



THERMAL SOLAR WATER HEATERS

An “Eco Friendly” cost-effective solution for household & commercial water heating.

MonoSun water heaters generally pay for themselves within 1-2 years compared to fitting and running cost of conventional electric water tank boilers or instant shower heaters.

We offer several system types, “see below”.

The compact integrated pressure model with SU316 inner tank is the most popular and highly recommended for homes.

1. Integrated Compact Pressure System



Working principal

The integrated compact pressure solar water heater consists of heat pipes connected through a seal directly into the water storage tank. Heat pipes consists of copper inner pipe and medium with alloy fins for extra thermal transmission through a sealed copper bulb heat exchanger at the top into the water tank. Produces a quick startup and has super efficiency.

No water flows into vacuum tubes, Thus if any are accidentally broken, no water leaks out. System works well with withdrawal of one or several heat pipe vacuum tubes. Some may be removed as less may be required in very hot sun reflection locations.

(Tank sizes range from 100Ltr to 300ltr for households for 2 to 7 people per unit. More than 1 unit can be fitted for the likes of guesthouses and small hotels).

Note: Correct sizing is important approximately 40-50Ltr per person to take advantage of solar and minimize use and wear on the electric backup booster heater element).

Can be used all year round even works well in extremely cloudy weather. Thermal solar works of IR Light Day light as opposed to PV solar which requires direct UV sun light.

Super heat preservation with thick integrated polyurethane foam between the inner tank and outer shell; No vent for less heat loss compared to the non-pressurized type.

Withstand pressure more than 6 Bar, Ideal to connect direct with mains tap water, safe efficient.

Equipped with auxiliary electric booster heater and intelligent controller for automatic minimum temperature control on cloudy days.

Simple yet strong structure, easy to assemble and install on different roof type structures.

Long lifespan, can be of good service in the range of 5 to 12+ years pending type location and water quality in regards to salty water and air.

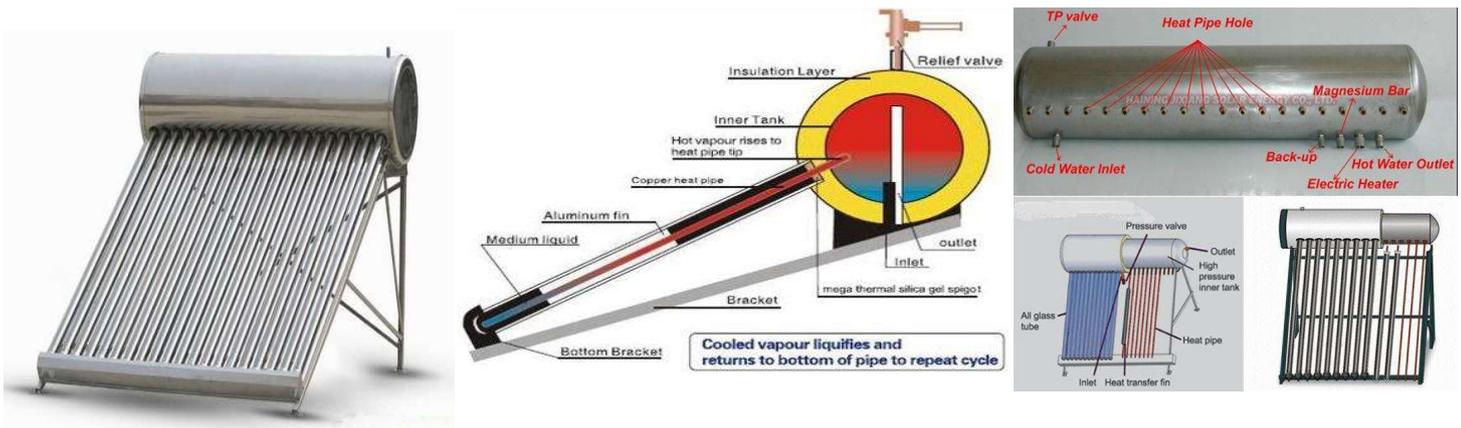
No problems balancing cold and hot pressures at your shower mix taps.

Heat pipe and fins inside vacuum tubes..

Produces water at the same pressure or higher than cold input pressure. Similar to a pressure cooker concept. Temperature and pressure controlled by an automatic (T/P) temp/pressure release valve fitted on the tank.

Electric backup heater which can be set to activate at desired minimum temperature, normally 40 to 45 Deg C. in case of long rainy cloudy days.

PRODUCT DETAILS



Heat Pipe Vacuum Tube: Tri-target glass tube and heat pipe with inner medium together makes an efficient solar collecting and super performance heat exchange, efficiency generated more than that of standard glass vacuum tubes.

Inner water tank: Upgraded and thickened from the standard food-grade SUS304-2B many brands use to a more corrosion resistant SU316 Marine Grade with advanced automatic argon-arc welding techniques to prolong lifespan.

Water tank shell: colour steel plate or carbon plate (PVDF) outer special coating or Stainless steel durable outer jacket, which are appealing look and survives long even when close to the ocean coast environment.

Insulation Layer: Germany-imported polyurethane integrated foam-forming with twice slaking treatment, preserves hot water constantly as long as 70~80 hours

Supporting Bracket: Either Anodized Alloy or Galvanized Steel baked outer power coating, good weight bearing and wind resistance design (140 km/hr), corrosion resistance ensures long life, easy installation, universal bracket suitable for flat or slope roof installation

Accessories: Stainless bolts & nuts, anti-aging dustproof rubber seal, plastic pipe holder to ensure their lives as long as other parts of the system. Sets supplied with up to 5m PPR hot water outlet piping and insulation free of charge.

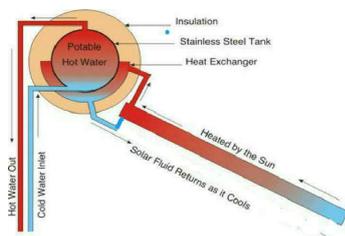
2. Split pressure water heaters (2 Types)

A) Split Thermo-syphon type separate with tank above the collectors

No work station or pump required when the tank is above the collectors

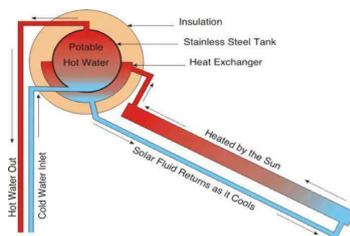


A1) With vacuum tube heat pipe collector



Split pressure system

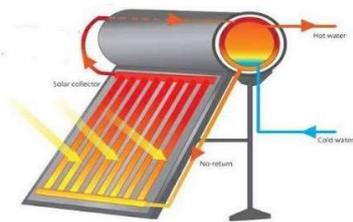
Heat pipe vacuum tube manifold collector with Ceramic lined inner tank & closed loop jacket heat exchanger.



Split pressure system

Flat plate collector with Ceramic lined inner tank & closed loop jacket heat exchanger.

A2) With Flat plate collector



Split pressure system

Heat pipe vacuum tube or Flat Plate collector with Stainless steel or Ceramic coated inner tank.

B) Split forced type with pumps work station

For those who want an aesthetic look with **No Tank** on the roof. The split pressure setup. Only the solar collectors fitted on the roof, "Flat plate or vacuum tube heat pipe collector options". Tank and controller are mounted separately "in the house closet for example".



(B1 With Heat Pipe Vacuum Tube collectors above)



(B2 With flat plate collectors above)

When the tank is on a lower level from the collectors. A workstation controller with pumps is required to move the water down to the storage tank. i.e. "Non Thermo-syphon"

Working Principle: Split forced solar water heater working principle

The collector absorbs solar energy and transmits it thermally to the water inside the collector. Collectors are on a separate manifold. "Not connected directly into the tank". They exchange IR heat to the water inside. The naturally heated water is pumped automatically by the controller's signal through a workstation back to the tank.

When the temperature at the collector is cooler than required. The circulation pump will be shut automatically, for example when clouds pass or at night time.

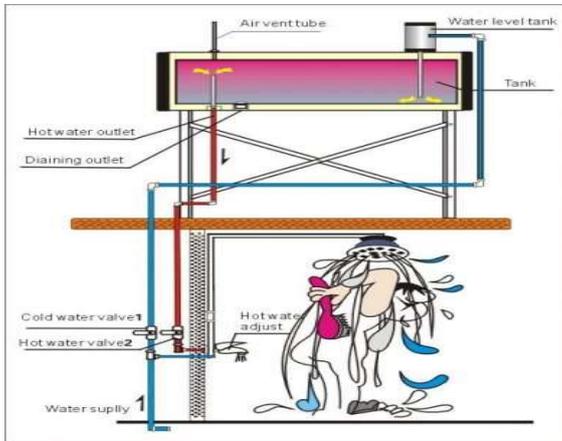
A mains grid powered electric backup heating element can be set to start automatically when the tank water falls below the desired minimum set temperature.

One of the reasons the tank size should be sized correctly to match the approximate number of people using it in a household. If too small there will not be sufficient naturally heated volume in the tank therefore more electricity will be used compared to a properly sized system to work 90% on solar using the electric backup heater only on long periods of dull rainy days or when excess water is used.

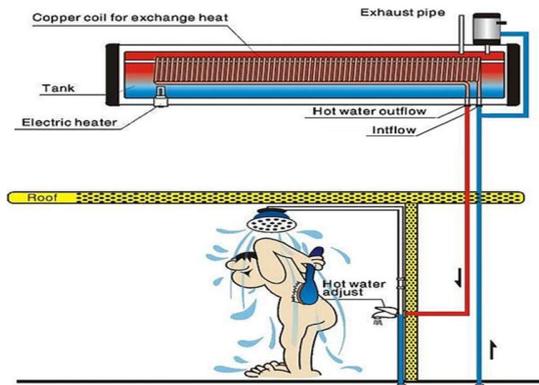
3a) Non Pressure Thermo-syphon

A very low cost economy model which has several limitations.

This model is for those on a limited budget who do not mind fiddling with tap settings and low hot water pressure to obtain a balanced stream of water at the desired temperature for showering.



3b) Non Pressure Integrated coil systems



Note: These budget system works on gravity feed producing only approximately 0.1 Bar pressure per meter height. Thus low pressure from hot water may be awkward to mix at your shower mixer tap due to higher pressure from the mains cold water side. Unless the system is installed at a sufficient height to produce similar water pressure as the cold mains or pump feed which is normally around 1 to 2 Bar. (Or at the main cold supply water tank is at the same level to provide the same gravity feed balanced pressure.)

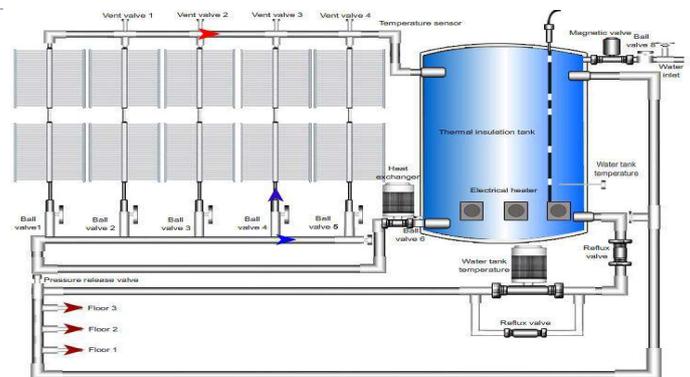
Open vented. Thus substantial Temperature loss overnight. The integrated model has an copper inner pipe to maintain water input pressure similar to the cold feed. However efficiency is low and heat loss through vent at night.

If you do not wish the above mentioned downside points, **best consider options (1) or (2) the pressure systems which do not have any of these difficulties.**

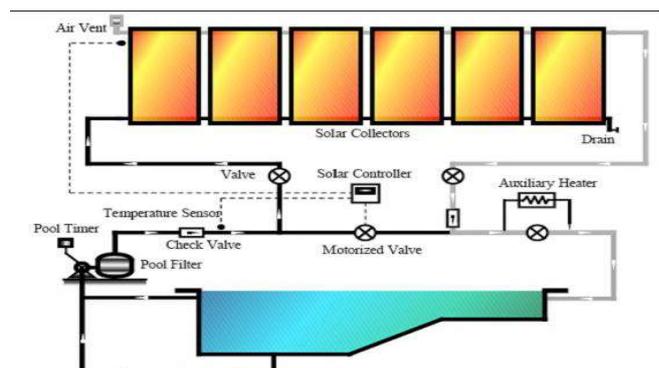
We avoid selling the Non Pressure residential home size/type for the above reasons. Unless it is a special request where cold water supply pressure would be from a cold water tank installed at the same level and output pressure as the hot water tank output. And make sure our customer fully understands limitations and disadvantages of Non Pressure systems.

4. Commercial Large scale Pressure & Non Pressure Systems.

These are available with either flat or vacuum tube collectors or heat-pipe manifolds for large commercial requirements as a cost effective and environmental means to heat water for hotels, Laundries, sauna and so forth where large volumes of hot water are required. Especially where there is no, or limited electricity supply to support electric or gas powered boilers.



However a large surface area is required for thermal solar water heating collector panels compared to Grid tie PV electricity producing solar if you already have a water heating system installed and connoted to the main National grid.



All our tank inners are upgraded from the industry standard SU304 Stainless Steel to either high quality more corrosion resistant grade SU316 Stainless Steel or Nano Ceramic Coating in the manufacturing process. These materials provide longer life to the solar water heater with regards to reduced chance of corrosion or Calcification scale build up in areas with poor water quality.

Drop in, or screw in Magnesium Anode Rods assist too. Low cost approx. 150--300THB easily replaced as and when required before the original depletes. In general every 1 to 2 years pending feed water quality.

MonoSun can offer a service cleaning & maintenance service if and when required

“Still have questions, interested in a quotation or to arrange a site survey for us to ascertain suitability and help recommend the best solution for your requirements”.

Don't hesitate to contact us.

We look forward to your enquiries or a visit to our office/showroom in Phuket.

Address: 12/493 Moo 3 ChaofaTawanTok Road,T.Wichit A.Muang Phuket Thailand 83000

Office Tel: 076-263717 Service Tel: 083-5502272

Email: info@monosun.net Website: www.monosun.net

Located: Half way between Central Festival & Chalong Temple.Slightly Opposite Wanthalang Gems.