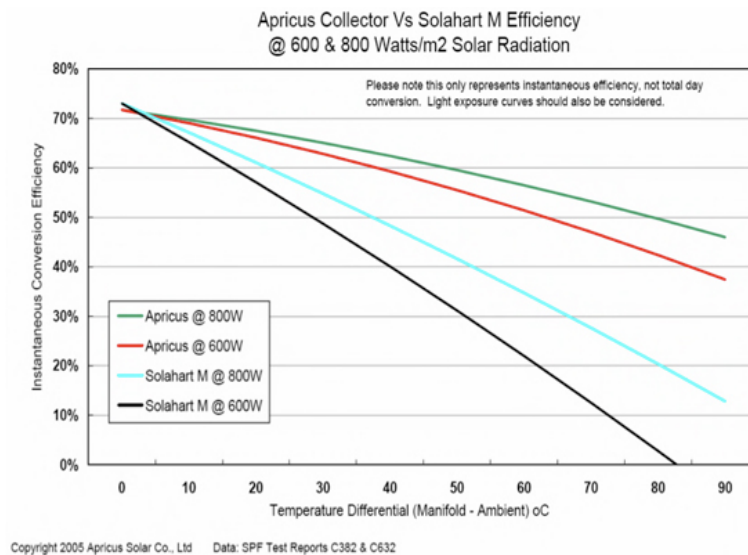
Due to the fact that there is no water held in the tubes themselves the system is able to be installed by a single plumber. There is also no need to strengthen a healthy roof as the average system only weighs around 120kg.

Excellent government rebates and incentives

There is a Federal rebate of \$1600 (unless you have had insulation fitted under the \$1200 or \$1600 rebate system) plus a State rebate of \$300 (provided you have not claimed over the \$1500 household maximum). These are provided ONLY if you are replacing an electric storage hot water system.

Save on your energy bills

Installing an Apricus solar hot water system is not only beneficial for the environment but can reduce your household bills up to 80%! The greatest contributor to household utility bills is energy used for heating water, a solar system can make a real difference. The graph below showing the efficiency of an Apricus System versus a Solarhart System show how effective Apricus Evacuated Tube Technology can be for you.



Maintenance free

Given the design of our evacuated tube system it is rarely necessary for any cleaning or maintenance to be needed. The occurrence of lichen growth or moss is not an issue unlike other solar hot water systems.

Longest industry warranty

With confidence Apricus holds the longest warranty of any system on the Australian market. 15 years coverage on all key system components should put any consumer at ease.

Flexible installation option

Our trained installers ensure that your system is mounted at the correct angle to provide optimum solar contribution all year round.

Australian and International standards

Apricus products are internationally certified and designed for a high quality of performance and reliability. **Solar Collector – Global Mark (AS/NZS 2712:2002) Australia & New Zealand.** Certification has been obtained through Global Mark. The certification number is 100633

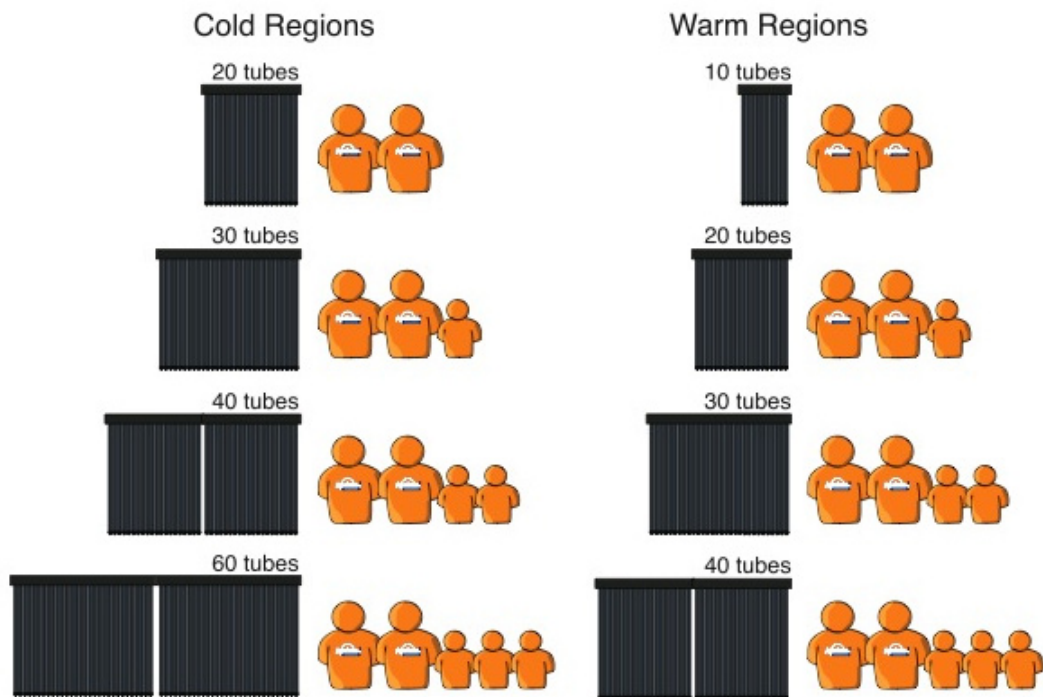
System Sizing

Apricus solar collectors are a supplemental energy source. Solar thermal cannot totally replace traditional energy sources (gas or electricity) as it is not always sunny! A solar thermal system will therefore have a backup boost from electricity or gas to ensure you always have hot water.

A correctly sized solar system can save between 50% and 80% off your annual hot water energy bills, depending on your location and water usage patterns.

By reducing the amount of gas or electricity (or other fossil fuel source) that is used, you are also directly reducing CO² emissions, which is a major factor in helping to combat global warming.

The diagram below provides a general idea of how many collectors are required based on the number of people in the household. A cold climate is somewhere that gets regular snow in the winter, warm winter would rarely go below freezing. In you are in a hot climate (near the equator) then a collector can provide even more hot water.



Common Questions and their Answers

- **How do I choose the right Apricus solar hot water system?**

Apricus produces a variety of different solar hot water systems that cater to variety of hot needs. The sizing of your system depends on the following key factors:

- How many people live your household.
- The area where you live.
- Your household water demands.
- The water quality in your area.

Your agent is more than happy to help you choose the best system for your household. Our Apricus agents are educated on the system and can choose the best water heater for your family, to help you pick the right unit for your current and future circumstances. For most homes a 30 tube system with a 315L tank will be suitable but there is an option of a 400L tank for those larger requirements, this is nearly the largest tank on the market.

- **Can the Apricus solar collector heat water to a high enough temperature?**

Yes, in good weather the Apricus solar collector can even bring water to boiling point. Generally this is not necessary and so the system should be designed to provide a daily temperature rise of around 25-30oC (45-54oF) in the summer. Sized in this manner will result in savings of 60-80% on hot water heating costs depending upon your location.

- **Are Apricus collectors more efficient than flat plate collectors?**

When comparing peak efficiency levels it may seem that there is little difference between flat plate and evacuated tubes. In fact, flat plate may actually be higher, but this is during minimal heat loss conditions. When averaged over a year evacuated tube collector have a clear advantage. The key points are:

1. Due to the cylindrical shape of the evacuated tube, the solar tubes are able to passively track the sun throughout the day. Flat plate collectors only provide peak energy output at midday when the sun is perpendicular to the collector's surface.
2. Air is evacuated from the tube to form a vacuum. This greatly reduces conductive and convective heat loss from the interior of the tube. As a result, wind and cold temperatures have less effect on the efficiency of the evacuated tube collector.

3. Apricus solar collectors can be used in cold temperatures when flat plate collector have limited or no heat output.

4. Evacuated tubes are strong, long lasting, and should one be broken, inexpensive and easy to replace. If a flat plate collector panel is damaged the whole panel must be replaced.

5. Due to the high efficiency absorption of solar radiation even during overcast conditions, combined with excellent insulative properties of the solar tube, solar tube collectors can heat water all year round (backup from gas and electricity is still required).

6. Due to the various advantages of evacuated tube collector over flat plate collectors, a smaller collector can be used to provide the same heating performance. For example, a standard household of 4-5 people would usually require a 250L / 66gallon water storage tank. In NSW location, only 30 evacuated tubes would be required to provide all summer hot water needs and almost all in other seasons.

7. Flat plate solar collectors can produce similar heat output to evacuated tube collectors, but generally only during hot, sunny conditions. When averaged over an entire year, evacuated tube collector heat output per net m² of absorber area, is between 25% and 40% greater than a flat plate collector.



- **Does my roof need strengthening to accommodate the Apricus hot water system?**

No!! Unlike flat plate systems, the Apricus is a split system. The light weight collector weighing 96 kgs dry goes on your roof while your tank is placed on the ground.

- **Are evacuated tubes strong?**

Yes, evacuated tubes are very strong. Tube strength is important when considering wind loading and also snow loading. Online there are videos showing static loading testing of the evacuated tubes until failure.

- **Can Apricus collectors withstand hail?**

Apricus evacuated tubes have been independently tested and shown to withstand impact from a 25mm / 1" ice ball at 25m/s / 90km/h / 55mph. If you are in a region with extreme hail (much larger than 25mm / 1") then the solar collectors should be installed at an angle of 45o or greater, which greatly increases impact strength.

The beauty of the Apricus solar collector design, is that if a freak storm should cause damage to one or more evacuated tubes, the system will still operate normally (just with reduced output), and the tubes can be easily replaced and they only cost about \$50 per tube!

In November of 2008 freak storms hit Brisbane with hail stones up to 60mm / 2" in size. Roof tiles were smashed, roofs of cars dented and flat plates solar collectors destroyed. To much surprise and delight many of the evacuated tubes

survived, and many systems were still operating providing hot water the following day when the sun came out. The replacement of the tubes only took about 30 minutes, and the systems were back to full operation.



Installation Related FAQs

- **Can Apricus Solar Collectors be used to heat a spa or hot-tub?**

Yes, Apricus solar collectors are perfect for heating a spa or hot-tub. In fact, one Apricus 30 tube collector is normally enough to keep a medium sized spa or hot-tub hot all through the summer and contribute a large amount of the heat required for the rest of the year.

- **Can Apricus Solar Collectors be used to heat swimming pools?**

Due to the enormous amount of energy required to heat a swimming pool, normally the answer is no, as there is not normally enough space to put the number of collector required to contribute significantly to the pool heating.

That being said, if you have the space and money to devote to a solar thermal heating system for your pool, then sure.

- **Can Apricus Collectors be installed horizontally?**

No. The heat pipes will not transfer heat when oriented horizontally.

- **There is no equator pointing roof space?**

If the house does not have North/South facing roof space, you can mount on the peak of the roof, a west facing roof, or on a suitably facing wall. Another option is a pole mount, in which case you can point the collector in any direction. Visit the photo gallery online for photos of different installation formats.

- **Will there be heat output on overcast days?**

The Apricus solar collector is a SOLAR collector, meaning that it absorbs energy from the sun. In particularly overcast weather the amount of solar radiation reaching the collector is greatly reduced and therefore heat output will be reduced. However the system still works on overcast days as it uses infrared rays from the sun that still get through cloud cover, just like you can get sunburnt still on cloudy days!

Your solar water heating system would have backup from a traditional energy source to ensure hot water regardless of the weather conditions.

It is certainly a false claim to state that the solar collector will provide you with hot water all year round, it is however correct to say that the solar hot water system (which includes gas/electric backup) will provide hot water all year round.



For further details look online at www.apricus.com.au

How can we get an Apricus System Installed?

Your company representative can arrange to get the system installed and determine the best position to install the system based on other solar products you may be implementing. For example PV systems would be more important to have on the north facing roof with the Apricus system on the western face.

The standard price of the system will be provided with an estimate of the cost of the extras required in your specific installation. The main extras are:

- Two storey homes because of extra pipework
- If the tank is to be installed on uneven ground – extra cost of a plastic base
- Installation on a flat roof – a tilt frame is required

Installation should be able to be completed within 30 days from time of ordering.

A deposit of \$500 must be paid with the order, then within 3 days a call will be received from the install company for an install slot that should be within 30 days.

The amount that must be paid to the installation company is the full amount less the deposit and the REC's rebate. Any other rebates due to you must be claimed by you as the householder from the relevant governments. These take between 60 days (federal rebate) to 4 months for the state rebate. We provide and can help complete the rebate paperwork.

To get a personal quotation for your home and hot water needs please contact your company representative or the office on contact details below.



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