V-GUARD

Harnessing nature for a better tomorrow.

SOLAR WATER HEATER

V-HOT PLUS SERIES

Harnessing the sun

Sacrificial Anodic Corrosion protection

ISI Electric Back up heater optional

High density PUF insulation

A Product from ISO 9001: 2015 Certified Company

www.vguard.in

V-Guard Evacuated Tube Collector Solar Water Heater

A revolutionary product from the house of V-Guard ,the brand that has always delivered the best in quality, technology, performance and service. The most advanced in Solar Water Heaters, V-Guard Solar Water Heaters are made from high-quality components and come with international technology. The Evacuated Tube Collector System facilitates high-efficiency absorption and utilization of solar energy, with minimum heat loss. V-Guard Solar Water Heater saves a substantial amount on electricity bills and other fuels, making it a worthy investment for a lifetime.

Features of V-Guard Evacuated Tube Collector System

- The concentric, high quality Borosilicate glass tubes in the Evacuated Tube Collector are sealed on both ends to create vacuum. The number of tubes vary according to the capacity.
- The high quality Solar Selective Coating (ALN/SS/Cu) facilitates excellent heat absorption and minimum heat emission.
- The storage tank is made of food grade stainless steel - SS 304L (see figure 2) • ISI Backup Heater with Automatic Temperature Controller (optional) • Fitted with Sacrificial Anode. • Huge savings on electricity and fuel charges. • Models available with Aluminium Stucco outer cover.

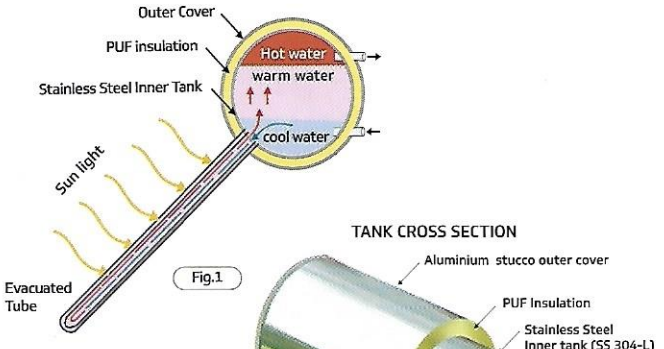
V-Guard Solar Water Heaters are manufactured in our factory with

- Imported machineries • Latest welding technology
- Experienced R&D personnel

Received business leadership award (Solar Thermal) from Solar Energy Society of India, New Delhi.

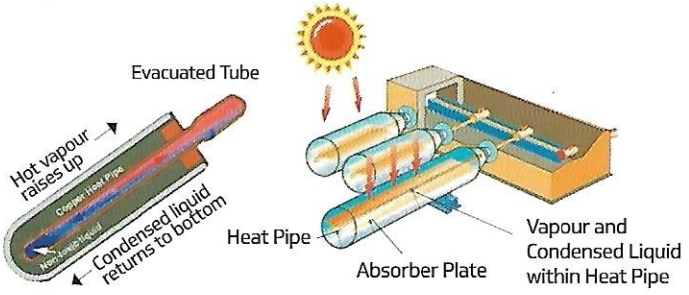
Working Principle of non pressurised Solar Water heater

Sunlight, incident on the Vacuum Tube, passes through the outer transparent glass tube and strikes the outer surface of the inner glass tube with selective coating (ALN/SS/Cu). This glass tube, which acts like a black body, absorbs the radiation and gets heated up in the process. The presence of vacuum between the two tubes prevents heat loss to the surroundings. The heated inner tube transfers this heat to the water with which it is directly in contact. Hot water is lower in density and therefore has a tendency to rise up. Cool Water from the tank flows down to replace the hot water, faciliating circulation by thermosyphon. And through this process, the entire water in the storage tank heats up and gets ready for use. The storage tank is insulated with PUF which minimises the heat loss at night.



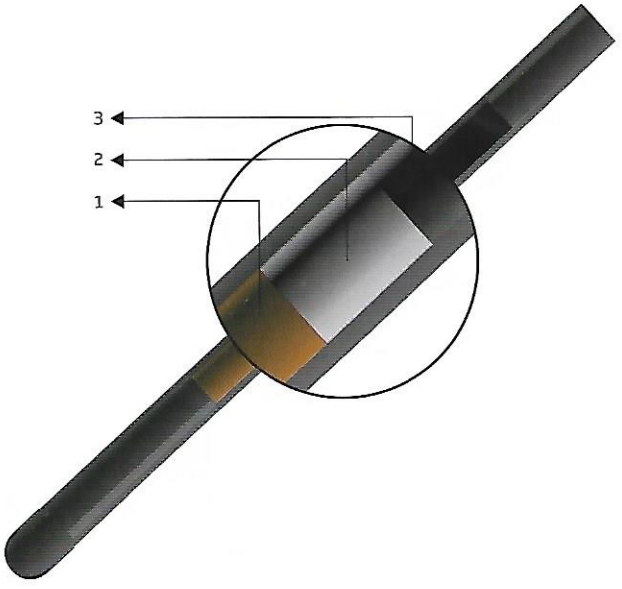
Working principle of pressurised Solar Water Heater

The non-toxic liquid inside the Copper heat pipe used in solar water heaters has a boiling point of only 25°C. So when the heat pipe is heated above 25°C, the liquid vapourises. The vapour rapidly rises to the top of the heat pipe transferring the heat to the cold water inside the tank. As heat is lost at the condenser top, the vapour condenses to form a liquid and returns to the bottom of the heat pipe to repeat the process. Each heat pipe is tested at 250°C. For this reason the Copper heat pipe is relatively soft. Because of high temperature, the glass tube is given a three-layer coating. Given the strict quality control and high Copper purity, the life expectancy of the heat pipe is even longer than that of the solar tube.



Three Layer Evacuated Tube

1. Metal Insulation layer (Copper)
   Reduces heat loss and lowers emission rate
2. Absorption layer (Stainless Steel & Al-N-Al Enameled Mirror)
   Anti-corrosion & Anti-oxidation
3. Anti-reflection Layer(Al-N-Al)
   Ensure high absorption rate and low emission rate by reducing reflection



EVACUATED TUBE COLLECTOR (ETC) SOLAR WATER HEATER TECHNICAL DETAILS (DOMESTIC SYSTEMS)

Model V-Hot Series	Utility points	Number of persons using hot water	Number of headers	Number of evacuated tubes	Back up heater (Optional)	Inner tank	Inlet/outlet pipe size of storage tank	Size of the evacuated tubes	Approx. wt of the storage tank without water	System height from the roof	Min. required over head tank height from the roof	Min. space area reqd. (NS X EW)
100 LPD	2	2-3	-	10	2KW	SS 304-L	1.9cm (3/4")	Ø58 x 1800 mm	13 kg	1.15 m	1.3 m	2.2 x 1.0m
125 LPD	2	3-4	-	13	2KW	SS 304-L	1.9cm (3/4")	Ø58 x 1800 mm	16 kg	1.15 m	1.3 m	2.2 x 1.3 m
150 LPD	3	4-5	-	15	2KW	SS 304-L	1.9cm (3/4")	Ø58 x 1800 mm	18 kg	1.15 m	1.3 m	2.2 x 1.5 m
200 LPD	4	5-6	-	20	2KW	SS 304-L	1.9cm (3/4")	Ø58 x 1800 mm	23 kg	1.15 m	1.3 m	2.2 x 2 m
250 LPD	5	6-7	-	25	2KW	SS 304-L	1.9cm (3/4")	Ø58 x 1800 mm	29 kg	1.15 m	1 .3 m	2.2 x 2.2 m

•Outer cover: Aluminium Stucco • Tank insulation - PUF

EVACUATED TUBE COLLECTOR (ETC) PRESSURISED SOLAR WATER HEATER TECHNICAL DETAILS

Model	Utility Points	Number of persons using hot water	Number of headers	Number of evacuated tubes	Back up heater (Optional)	Inner tank	Inlet/outlet pipe size of storage tank	Size of the evacuated tubes	Approx. wt of the storage tank without water	System height from the roof	Min. required over head tank height from the roof	Min. space area reqd. (NS X EW)
100 LPD-PR	2	2-3	-	10	2KW	SS 304-L	1.9 cm (3/4")	Ø58 x 1800mm	20 Kg	1.3 m	1.45 m	2.5 x 1.1 m
125 LPD-PR	2	3-4	-	12	2KW	SS 304-L	1.9 cm (3/4")	Ø58 x 1800mm	24 Kg	1.3 m	1.45 m	2.5 x 1.25 m
150 LPD-PR	3	4-5	-	15	2KW	SS 304-L	1.9 cm (3/4")	Ø58 x 1800mm	27 kg	1.3 m	1.45 m	2.5 x 1.6 m
200 LPD-PR	4	5-6	-	20	2KW	SS 304-L	1.9 cm (3/4")	Ø58 x 1800mm	34 Kg	1.3 m	1.45 m	2.5 x 2.1 m
300 LPD-PR	5	8-9	-	29	2KW	SS 304-L	1.9 cm (3/4")	Ø58 x 1800mm	48Kg	1.5 m	1.65 m	2.5 x 2.4 m
500 LPD-PR	8	14-15	2	44	4KW (2KW+2KW)	SS 304-L	2.54 cm (1")	Ø58 x 1800mm	54 Kg	1.8 m	1.95 m	2.8 x 4.4 m
1000 LPD-PR	14	29-30	2	88	6KW (3KW+3KW)	SS 304-L	3.81 cm (1.5")	Ø58 x 1800mm	120 Kg	1.97 m	2.2 m	3.0 x 8. 1 m

•Outer cover: Aluminium Stucco • Tank insulation - PUF

EVACUATED TUBE COLLECTOR (ETC) SOLAR WATER HEATER TECHNICAL DETAILS (LARGE SCALE SYSTEMS)

Model	Utility points	Number of persons using hot water	Number of headers	Number of evacuated tubes	Back up heater (Optional)	Inner tank	Inlet/outlet pipe size of storage tank	Size of the evacuated tubes	Approx. wt of the storage tank without water	Approx wt of one header set (One header, Stand and tubes without water)	System height from the roof	Min. required over head tank height from the roof	Min. space area reqd. (NS X EW)
300 V-HOT	5	8-9	-	29	2KW	SS 304-L	2.54 cm (1")	Ø58 x 1800mm	34 kg	-	1.2 m	1.35 m	2.1 x 2.3 m
500 V-HOT DI	8	14-15	-	33	4KW (2KW+2KW)	SS 304-L	2.54 cm (1")	Ø70 x 2100mm	46 kg	-	1.55 m	1 .7 m	2.4 x 3.2 m
500 LPD DI	8	14-15	-	30	4KW (2KW+2KW)	SS 304-L	2.54 cm (1")	Ø58 x 2100 mm	44 kg	-	1.52 m	1.67 m	2.4 x 2.5 m
1000 LPD	14	30	4	80	6KW (3KW+3KW)	SS 304-L	2.54 cm (1")	Ø58 x 1800 mm	75 kg	60 kg	2.1 m	2.25 m	3.3 x 7.6 m
1500 LPD	21	45	6	120	6KW (3KW+3KW)	SS 304-L	2.54 cm (1")	Ø58 x 1800 mm	110 kg	60 kg	2.1 m	2.25 m	3.3 x 11.2 m
2000 LPD	28	60	8	160	6KW (3KW+3KW)	SS 304-L	3.81 cm (1.5")	Ø58 x 1800 mm	120 kg	60 kg	2.1 m	2.25 m	6.0 x 7.6 m
2500 LPD	35	75	10	200	6KW (3KW+3KW)	SS 304- L	3.81 cm (1.5")	Ø58 x 1800 mm	150 kg	60 kg	2.1 m	2.25 m	6 x 9.5 m
3000 LPD	42	90	12	240	6KW (3KW+3KW)	SS 304-L	5.08 cm (2")	Ø58 x 1800 mm	180 kg	60 kg	2.1 m	2.25 m	8.6 x 7.6 m
4000 LPD	56	120	16	320	9KW (3KW-3NOS)	SS 304-L	5.08 cm (2")	Ø58 x 1800 mm	220 kg	60 kg	2.2 m	2.35 m	11.6 x 7.6 m
5000 LPD	70	150	20	400	9KW (3KW-3NOS)	SS 304-L	5.08cm (2")	Ø58 x 1800 mm	280 kg	60 kg	2.4 m	2.35 m	11.5 x 9.5 m

*Number of tubes in 1000 LPD to 5000 LPD subject to Site condition • Outer cover: Aluminium • Tank insulation- PUF

EVACUATED TUBE COLLECTOR (ETC) SOLAR WATER HEATER TECHNICAL DETAILS (LARGE SCALE SYSTEMS) VERTICAL HEADER AND VERTICAL TANK

Model	Utility points	Number of persons using hot water	Number of headers	Number of evacuated tubes	Back up heater (Optional)	Inner tank	Inlet/outlet pipe size of storage tank	Size of the evacuated tubes	Approx. wt of the storage tank without water	Approx wt of one header set (One header, Stand and tubes without water)	System height from the roof	Min. required over head tank height from the roof	Min. space area reqd. (NS X EW)
1000 LPD	14	30	2	80	6KW (3KW+3KW)	SS 304-L	3.81 cm (1.5")	Ø58 x 1800 mm	70 kg	135 kg	2.15 m	2.3 m	3.3 x 8.0m
1500 LPD	21	45	3	180	6KW (3KW+3KW)	SS 304-L	3.81 cm (1.5")	Ø47 x 1500 mm	110 kg	135 kg	2.68 m	2.83 m	4.5 x 12 m
2000 LPD	28	60	4	240	6KW (3KW+3KW)	SS 304-L	3.81 cm (1.5")	Ø47 x 1500 mm	130 kg	135 kg	2.0 m	2.15 m	8 x 8 m

• Outer cover: Aluminium • Tank insulation - PUF

APPLICATIONS

• Houses and Bungalows • Hotels/Hospital/Restaurants • Resorts / Apartments • Poultry Farms •Textile Mills & Drying Units/ Industries • Pool Heating

5000 LPD PR (3000 LPD PR + 2000 LPD PR)

3000 LPD

5000 LPD (2 NOS OF 2000 LPD + 1000 LPD)

2500 LPD

SUPERIORITY OF EVACUATED TUBE TECHNOLOGY	
Evacuated Tube Collector (ETC)	Flat plate collector (FPC)
1. Quick heat generation	Slow heat generation
2. Heat absorbing surface is always perpendicular to the sun-rays because of the cylindrical collector glass tube. Hence peak absorption always.	The collector fins and tubes being flat ,the incident sun- rays will be at 90 degrees only at noon. So the peak absorption is also only during this time.
3. Vacuum inside the collector tube reduces heat loss at night	Heat loss will be more in collector panels at night.
4. Negligible scaling of tubes -can be cleaned manually(inner dia 37 mm or 48 mm).	Heavy scaling of copper tubes which cannot be cleaned manually as bore dia is 12.50mm, causing substantial loss in the efficiency of the system.
5. Satisfactory performance in cold conditions.	Performance falls significantly on cloudy and winter days.
6. Increment in temperature form ambient temperature is more on clear sunny days.	Increment in temperature form ambient temperature is comparatively less on clear sunny days.
7. Advance technology at a competitive price.	Out dated technology ,high price.
8. Less area required for installation.	Unit occupies huge area
9. Incase of collector tubes damage, tubes can be replaced individually.	Entire glass has to be replaced in case of damage ,high cost for replacement

ANNUAL SAVING WITH THE USE OF V-GUARD SOLAR WATER HEATER

Sl No	Capacity	*Electricity		Diesel		Fire wood		LPG		Coal	
		Per year in unit	savings/ year in Rs	Per year in ltr	Savings/ year in Rs	Per year in Kg	Savings/ year in Rs	Per year in Kg	Savings/ year in Rs	Per year in Kg	Savings/ year in Rs
1	100 LPD	1395	10462	202	13534	533	6396	190	13072	372	13020
2	200 LPD	2791	20932	403	27001	1066	12792	381	26213	744	26040
3	300 LPD	4186	31395	605	40535	1600	19200	571	39285	1117	39095
4	500 LPD	5581	41857	807	54069	2133	25596	762	52426	1489	52115
5	1000 LPD	13953	104647	2017	135139	5333	63996	1905	131064	3722	130270
6	2000 LPD	27907	209302	4034	270278	10666	127992	3810	262128	7445	260575
7	3000 LPD	41860	313950	6050	405350	16000	192000	5714	393123	11167	390845
8	4000 LPD	55814	418605	8067	540489	21333	255996	7619	524187	14889	521115
9	5000 LPD	69767	523252	10084	675628	26666	319992	9524	655251	18612	651420
10	10000 LPD	139534	1046505	20168	1351256	53332	639984	19048	1310502	37224	1302840

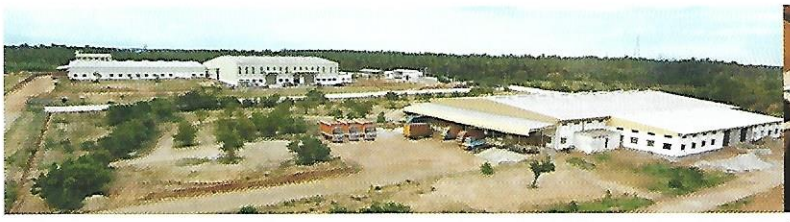
Note:

1.The data given above may vary according to the site, solar radiation available, weather conditions and pattern of usage

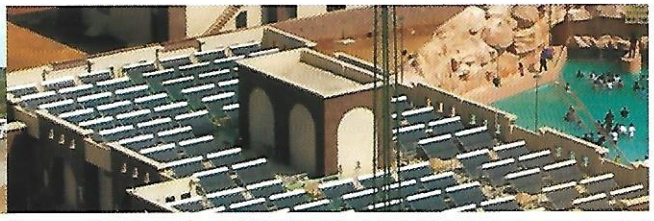
2. Savings are calculated by considering the investment on Solar Water Heater, interest on investment, depreciation and maintenance cost.

3. Electricity tariff is calculated as per the charges in the state of Kerala,for the Consumption of 501-600 units.

4. Only 300 days in a year have been taken into consideration. Rest of the days are assumed as cloudy and overcast.



Factory



Solar pool heating system (100000 LPD) installed at Wonderla Amusement Park

Authorised DMA/ Dealer:

Designed by VGCC, Aug. 2018

V-Guard Industries Ltd.
Registered Office: 42/962, Vennala High School Road, Vennala, Kochi - 682 028, Kerala.
Ph: 0484-2005000, 3005000 www.vguard.in

V-Guard Care
1800 103 1300 (Toll Free)
1860 180 3000 (Charges Apply)
customercare@vguard.in
CIN: L31200KL1996PLC010010

V-GUARD
Bring home a better tomorrow