

Solar Water Heater



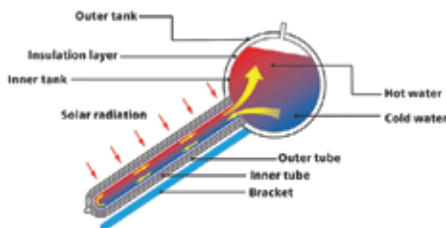
Non - Pressurized Solar water heater with Vacuum Tubes .

For water heating available with 100-400L Tank .

Non-pressurized solar water heater is a cost-effective system for residential hot water applications. This system is designed according to the thermosiphon principle and operating with proportion difference between cold water and hot water . the water heated by vacuum tube is held in the storage tank where the insulation preserves the heat .

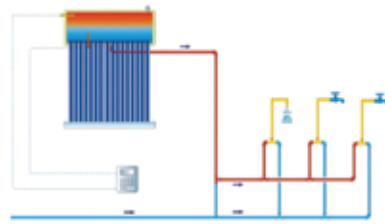
Solar water heater based on thermosiphon principle.

This type of solar water heater uses the sun to heat the working fluid (mostly water) in the vacuum tubes. The solar collector absorbs solar radiation , converts the sunlight to heat and transfers it to the water. The heated water naturally rises through the solar collector into the tank where the cooler water at the base of the tank is forced out and descends to the bottom of collector (thermosiphon circulation) . the circulation will be interrupted when there is no solar radiation



Whereas active solar water heating system rely on electric pumps, valves, and controllers to circulate the water through the vacuum tube collector , a thermosiphon system relies on gravity and tendency for water to naturally circulate as it is heated . since complex mechanical liquid pumps are not necessary , this types of systems are a reliable and cost-effective solution for hot water generation. thermosiphon systems are mainly used in regions with high solar radiation and good water quality .

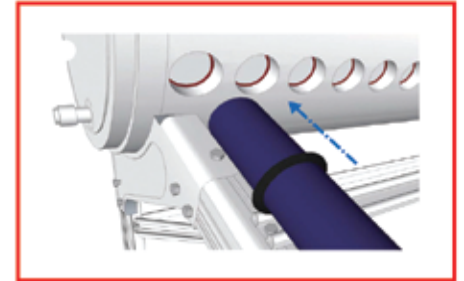
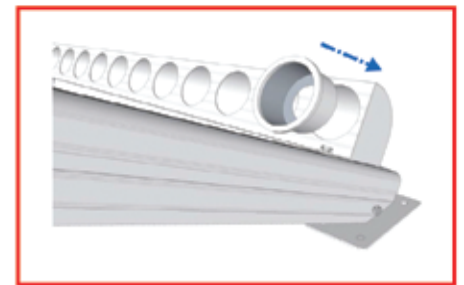
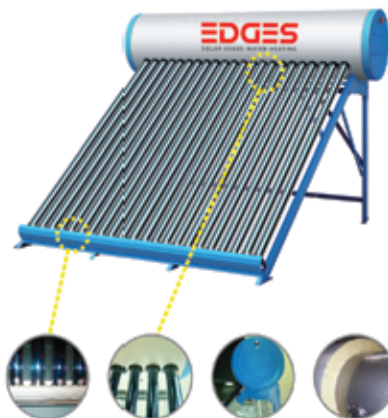
Installation types .
pitched roof , flat roof .



Example of an easy installation

Advantages and benefits .

- cost effective solar water heating solution
- long operating life time but low in maintenance costs and repair requirements
- short amortization rate .
- customized solar water heating solutions.
- high energy yield and low heat loss due to the high vacuum of the evacuated tubes and PU insulation HFC245-FA* .
- High-quality stainless steel in the inner tank to continuously maintain a good water quality .

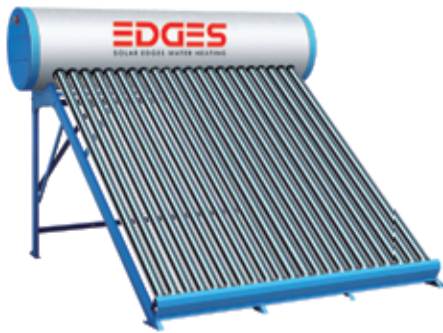


Non - pressurized solar water heater with Vacuum tubes . Specification

Series (standard)		LP - 1001	LP - 2001	LP - 3001	
General info	Rated operating pressure	Mpa	0.06	0.06	0.06
	Gross surface area	m ²	1.34	2.72	4.10
	Aperture area	m ²	0.91	1.82	2.73
	Installation dimensions (LxWxD)	mm	1053 x 1976 x 1342	1883 x 1976 x 1342	2713 x 1976 x 1342
Water tank	Tank dimensions	mm	φ 472 x 1053	φ 472 x 1883	φ 472 x 2713
	Tank weight	kg	20	30	40
	Insulation of tank	material / mm	Polyurethane / 45	Polyurethane / 45	Polyurethane / 45
	Material inner tank	material		Stainless steel SUS 316 L	
	Diameter / thickness inner tank	mm		Diameter 385 / 1.2	
	Material outer tank	material		White painted steel	
Tube	Diameter / thickness outer tank	mm		φ 472 / 0.4	
	Type of vacuum tubes			φ 58x1800 mm vacuum tube	
Bracket	Evacuated tubes	no.	10	20	30
	Bracket	material / colour		Aluminum alloy / Silver white	
	Bracket inclination	degree		30	
OTS	Weight	kg	5.4	8.9	10.7
	Electric heating				Provision of electric heating and anode protection

System structure and principle .

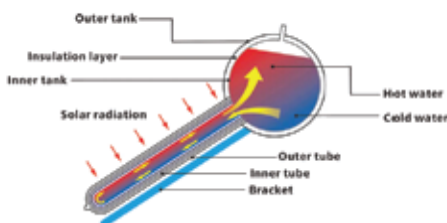
Advantages and benefits .



principle of solar water heater system.

solar radiation is absorbed by coated vacuum tubes and converted into heat, then warming the water in tubes. the heated water rises to the water tank and cold water in the tank is lowered into the vacuum tubes , therefore the natural circulation can continue running .

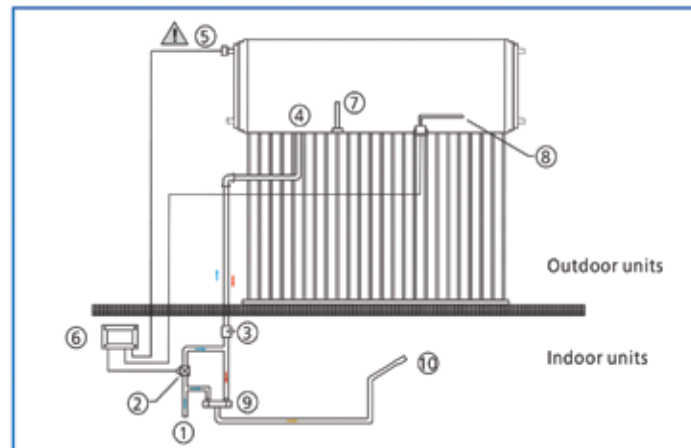
The water stored in the insulated water tank finally gets heated .



Water quality requirements for stainless steel inner tank are as following :

Item	Specifications
Dissolving solid	≤600mg/L or ppm
CaCO ₃	≤400mg/L or ppm
Saturation index	+0.4 to -1.0 at 65°C
PH	6.5 to 8.5
Dissolving CO ₂	≤18mg/L or ppm
Chloride	≤200mg/L or ppm
Magnesium	≤10mg/L or ppm

Automatic filling system with controller .



Structure and principle of vacuum tube .

1- Inner tube 2- Coating material 3-Vacuum gap 4- Outer tube 5- Supporter 6- Getter 7- Absorption film .

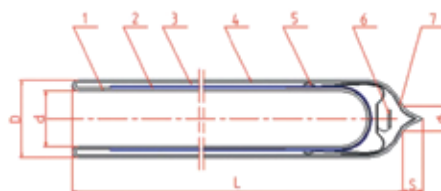
A vacuum tube consists of above - mentioned seven parts, and mainly used for solar irradiation absorption and water preservation .

1- The selective absorbing coating on outer surface of inner tube is mainly applied for solar irradiation absorption.

2- The vacuum gap, the space between the outer and inner tubes, is used for heat insulation and preventing the heat loss .

3- The getter, at the bottom of the tube , is used to absorb the air .

4- The absorption film is used to indicate the presence of vacuum , and a white .



Advantages and characteristics .

- SUS 316L 1.2 MM thickness stainless steel inner tank material high resistant to chlorine from corrosion .

- Automatically argonarc welding and electric resistance welding are used in welding the inner tank .

- Accurate and reasonable design 0 cambered inner end cap .

- Overall foaming polyurethane insulation that has less heat loss.

- Azzurro vacuum tube with advanced coating technology that has absorption efficiency ≥ 93 % and emissic rate ≤ 6% .

- Suitable and durable wind resistance aluminum bracket that is easy for assembling and delivering .

- Bar code design that can ensure every product to be followed.

- Auxiliary energy can be chosen by consumers , which would ensure hot water provided at all time .

International certifications & standards :



WHO WE ARE ?



1988

Foundation of paradigm Energie - und umwelttechnik GmbH & Co . KG

1992

Market launch of the flat plate solar collector .

1996

Market launch of the first vacuum tube collector with CPC- reflector .

2000

Establishment of Ritter Solar for production of vacuum tube collectors .



2008

Linuo Paradigma established its first oversea production base in Cuba .



Facts & figures .

- 28 years lineage on solar thermal industry .
- 11 years OEM export service .
- 360,00m² oversea installation .
- 80,000m² production area .

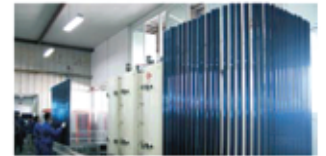
1994

foundation of Linuo Group and its glass tube production line .



1998

Linuo Group found its second glass tube production line for solar thermal vacuume tube .



2001

LINUO PARADIGMA is Established in China as a joint-venture between linuo group and Ritter Gruppe .



2010

Linuo paradigma established LINUO Ritter International CO.LTD. for global market .

2014

Linuo Ritter International established Ritter Solar energy Korea under Linuo Paradigma for product of solar collector and PV module .

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