



SOLAR WATER HEATING SYSTEM
VERSOSUN THERMAL SOLUTIONS

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The great advantage of having a Solar Water heater is ITS FREE!

The benefits of choosing to install a solar powered hot water system are significant when viewed through a long-term lens. This return will also increase in-line with the increase in gas and electricity prices in the future, and so its promising to the world- by reducing expenses and by being GREEN.

VERSOSUN Thermal Solutions offers cost effective solutions for the hot water system for residential, commercial buildings using solar renewable energy by effective absorption of solar energy. VERSOL specialized design team is mainly dedicated to the continuous improvement and development of renewable Energy Recovery Technology and due to their special touch, the VERSOSUN Thermal Solutions always promise the best output and hens less energy expenses in the building.

Depending on the way of System design or control on the System VERSOL can offer three different type of Solar Thermal System to heat your Water.

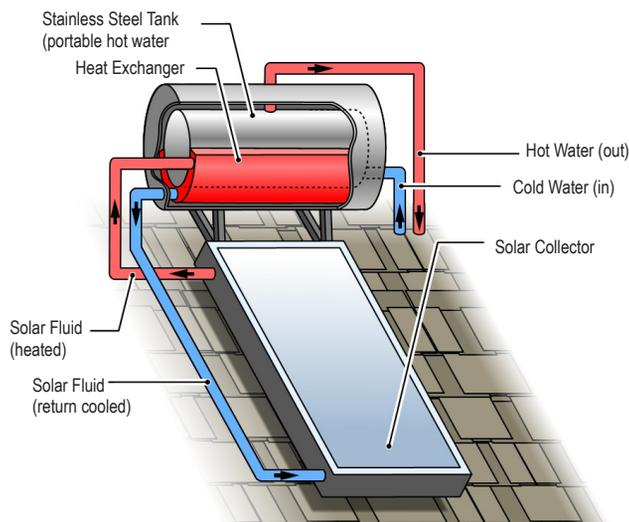
- Thermosiphon Solar Water Heater
- Active System- Forced Solar Water Heating System
- Active Vented System- Drain Back Solar Water Heating System

THERMOSIPHON SOLAR WATER HEATER

Thermosiphon is the cheapest system available, where the heat flow is taking place due to natural effect called Thermosiphon. So there is no need of mechanical pump for the circulation of heated water to tank.

Thermosiphon Water Heaters are with water tank and Solar panel, located together and installed ideally on the roof of the building although they can be installed in almost any location. This type is suitable as consumption rate is less, especially for Villas or small offices.

VERSOL can offer Thermosiphon Solar Water Heater with either by Evacuated Tube Collectors or with Flat Plate Collectors depends on the requirement. VERSOSUN include many options to meet the customer requirement in different type of application. More in details will discuss in the Thermosiphon data sheet page.

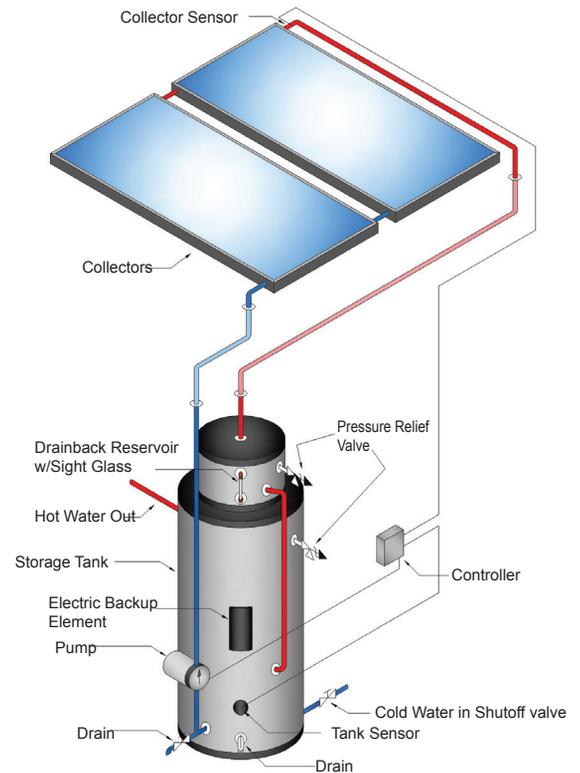


ACTIVE SYSTEM- FORCED SOLAR WATER HEATING SYSTEM

ACTIVE SYSTEM, where VERSOSUN Solar Panels are placed on the roof and the VERSOTHERM Storage Calorifiers can be placed anywhere inside or outside the building. In this case we need a pumping system to circulate water throughout the system- from storage tank heat exchanger to solar panel and from solar panel to storage tank heat exchangers. These systems are slightly complicated and require a number of components. The controls need to be designed understanding the area and application as the heat absorption and demand will vary place to place.

VERSOSUN Thermal Solutions come complete with below components

- VERSOSUN Solar Thermal Collectors
- VERSOTHERM Storage Calorifiers
- VERSOL Controller
- VERSOL Pumping Station
- VERSOHEX Emergency Cooling Station (Optional)
- Safety & Control Equipment



VERSOL Pumping Station pumps heat-transfer fluids/anti-freeze liquid, through collectors and then to the heat exchangers which can be inbuilt (VERSOTHERM) or external heat exchanger (VERSOHEX) and then stored the storage tank. Heat exchangers transfer the heat from the fluid to the potable water stored in the tanks. VERSOL can also offer with overheat protection, which is Cooling Heat Exchangers (VERSOHEX) which is preferable for Systems with more number of panels and buildings with unbalanced demand. This will protect the collector and the solar fluid from becoming super-heated when the load is low and the intensity of incoming solar radiation is high.

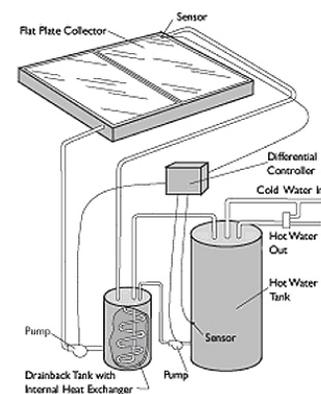
ACTIVE VENTED SYSTEM- DRAIN BACK SOLAR WATER HEATING SYSTEM

VERSOL can also offer Drain Back System, which is a type of Active System, use pump station to circulate water through the collectors. The water in the collector loop drains into a reservoir when the pumps stop by controller. This makes drain back systems a good choice in colder climates. Drain back systems must be carefully installed to assure that the piping always slopes downward, so that the water will completely drain from the piping. This can be difficult to achieve in some circumstances.

VERSOSUN Thermal Solutions come complete with below components

- VERSOSUN Solar Thermal Collectors
- VERSOTHERM Storage Calorifiers (Drain Back Tank)
- VERSOTHERM Buffer Tank (Storage Tank)
- VERSOL Controller
- VERSOL Pumping Station
- VERSOHEX Emergency Cooling Station (Optional)
- Safety & Control Equipment

VERSOSUN Thermal Solutions offers more competitive efficient Drain back Solar System, which uses Heat Exchanger in the drain back tank and hence reduce the energy loss in the vented drain back tank and also one circulation pump is only required in the Solar Heating Side.



VERSOSUN THERMOSIPHON SOLAR WATER HEATERS (VERSOSUN-TS)

Thermosiphon is the cheapest system available, where the heat flow is taking place due to natural effect called Thermosiphon. So there is no need of mechanical pump for the circulation of heated water to tank.

Thermosiphon Water Heaters are with water tank and Solar panel, located together and installed ideally on the roof of the building although they can be installed in almost any location. This type is suitable is consumption rate is less, especially for Villas or small offices.

VERSOL can offer Thermosiphon Solar Water Heater with either by Evacuated Tube Collectors or with Flat Plate Collectors depends on the requirement.

VERSOSUN include many options to meet the customer requirement in different type of application. More in details will discuss in the Thermosiphon data sheet page.



VERSOL EVACUATED TUBE SOLAR WATER HEATER (VERSOSUN-TS/VT)

VERSOL Thermosiphon Solar Water Heaters are normally used for Domestic applications where the hot water requirement is less. Evacuated tube collectors can offer better efficiency and hence the Thermosiphon Solar Water Heaters with Evacuated Tube Collector always promise better performance for the residential villas and Office buildings.

Speciality of VERSOSUN-TS/VT Range:

- High performance evacuated tube collectors
- Available in 18, 20, 24 & 30 tube panels
- Stainless Steel Storage Tank
- Copper Heat pipes - offering low maintenance
- Easy to install, simple roof fixings or frames
- Can be mounted flat or inclined roof



Model	Volume	No of Tubes	Dia. of Heat Pipe	Tube Length	Elec. Back Up
VERSOSUN TS/VT-150	150 L	15	58mm	1800mm	1.5 kW
VERSOSUN TS/VT-200	200 L	18	58mm	1800mm	1.5 kW
VERSOSUN TS/VT-250	250 L	20	58mm	1800mm	1.5 / 3 kW
VERSOSUN TS/VT-300	300 L	24	58mm	1800mm	1.5 / 3 kW

VERSOL FLAT PLAT SOLAR WATER HEATER (VERSOSUN-TS/FP)

VERSOL Thermosiphon Solar Water Heaters are also available with Flat Plate Collectors, which are in VERSOSUN-TS/FP range. These range are suitable for the applications like Villas, Small Residential Blocks, and Office Buildings etc.

VERSOL Flat Plate Solar Water Heaters consist of VERSOSUN Thermal Panels and Storage Tanks. The Storage Tank Can be Pressurized or Non-Pressurized. VERSOSUN Thermal Panels consist of a copper riser tube structure, fitted to a flat absorber plate. The absorber plates are highly efficient, and are made of specially designed Tinox Selective or Black Chrome based on the requirement. The absorber plate on standard Flat plate solar thermal collectors are generally aluminum sheet. The absorber riser tubes and header tubes are made of copper tubes and header tubes are 22mm size. All wetted part of the panels is made of Copper.



The collector structure is manufactured from galvanized steel and the collector base is manufactured from weather resistant aluminium or galvanized sheet with 40mm glass wool /fibre glass rear insulation. The glass cover is highly transparent, made from low-iron, and tempered glass of thickness 3-4mm.

Specialty of VERSOSUN-TS/FP Range:

- High performance Flat Plate collectors
- Available in 150,200,300,450 capacities
- Collectors with Black chrome absorber
- All wetted parts are Copper/Stainless Steel
- Easy to install, simple roof fixings or frames
- Can be mounted on a flat or on a pitched roof
- Available in Pressurized & Non-pressurized

Model	Volume	No of Panels	Panel Area	Total Panel Area	Elec. Back Up
VERSOSUN TS/FP-150	150 L	01	2.0 m ²	2.0 m ²	1.5 kW
VERSOSUN TS/FP-200	200 L	01	2.0 / 2.4 m ²	2.0 / 2.4 m ²	1.5 kW
VERSOSUN TS/FP-250	250 L	02	2.0 m ²	4.0 m ²	1.5 / 3 kW
VERSOSUN TS/FP-300	300 L	02	2.0 m ²	4.0 m ²	1.5 / 3 kW
VERSOSUN TS/FP-400	400 L	03	2.0 m ²	6.0 m ²	3 kW
VERSOSUN TS/FP-500	500 L	03	2.0 / 2.4 m ²	7.2 m ²	3 kW

VERSOSUN SOLAR WATER HEATING SYSTEMS (VERSOSUN-FS & DB)

VERSOSUN Solar Water Heating Systems under VERSOSUN Thermal Solution range can offer two types of Systems which are normal active solar heating system and drain back solar heating system.

- VERSOSUN-FS – Active System- Forced Solar Water Heating System
- VERSOSUN-DB- Active Vented System- Drain Back Solar Water Heating System

VERSOSUN Thermal Solutions are offered with our own designed & manufactured products which ensure efficient performance of the System. All System components are coming from single vendor design.

VERSOSUN Thermal Solutions come complete with below components

- VERSOTHERM Storage Calorifiers
- VERSOSUN Solar Thermal Collectors
- VERSOL Controller
- VERSOL Pumping Station
- VERSOHEX Emergency Cooling Station (Optional)
- Safety & Control Equipment

VERSOSUN-FS FORCED SOLAR WATER HEATING SYSTEM

ACTIVE SYSTEM, where VERSOSUN Solar Panels are placed on the roof and the VERSOTHERM Storage Calorifiers can be placed anywhere inside or outside the building. In this case we need a pumping system to circulate water throughout the system- from storage tank heat exchanger to solar panel and from solar panel to storage tank heat exchangers. These systems are slightly complicated and require a number of components. The controls need to be designed understanding the area and application as the heat absorption and demand will vary place to place

VERSOSUN Model	Storage Volume	Panel Area	Ele. Back Up
FS/250/6	250 L	6 m2	3 kW
FS/300/6	300 L	6 m2	3 kW
FS/500/8	500 L	8 m2	5 kW
FS/1000/16	1000 L	16 m2	7 kW
FS/1500/24	1500 L	24 m2	10 kW

Storage Volume and no of Panels need to be design by considering the Hot Water Demand of the building. VERSOSUN Thermal Solution offers wide range of sets depends on the duty requirement.

VERSOSUN-DB DRAIN BACK SOLAR WATER HEATING SYSTEM

VERSOL can also offer Drain Back System, which is a type of Active System, use pump station to circulate water through the collectors. The water in the collector loop drains into a reservoir tank when the pumps stop by controller. This makes drain back systems a good choice in colder climates. Drain back systems must be carefully installed to assure that the piping always slopes downward, so that the water will completely drain from the piping. This can be difficult to achieve in some circumstances.

VERSOSUN Model	Storage Volume	Panel Area	Ele. Back Up
DB/250/6	250 L	6 m2	3 kW
DB/300/6	300 L	8 m2	3 kW
DB/500/8	500 L	10 m2	5 kW
DB/1000/16	1000 L	20 m2	7 kW
DB/1500/24	1500 L	30 m2	10 kW

Storage Volume and no of Panels need to be design by considering the Hot Water Demand of the building. VERSOSUN Thermal Solution offers wide range of sets depends on the duty requirement.

VERSOTHERM STORAGE CALORIFIERS (VERSOTHERM-STI)

The VERSOTHERM-STI range of Storage Calorifiers offers an ideal solution when domestic hot water is required in volume. Domestic Water is heated indirectly by a primary medium (Solar) via an internal u-tube battery or by external heat exchanger and stored directly. The size of Storage Tanks and Calorifiers depends on the Building Hot Water Demand and the Recovery Time requirement. VERSOTHERM Calorifiers are designed and manufactured to suit any hot water application and with VERSOSUN Thermal Solutions all the Calorifiers are supplied with Electric Back Up Heaters or Optional Boiler/Heat pump Heating Heat Exchangers.

Material of Construction

VERSOTHERM Calorifiers for VERSOSUN Thermal Solution need to select carefully for the best performance and long life time. Material need to be chosen depends on the application and medium. Apart from the selection of MOC, due to the specified welding technology and the tools, VERSOTHERM Calorifiers guarantee the life longevity.



VERSOTHERM Range in VERSOSUN Thermal Solutions are

- **Copper Lined Steel**

Storage Calorifiers shell combines the high strength of carbon steel with the corrosion resistance of copper. The process involves manufacturing a carbon steel outer shell and then lining internally with copper sheets which is welded together to form a waterproof surface with all wetted parts within the Calorifiers being manufactured from copper. Copper Lined Steel is suitable with VERSOTHERM-STI-UT Series.

- **Stainless Steel**

Storage Calorifiers shell is made of Stainless Steel Sheet which ensure life time of the tank as there is no other material involved. This is suitable in VERSOTHERM-STI-UT Series & VERSOTHERM-STI-SPIRA Series.

- **Glass Lined Steel**

Internally Glass or Enamel Lined Steel ensure corrosion resistive tank, but with Steel. This is commercially competitive option for small and Medium Ranges. This option is suitable for VERSOTHERM-STI-UT Series & VERSOTHERM-STI-SPIRA Series.

Commonly used Storage Calorifiers for VERSOSUN Thermal Solution are

- **Multiple Heated Calorifiers (STI-UT-EC Series)**

VERSOTHERM STI-UT-EC Series Storage Calorifiers are with U tube Heat Exchangers and Electric Immersion Heaters. The U- tube Heat Exchangers are to be connected with Solar Water Heating System line and the Electric Immersion Heaters to cover peak demand or as Back Up. This series Storage Calorifiers can be designed to use with Steam, Hot Water Boilers or Heat Pump instead of Electrical Back Up .

STI-UT-EC Range can be available with Copper Lined Steel, Stainless Steel or Glass Lined Steel Tanks

- **Spiral Tube Storage Calorifiers(STI-SPIRA Series)**

VERSOTHERM STI-SPIRA Series Storage Calorifiers are with Spiral Tube Heat Exchangers for the primary Heating Solar System This Series always will be with Electrical Immersion heaters as back up. STI-SPIRA Series is suitable to use with Small or Medium size heating circuits like Solar Water Heating or Heat Pump Systems where the heating load will be reasonably less. STI-SPIRA Series can be up to 5000L capacity with heating load of 100kW and the Electrical Heaters can be Threaded type or Flanged type. STI-SPIRA range will be available only with Stainless Steel or Glass Lined Calorifiers Tanks.



STI-UT Range
STI-UT – Calorifiers with U-Tube HEX
STI-UT-EC – Combined U-tube and Electric Heaters



STI-SPIRA Range

VERSOSUN SOLAR THERMAL COLLECTORS (VERSOSUN-WH Range)

VERSOSUN Solar Thermal Collectors offers efficient, best quality water heating Systems. VERSOSUN Solar Thermal Collectors are available in Flat Plate and Evacuated Tube types

- **VERSOSUN-WH-FP** – Flat Plate Solar Thermal Collectors
- **VERSOSUN-WH-ET** - Evacuated Tube Solar Thermal Collectors

Evacuated Tube Thermal Collectors (VERSOSUN-WH-ET Range)

VERSOSUN Evacuated tube collectors are made of high performance evacuated tubes with tinco coated vacuum tubes. Different types of panels are available with 10, 15, 20, 30 tubes to suit requirements. VERSOL offer many options to the customers to choose their panel based on the space availability in the roof. The heat pipes offers high efficiency, low maintenance.



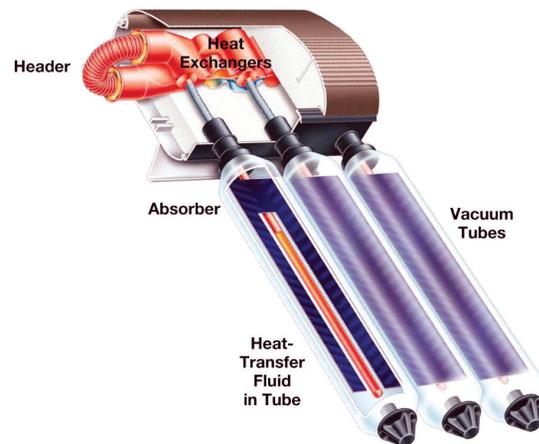
VERSOSUN-WH-ET Speciality:

- High performance
- Available in 10, 15, 20, 25 & 30 tube panels
- Can be mounted on flat or pitched roof
- Low maintenance
- Easy to install, simple roof fixings
- 10 year warranty, 20+ year lifespan

Working Principle:

Evacuated Tube absorbs solar energy and converts it to usable heat. A vacuum between the two glass layers insulates against heat loss. The Heat Transfer Fin helps to transfer heat to the Heat Pipe. Heat Pipe Copper vacuum pipe that transfers the heat from within the Evacuated Tube up to the manifold.

Manifold insulated box containing the copper header pipe. The header is a pair of contoured copper pipes with dry connect sockets that the heat pipes plug into.



VERSOSUN-WH-ET Range:

VERSOSUN MODEL-WH-ET	ET/10	ET/15	ET/20	ET/30
No Of Tubes	10	15	20	30
Weight (m2)	40.0	58.0	62.0	110.0
Aperture Area (m2)	0.93	1.4	1.87	2.79
Width (mm)	950	1340	1730	2550

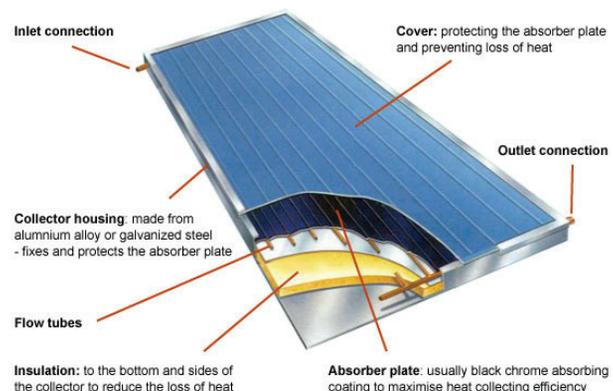
Flat Plate Thermal Collectors (VERSOSUN-WH-FP Range)

VERSOSUN Flat plate thermal collector consists of a copper riser tube structure, fitted to a flat absorber plate. The absorber plates are made Copper or Aluminium plates coated with Tinox or Selective Black Chrome. Based on the Absorber plate selection the Panels can be FP 2,0/Cu-Cu or FP2,0/Cu-Al. Both model have the Riser Tubes with Copper and Absorber plate Copper Sheet or Aluminium Sheet.

The collector structure can be made of Stainless Steel, Anodized Aluminium or Galvanised Steel. The collector base is manufactured from weather resistant aluminium or galvanized sheet with 40mm Glass wool rear insulation. The glass cover is highly transparent, made from low iron, tempered glass, which ensure the mechanical protection and efficiency.

Working Principle:

The Solar collector captures the solar energy by employing the 'green-house' effect. The glass cover of the collector permits up to 90% of the visible sunlight to enter the collector. When this light passes through the glass cover, the frequency of the light is decreased to a lower energy level. When the light hits the absorber plate, the light is absorbed as heat. The combination of the frequency change and the absorber surface on the plate captures the maximum amount of energy. As the absorber plate heats up, it begins to radiate energy as infrared or heat radiation. The glass cover traps the heat in the collector as the glass is essentially opaque to infrared waves, thus increasing the temperature and heating the water in the copper tube assembly.



VERSOSUN-WH-FP Range:

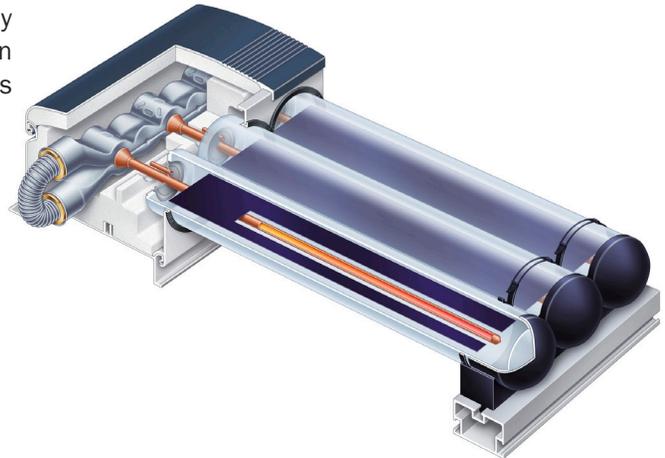
VERSOSUN MODEL- WH-FP (Cu-Al)	FP 2,0	FP 2,4	FP 3,0
Dimension (h * w * d)	2000 * 1000 * 80	2000 * 1200 * 80	2000 * 1500 * 80
Gross Area (m2)	2.0	2.4	3.0
Aperture Area (m2)	1.86	2.23	2.78
Cover	Low Iron Tempered Glass, Solar Glass		
Cover Thickness (mm)	3.5 / 4		
Weight (Kg)	35	40	50
Water Volume (L)	1.6	1.8	2.0
Copper Connection (mm)	22	22	22
Panel Orientation	Vertical	Vertical	Vertical
ABSORBER			
Material	Copper & Aluminium	Copper & Aluminium	Copper & Aluminium
Absorber Sheet Coating	Selective Black Chrome Coated Al Sheet		
Absorber Coefficient (%)	95±5	95±5	95±5
Emission Coefficient (%)	5±2	5±2	5±2
Header Pipe	Cu	Cu	Cu
Header Pipe Size (mm)	22	22	22
Riser Tube	Cu	Cu	Cu
Welding	Ultrasonic Welding	Ultrasonic Welding	Ultrasonic Welding
Max Test Pressure (Bar)	14.0	14.0	14.0
INSULATION			
Material	Polyester Fibre	Polyester Fibre	Polyester Fibre
Conduction Cof. (W/mK)	0.035	0.035	0.035
Thickness (mm)	35	35	35
CASING			
Frame	Aluminium Alloy	Aluminium Alloy	Aluminium Alloy
Max Temperature (°C)	208	208	208

Evacuated Tube Thermal Collectors (VERSOSUN-WH-ET Range)

VERSOSUN Evacuated tube collectors are made of high performance evacuated tubes with tinco coated vacuum tubes. Different types of panels are available with 10, 15, 20, 30 tubes to suit requirements. VERSOL offer many options to the customers to choose their panel based on the space availability in the roof. The heat pipes offers high efficiency, low maintenance.

VERSOSUN-WH-ET Speciality:

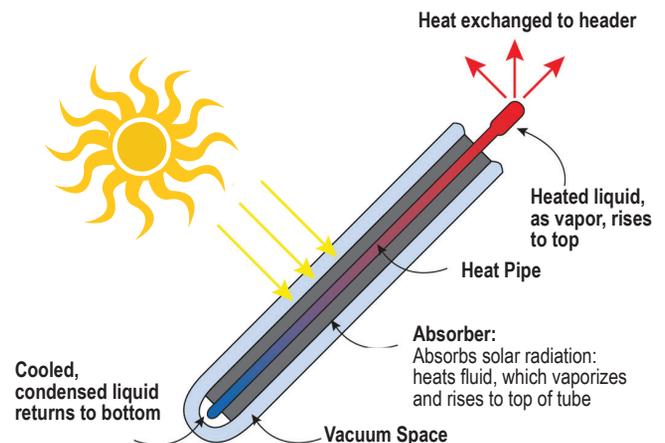
- High performance
- Available in 10, 15, 20, 25 & 30 tube panels
- Can be mounted on flat or pitched roof
- Low maintenance
- Easy to install, simple roof fixings
- 10 year warranty, 20+ year lifespan



Working Principle:

Evacuated Tube absorbs solar energy and converts it to usable heat. A vacuum between the two glass layers insulates against heat loss. The Heat Transfer Fin helps to transfer heat to the Heat Pipe. Heat Pipe Copper vacuum pipe that transfers the heat from within the Evacuated Tube up to the manifold.

Manifold insulated box containing the copper header pipe. The header is a pair of contoured copper pipes with dry connect sockets that the heat pipes plug into.



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