

## CERTIFICATION



Best-in-class  
clean hot water solutions



Environmental health



Energy efficiency



Customer service



Product innovation



Multi Flow  
Heat Exchanger



India's Most Advanced Solar Water Heating System

For complete information. Please call or write us Your request will receive prompt attention

### INTER SOLAR SYSTEMS PVT. LTD.

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Authorised Dealer :



TOTAL SOLAR  
SOLUTIONS

# Introduction

*Having more than 19 years of experience.*



## Vision

Inter Solar system one of the largest manufacturer of solar energy equipments in India. We strive to optimize performance & efficiency at lower cost. Our R & D teams regularly tests New material, Manufacturing methods, designs & improves distribution systems. New Solar Technology is evaluated as it develops. Besides improving existing products and systems, Inter Solar research team explores exciting new solar ideas.

Inter Solar R&D achievements include freeze protection , scale protection, integrated solar controls, customized solar solutions & much more.

## Company Profile

Inter Solar systems are pioneers manufacturer of solar equipments i.e. solar water heating systems, high temperature solar water heating systems, solar air heating systems, solar pool heating systems, heat pump, solar photovoltaic modules, solar power plants to meet the customer requirements for domestic, commercial, hotels, hospitals, swimming pools, etc.

The company introduces high end products strictly accordingly to ISO 9001, 14001 and 20001. Solar water heaters being manufactured are both CE & ISI marked.

Inter Solar having covered area for manufacturing setup of 70,000 sq. ft. with state-of-the-art technology with special purpose machinery. Inter Solar design and manufacture the system to meet the customer requirements and ensure customer satisfaction.

Inter Solar aims to continue manufacturing and marketing the best engineered product for both domestic and export and will continue to introduce new products to keep abreast with market trends

### Pioneers in:



Solar Pool Heating



Process Heat



Hotels



Hospitals

# PRODUCT RANGE

All solutions under one roof from power to hot water

## PRODUCT RANGE

- Solar water heating-domestic, hotels
- Solar water heating systems- Industrial up-to 90° C
- Solar Swimming Pool Heating systems
- Solar Air Heating systems
- Solar Heat Pumps
- Solar Photovoltaic Modules
- Solar Power Plant – On Grid & Off Grid



# Thermosyphon System

INTER SOLAR STANDARD MODEL consists of collectors, insulated hot water tank, inter connecting piping and electrical backup. It heats the water directly it is recommended for water having hardness less than 80 PPM.

INTER SOLAR EXECUTIVE MODEL consists of collectors, insulated hot water tank, heat exchanger with makeup tank, inter connecting piping and electrical backup. It heats the water indirectly. It is recommended for water having hardness more than 80 PPM and for snow bound area for anti freeze.

INTER SOLAR DELUXE MODEL consists of collectors, pressurized dish end hot water tank with heat exchanger, inter connecting piping and electrical backup, it heats the water indirectly. It is recommended for pressurized water supply and for water having hardness more than 80 PPM and for snow bound area for anti freeze.



## Std. and EX Model

- FEATURES**
- Std. Model - Are not suitable/recommended for frost or harsh water regions.
- Ex Model** - Are suitable/recommended for frost or harsh water regions.
- High Performance Black Chrome selective surface collector, for use in low to medium solar gain areas.
- Ultrasonically/Laser welded absorber to copper tubes, ensuring high efficiency and durability.
- The single-pane 3.2/4 mm tempered patterned/clear solar glass having high solar transmittance upto 92% and excellent durability.
- Silicon adhesive used for glass and frame attachment.
- S.S. 304 L tank with sacrificial anode
- Thermosiphon technology requires no mechanical pump.
- "Over Temperature Protection (OTP) standard".
- Suitable for non pressurised/gravity flow cold water supply.

### KEY BENEFITS

- Will reduce your heating costs by upto 90%.
- Collector design withstands extreme weather conditions.
- Enhanced tank protection.
- "Reliable, low maintenance operation for years of worry free hot water".
- Trusted Inter Solar warranties.
- Hot water regardless of the weather.
- Not suitable for water having hardness more than 80 ppm.
- Tank made of Outokumpu stainless steel sheet (duplex grade S32101).
- Ex Model** - Whole system stands for both snow bound area and anti freeze.
- Suitable for freeze prone or harsh water quality areas.
- Suitable for water having hardness more than 80 ppm.
- The beauty of the system is that it works on partially cloudy days.

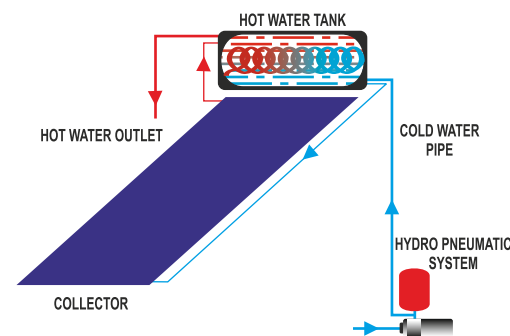
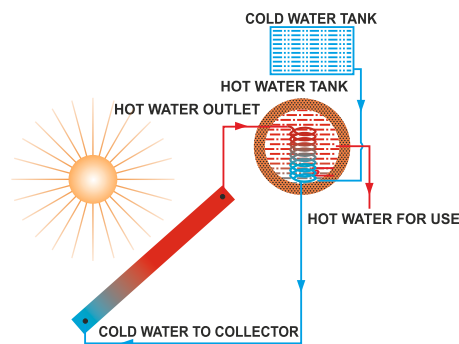
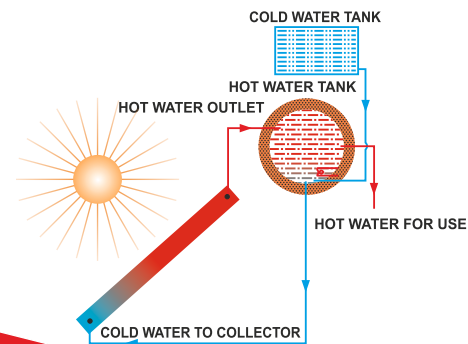
## DX Model

### FEATURES

- High Performance Black Chrome selective surface collector, for use in low to medium solar gain areas.
- Laser or ultrasonically welded absorber to copper tubes, ensuring high efficiency and durability.
- The single-pane 3.2/4 mm tempered patterned/clear solar glass having high solar transmittance upto 92% and excellent durability.
- Silicon adhesive used for glass and frame attachment.
- S.S. 304 L tank with sacrificial anode
- Thermosiphon technology requires no mechanical pump.
- "Over Temperature Protection (OTP) standard".
- Are suitable/recommended for frost or harsh water regions.
- Suitable for pressurised cold water supply upto 5kg/cm<sup>2</sup>.

### KEY BENEFITS

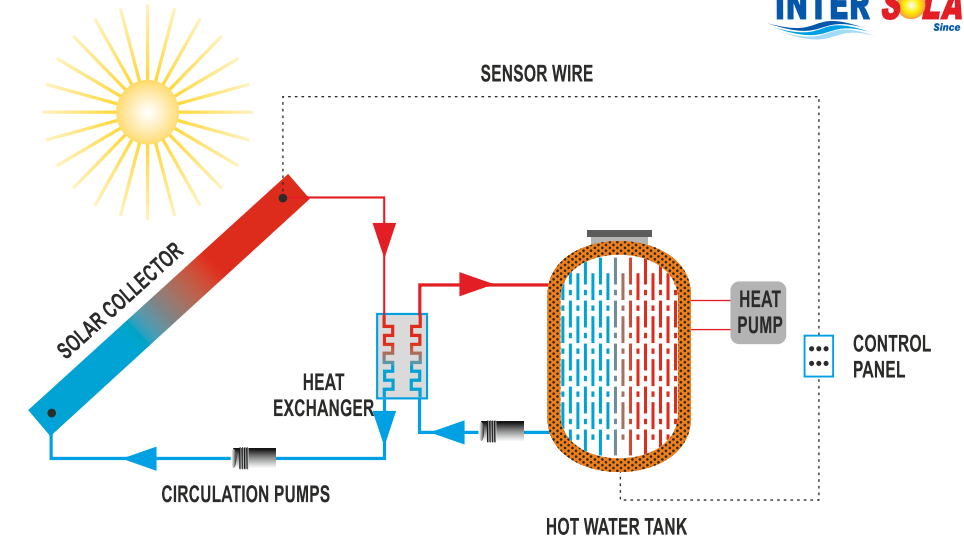
- The beauty of the system is that it works on partially cloudy days. It can reduce your heating costs by upto 90%.
- Protects from over performance on hot days and when there is low water usage.
- Collector design withstands extreme weather conditions
- Outokumpu stainless steel sheet (duplex grade S32101).
- Suitable for freeze prone or harsh water quality areas.
- Suitable for water having hardness more than 80 ppm.



# Split System

Inter Solar's split system solar water heaters is designed to give customer the maximum flexibility at installation locations.

Unobtrusive Solar Collectors are mounted on a South facing roof, while the storage tank is mounted at ground level out of sight. The electric back-up model can even be installed inside your home. While maximizing the potential savings from the sun.



## Working

With Inter Solar Split System technology the heat exchanger is outside the hot water tank at ground level through the collector panels by an electric pump. It heats the water indirectly.

Cold water is pumped in a continuous cycle from the bottom of the tank and circulated through the collector panels where it absorbs the heat extracted from the sun before being returned to the tank.

In Split closed circuit systems, which are recommended for frost prone and poor water quality situations, Antifreeze fluid is used to circulate through the collectors. The heat collected from the panels is transferred from the fluid to the water in the tank by a heat exchanger.

The circulator is regulated by a control unit on the water heater. When the controller senses an 5°C differential in temperature between the top of the collector panels and the bottom of the tank, the circulator is activated until the temperature differential falls to 3°C. This ensures the optimum use of the sun's free energy.

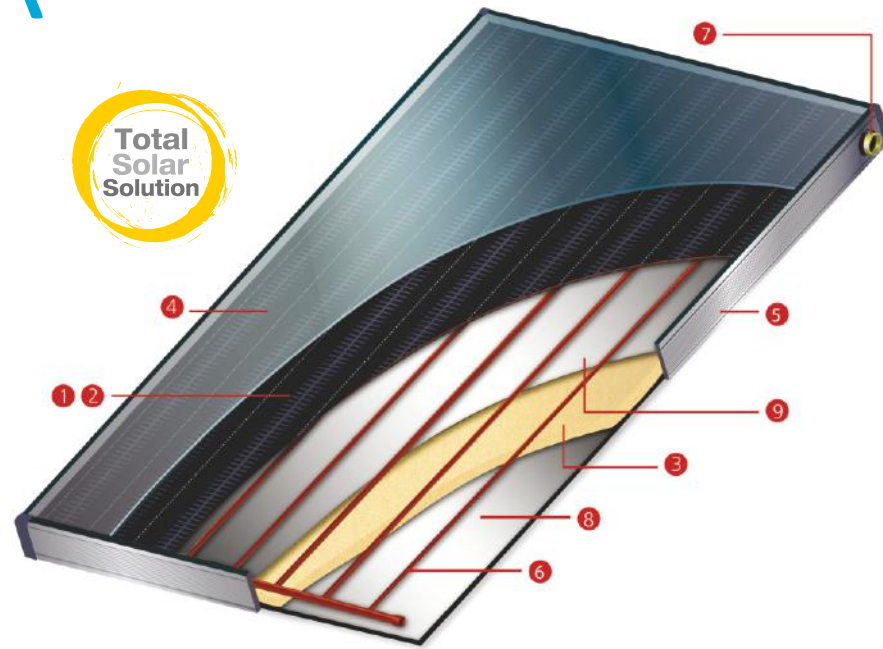
With a Inter Solar's Split solar water heating system you can choose from a range of boosters including in-tank electric or in-line Heat Pump continuous flow boosting to ensure you always have hot water on tap even on cloudy days.



# INTER SOLAR COLLECTOR

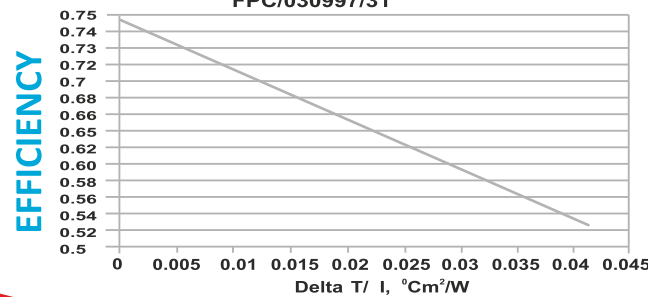
## COLLECTOR DETAILS

- Absorber Plate** : Made of copper sheet, laser or ultrasonically welded to copper tubes, ensuring high efficiency and durability.
- Absorber Plate Coating** : Selective black chrome or Ultra selective sputtered coating with excellent energy absorption and very low energy emission for high performance even in cooler climates.
- Insulation** : The absorber plate is encased in 50 mm resin bonded rock wool, retaining the collector's heat.
- Solar Glass Glazing** : The single-pane 4 mm tempered patterned or clear solar glass has high solar transmittance upto 92% and excellent durability.
- Casings** : Aluminum (Al) anodized aluminum extrusion casings are made of solid construction available in a natural or off-white.
- Tubing Grid** : 12.7 mm copper risers brazed to 25 mm copper/manifolds with optimal flow distribution.
- Piping Connection** : Four GI/brass flanges.
- Back Plate** : The back plate is made of aluminum sheet.
- Aluminum Foil** : The aluminum foil above insulation acts as a barrier against out-gassing.



Collectors		Sol 230	Sol 210
Aperture area	m <sup>2</sup>	2.3	2.1m <sup>2</sup>
Dimensions	L (mm)	1860m <sup>2</sup> ± 10	2035 ± 10
	W (mm)	1240 ± 10	1035 ± 10
	H (mm)	100 ± 10	100 ± 10
Weight	Kg	36	32
Working pressure	KPA	80	80
Absorber area	m <sup>2</sup>	2.1	2
Absorber coating		Black Chrome Selective Coating	
Absorber material		Cu/Al	Cu/Al
Riser material		Cu	Cu
No. of Risers		10/9	9/8
Frame Material		Extruded Aluminium	
Insulation Material		Rock Wool Blanket 48kg/m <sup>2</sup>	
Glass		3.2/4 m <sup>2</sup> Tempered low iron glass	
Type of Welding in absorber		Ultra Sonic/ Laser	

THERMAL EFFICIENCY CURVE  
FPC/030997/31

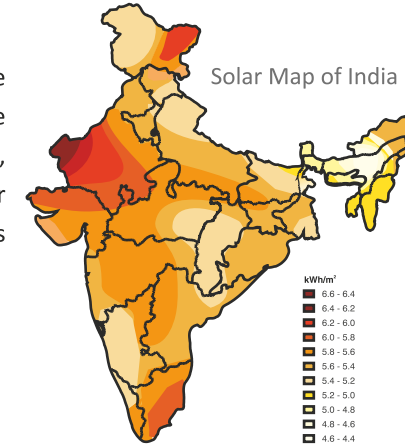


# SOLAR PROJECT SOLUTION

## SERVICES OFFERED

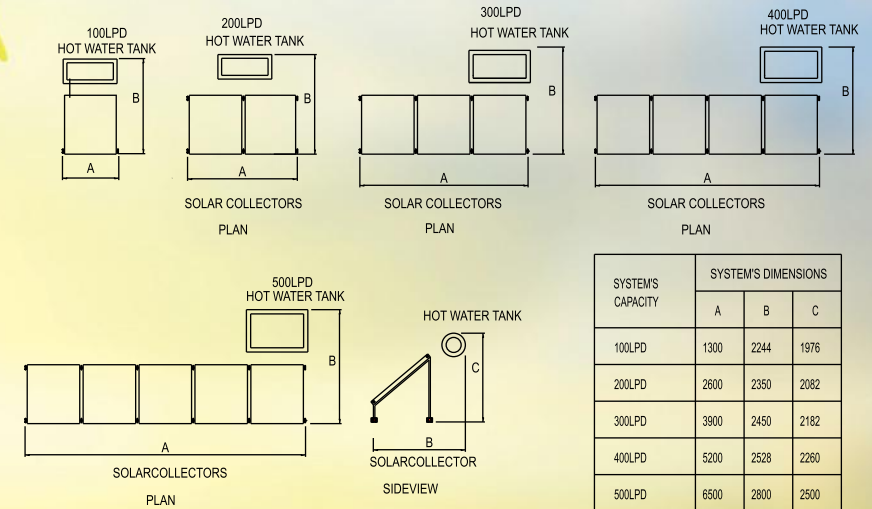
Inter Solar provides a complete engineering & contracting service for domestic, swimming pool, commercial & industrial solar projects. This offers our customers distinct advantages.

- Lower prices
- Direct Feedback
- Single source responsibility
- Unparalleled systems experience



## PROVISIONS & PREFEASIBILITY

- Shadow free south facing area for collector
- Cold water tank at 7 ft. height from roof level
- Insulation of piping from solar to user point is mandatory.
- Dedicated separate insulated hot water line from solar to bathrooms
- Site prefeasibility is required for better designing.



# INTER SOLAR TECHNOLOGY EDGE



- **Selective Coating:** The worlds most advanced continuous black chrome coating improves the collectors efficiency.
- **Laser Welding:** Laser Welded Fin & tube ensures a very high degree of thermal efficiency & thermal stability.
- **Toughened Solar Glass:** Low Iron high transmissivity toughened glass gives high efficiency & superior protection.
- **Insulation:** Rock Wool/ Puff having low conductivity is used to minimize the heat loss.
- **Exclusive Closed circuit system:** Incorporate failsafe low cost freeze protection developed to with stand harsh winter climates.
- **Stainless Steel Solar Storage Tank:** Inter Solar manufacture lifetime corrosion resistant stainless steel tanks. However large tanks are made of Mild Steel with special epoxy coating.
- **Sacrificial Anode:** Sacrificial anode used for ultimate tank life and durability.
- **Hot water all year Round:** A highly efficient heat pump / gas / electric booster used for cloudy / foggy days.



# SOLAR HEAT PIPE with CPC Reflector



## WORKING:

### CPC-REFLECTOR MADE IN INDIA

In order to increase the efficiency of the evacuated tubes, a highly reflecting and weather-proof CPC-reflector (Compound Parabolic Concentrator) is placed behind the evacuated tubes. The special mirror geometry ensures that even at unfavorable irradiation angles and diffuse sunlight falls onto the absorber. This substantially improves the energy yield of a solar collector. Unfavorable irradiation angles are given at diagonally incoming light (azimuth angle) (no south adjustment of the mounting area, sun progress from east to west, diffuse irradiation).

The mirror is produced from a metal sheet with protective coating using accurate roll forming technology. Due to the special fastening technique the mirror can be exchanged without using tools.

### WORKING PRINCIPLE

The selective coating on copper absorber absorbs the heat energy from solar radiation. The liquid in copper tubes gets heated. The liquid rises in the tube and give the energy to the manifold. Thus heating the water in the tank.

Heat Pipe Technology is best for industrial use for temp. application upto 90°C and for Air conditioning application.

### INTER SOLAR™

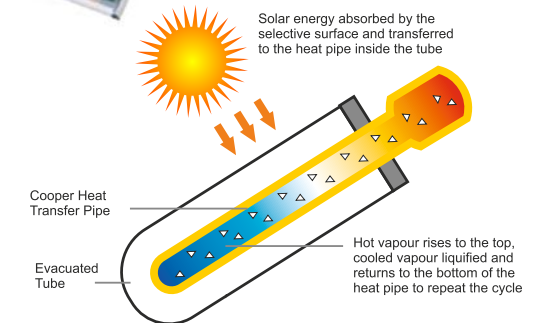
Heating your household water is the major consumer of energy in most homes.

INTER SOLAR™ Solar Hot Water System will not only help the environment by reducing CO<sup>2</sup> emissions, it can also reduce your hot water heating costs by up to 90%.

## CHARACTERISTIC

- This type of solar water heater can work at high pressure.
- It uses the heat pipe to deliver the heat energy.
- Because of the no water in the vacuum tube, there is no tube breakage in the winter, even in coldest area.
- Each vacuum tube can work alone, so it can still operate in the event of tube breakage.

Condensing End  
Heat Sealing Interface  
Vacuum Heat Pipe  
Selective Absorption coating  
High Borosilicate Vacuum Glass Tube



# SOLAR EVACUATED TUBE SYSTEMS (ETC)



Why choose a INTER SOLAR™ Evacuated Tube Solar Hot Water System?

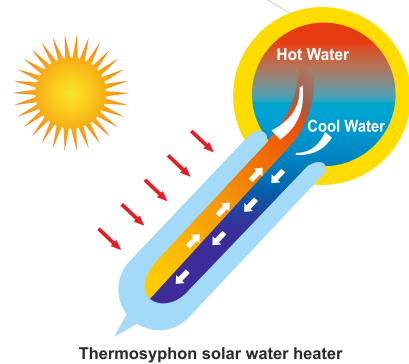
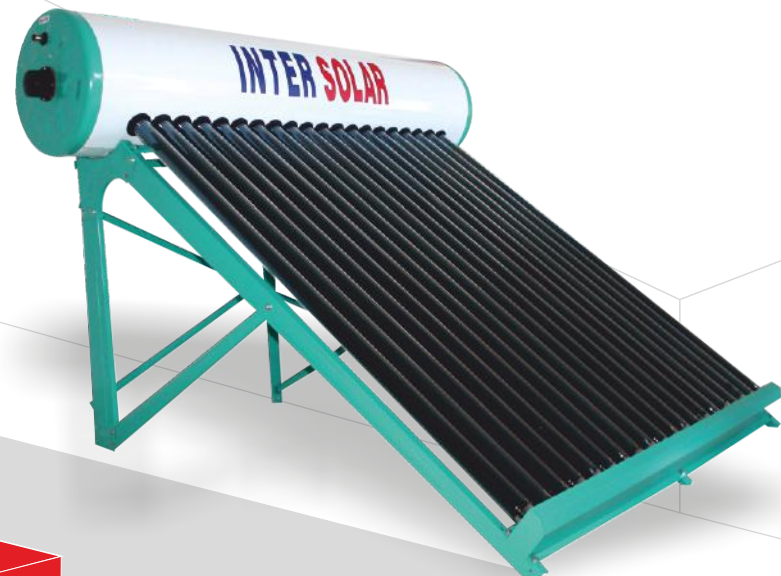
Evacuated Tube technology is in use worldwide and is more efficient in areas where diffuse radiations are more as compared to direct radiations climates.

## WORKING PRINCIPLE

The selective coating on the inner cover of the evacuated tubes absorbs the heat. When temperature rises, the density of water drops and weight goes down, hot water will go up to exchange with cold water in tank. In this way, the temperature of the water in tank goes up. ETC technology is suitable for domestic non-pressurised hot water application.

## INTER SOLAR™

Heating your household water is the major consumer of energy in most homes. INTER SOLAR™ Solar Hot Water System will not only help the environment by reducing CO<sub>2</sub> emissions, it also reduces your hot water heating costs by up to 90%.



# Technical Specification of Solar Evacuated Tube Systems (ETC)

MODEL	SYSTEM 100 ETC	SYSTEM 200 ETC	SYSTEM 300 ETC
<b>GENERAL CHARACTERISTICS</b>			
> Circulation Method	Thermosyphon	Thermosyphon	Thermosyphon
> Capacity	100 liters	200 litre	300 litre
> Electrical Backup	2 kw	2 kw	3 kw
> Sacrificial Rod Material	Magnesium	Magnesium	Magnesium
> No of Sacrificial Rods	1	1	1
<b>FRAME</b>			
> Frame Material	Powder coated GI 1mm	Powder coated GI 1mm	Powder coated GI 1mm
> Angle of Inclination	30 degrees	30 degrees	30 degrees
<b>TANK</b>			
> Inner Tank Material	Stainless Steel 304	Stainless Steel 304	Stainless Steel 304
> Inner Tank Thickness (mm)	0.5 mm	0.5 mm	0.5 mm
> Case Material	Color Coated GI	Color Coated GI	Color Coated GI
> Case Thickness	0.4 mm	0.4 mm	0.4 mm
> Insulation Material	Polyurethane Foam (PUF)	Polyurethane Foam (PUF)	Polyurethane Foam (PUF)
> Insulation Thickness (mm)	45 mm	45 mm	45 mm
> end cap Material	Powder coated GI 1mm	Powder coated GI 1mm	Powder coated GI 1mm
> end cap Thickness	0.4 mm	0.4 mm	0.4 mm
> Pipe Material	Stainless Steel 304	Stainless Steel 304	Stainless Steel 304
> Pipe Size	3/4 "	3/4 "	3/4 "
<b>TUBE</b>			
> Tube Dimensions d*h (mm)	58*1800 mm	58*1800 mm	58*1800 mm
> Tube Glass Thickness (mm)	1.6 mm	1.6 mm	1.6 mm
> No. of Tubes	10	20	30



# SOLAR HEATED SWIMMING POOL



## ISOTHERMAL POOL COVER SAVES POOL EQUIPMENT EXTENDS POOL LIFE

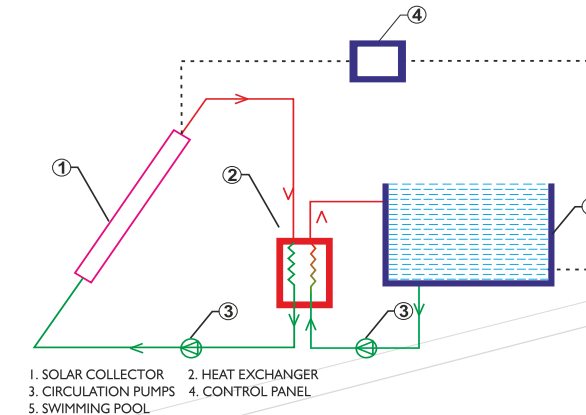
Inter Solar provides isothermal covers keeps heat in & dirt out, your pump and filter operates only few hours a day. That saves substantially on your electric bill and helps equipment last up to three times longer. The Covers also extends the life of your pool. By reducing evaporation, it consequently reduces the amount of calcium and mineral deposits. That means fewer acid washings and less need for replastering.

# SOLAR SWIMMING POOL HEATING

## Warm pools are used pools

Solar Swimming Pool Heater heating system significantly reduces swimming pool heating cost.

- They are cost competitive with both gas and heat pump pool heaters
- They have very low annual operating cost.
- In fact solar pool heaters is the most cost effective use of solar energy in many climates.



Inter Solar Swimming Pool Heating system is Energy saving, & eco friendly way of heating Swimming Pool.

Inter Solar maintains the Swimming Pool Water to comfortable temperature of 24 to 26 ± 2°C round the clock during winter Season\*.

Over the years, we continuously improved & refined the original Design. With extensive testing & innovation Inter Solar System is the Finest automatic Pool Heating System in India.

## Solar Swimming Pool Heating

Inter Solar offers a range of high quality, energy efficient solar systems to extend your pool season. We are No.1 in solar swimming pool heating systems in India.

Inter Solar is India's largest Manufacturer of Solar pool Heaters & has manufactured continuous products of solar Pool Heaters Since 1997. Rapid Pay back period commercial solar pool heating system typically pays back in less than 3 years having life expectancy of more than 15 years.



# SOLAR PV LIGHTING PRODUCT

The Solar Lighting is the most widely used application of Solar Energy. It is extensively used in all parts of the world. Solar Lighting Applications are used for both Community Lighting as well as for Domestic purposes. It helps in reducing electric power consumption and is easy to operate and handle. It consists of Solar Cells, Control Panel and Lighting Devices. It is extensively available in different models:-

## STAND ALONE SECURITY/ STREET LIGHTING SYSTEM

- 37/40W SPV Module
  - 12V, 40 AH Battery
  - 11W LED Lamp
  - Manually Operated
- 
- 70/74W or 2 nos. 37/40W
  - SPV Module
  - 12V, 75AH Battery
  - 18W LED Lamp
  - Dusk to Dawn Operation
- 
- 1 no. 150 W
  - 12V 150 AH Battery
  - 35W LED Lamp
  - Dusk to Dawn Operation

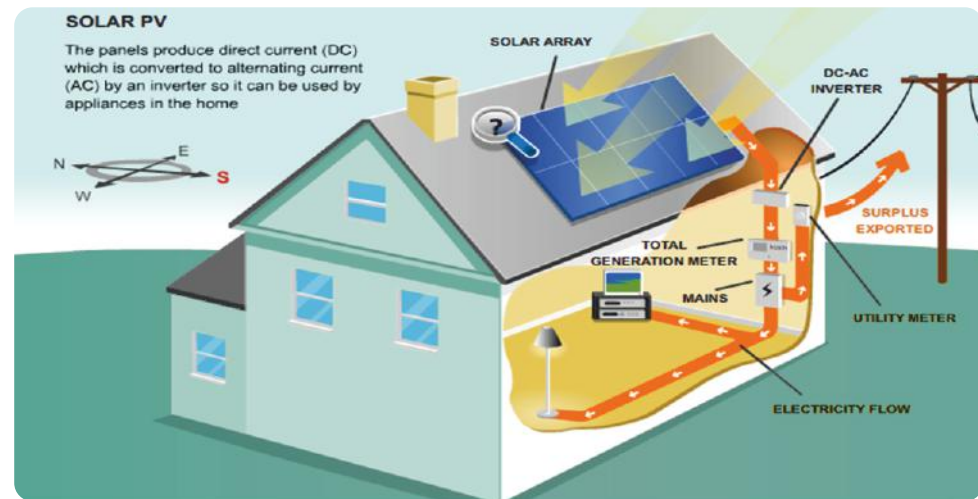
Solar Street Lighting Systems operates without cables and hence reduces transmission and cabling losses. Its consists of SPV module tubular battery with battery box, 4 mtr. pole, Lamp housed in weather proof assembly with inbuilt solid state charge controller.

Its operation time extends from Dusk to Dawn without any reduction in Performance.



## SOLAR POWER ENABLING SOLAR EVERYWHERE For your Home & Business

- Sell excess to grid
- 25 Years Warranty from INTER SOLAR POWER
- Reap accelerated depreciation bene Fit
- Pay back in 5-6 Years\*

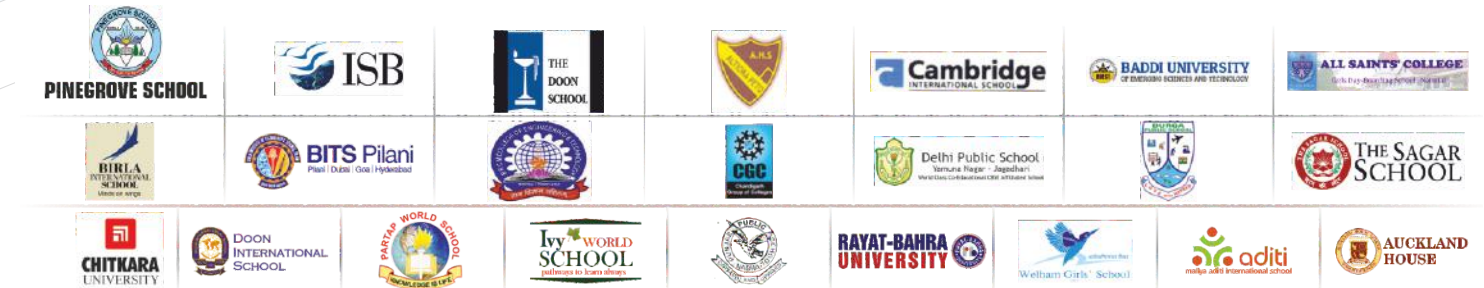


# OUR PRESTIGIOUS CLIENTS

### HOTELS



### EDUCATION



### HOSPITALS



### INDUSTRY



### CLUBS

