

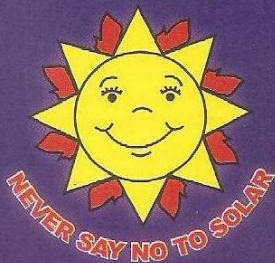
# SOLAR

## Solar Power

- ☞ THE FUTURE POWER
- ☞ UNLIMITED
- ☞ MAINTENANCE FREE
- ☞ NON POLLUTING
- ☞ COST EFFECTIVE
- ☞ ECO FRIENDLY
- ☞ RELIABLE
- ☞ FREE POWER
- ☞ FOREVER

“The earth receives 75000 trillion kilo watt energy from the sun every day.  
A mere 0.1% is enough to meet the world's energy requirements”

- Business India, July 03 1995



## RADIANT ENERGY TECHNOLOGIES

....A Committed Team with Innovation and Dedicated Service

Flat No. 205, Hanumantha Reddy Complex, Tadbund 'X' Roads, Secunderabad - 500 009.

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# "SOLAR LANTERN"

--- The Gift of God (Sun)

**Solar Lantern** is a powerful & compact lighting system which uses "**SUN ENERGY**" and gives free power forever.

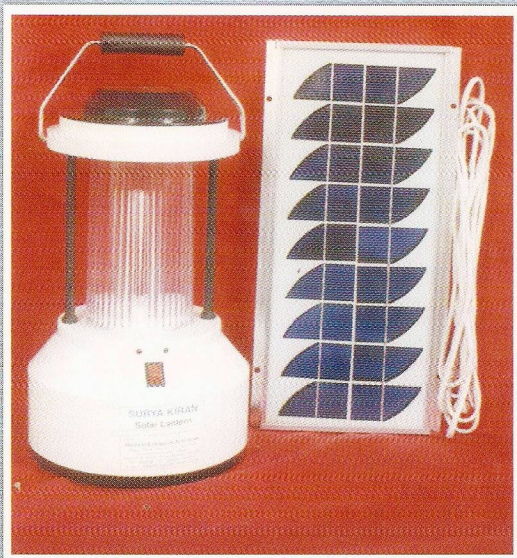
Solar Lantern consists of a Solar module, Tough polycarbonated body, Compact Fluorescent Lamp (CFL), Battery and a Electronic circuit. The brief description of the parts of Solar Lantern is as follows :

1. **Solar Photovoltaic Module** : which receives solar energy and converts into electricity (DC current).
2. **Electronic Circuit** : which receives DC power from solar module and converts into AC power.
3. **Battery** : is a charge storage device which stores power for a longer time.
4. **Compact Fluorescent Lamp (CFL)** : which receives the power from the battery and gives the actual light.

The different models available in Solar Lantern is described below.

- a. **"Surya Deep" Mini Lantern** with 6V - 3Wp/5Wp Solar PV Module  
6V - 4 Ah SMF Battery  
5 W CFL
- b. **"Surya Kiran" Big Lantern** with 12V - 5Wp/10Wp Solar PV Module  
12V - 7 Ah SMF Battery  
7W CFL

SURYA KIRAN BIG LANTERN



SURYA DEEP MINI LANTERN



● 6-7 Hours Uninterrupted (3-4 hours/day) lighting after full charge



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# SOLAR WATER HEATER

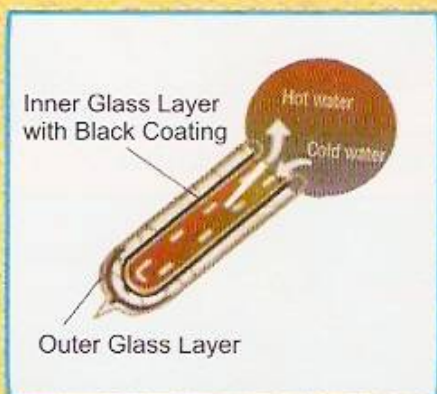
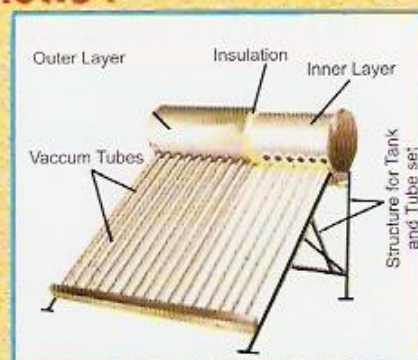
## (VACCUM TUBE TECHNOLOGY)

**Vaccum tube Solar water heater** is a powerful system to heat the water to the required levels. The vaccum tube solar water heater will have the following accessories.

- i) Hot water storage tank
- ii) Vaccum tubes (solar collector)
- iii) Structure for tank & tube set
- iv) Electrical backup heater (Optional)

### The brief description of the above parts is as follows :

**Hot water storage tank :** The hot water storage tank is useful in storing the hot water generated by the solar collector. The hot water storage tank will have two layers ( Inner & outer layer) as shown in figure. The inner layer is the actual hot water storage tank made up of stainless steel. The outer layer is only a cover to protect insulation material and generally it is made up of stainless steel (or) Aluminium (or) G I Sheet. An insulation material will be used in between the two layers to cut down heat losses to the atmosphere. Generally the insulation material will be either PUF (or) Wool.



**Vaccum tubes (collector):** Vaccum tubes are used to heat the water to the required temperature levels. Vaccum tubes are made up of special grade borosilicate glass. Vaccum tube will have two layers of glass as shown in figure.

The inner glass layer of the tube is coated with selective black colour to absorb more sun rays. The outer layer is a plain glass. Vaccum will be created between the two layer of glass to cut down heat losses to atmosphere. Each vaccum tube is fitted directly into the tank. The vaccum tube absorbs the sun rays and heat the water flowing in the tube.

### TECHNICAL SPECIFICATION OF SYSTEM

#### Hot water Storage Tank

Inner tank : Stainless steel (304grade)  
 Outer cover : Stainless steel / Aluminium / GI  
 Insulation : PUF / Wool

#### Vaccum Tube

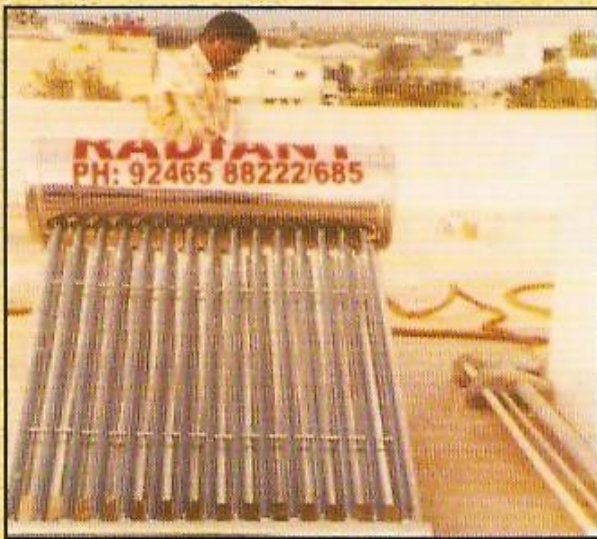
Material : Borosilicate  
 Lenth of the tube : 1500 mm  
 Inner dia. of the tube : 37 mm  
 Outer dia. of the tube: 47 mm



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100 LPD at Lake View Enclave - Sainkपुरi, Sec'bad



200 LPD at Bhavani Nagar -ECHL, Secunderabad



500 LPD at Tadbund - Secunderabad.



1000 LPD at Manikonda - Hyderabad.



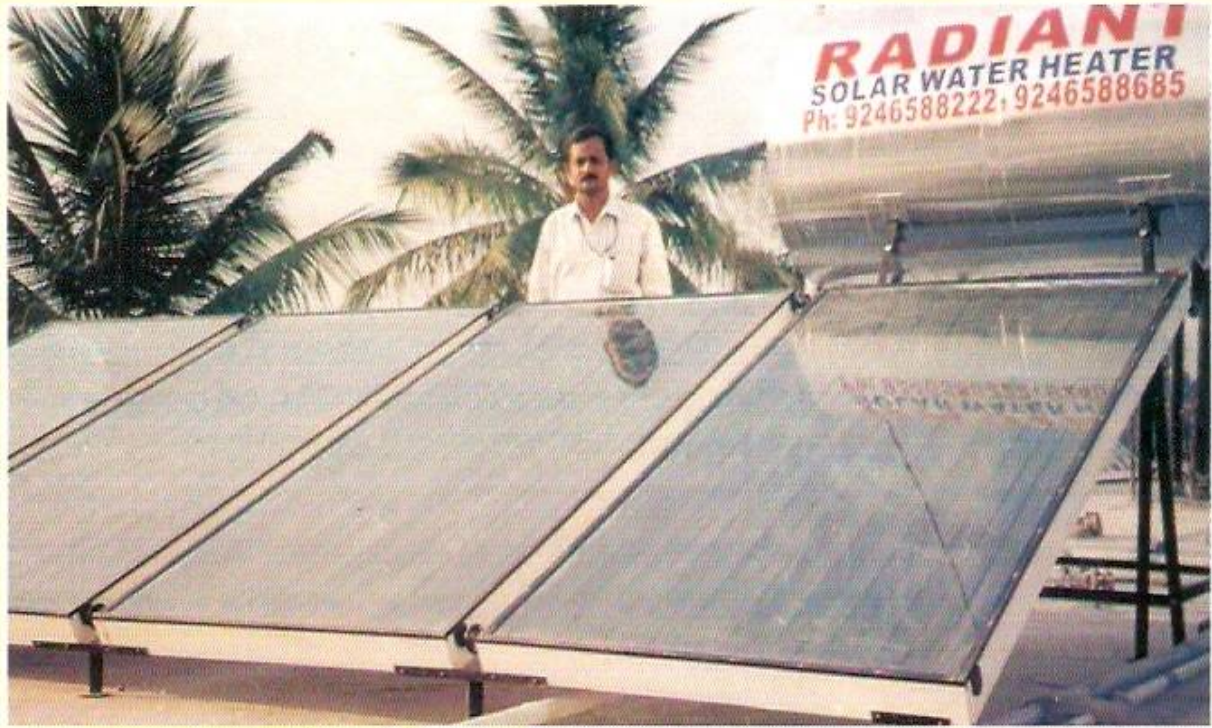
1500 LPD at Rajendra Nagar - Hyderabad.



2000 LPD at Nacklace Road - Hyderabad.

Authorised Dealer :

# SOLAR WATER HEATER



**SOLAR WATER HEATER IS A POWERFUL SYSTEM  
TO HEAT THE WATER TO THE REQUIRED  
TEMPERATURE LEVELS**



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#### I. Accessories of the Solar Water Heating System :

Solar Water Heating System consists of a **Solar Collector** which collects the sun radiation and raises the water temperature to the required levels, an **Insulated Stainless Steel hot water tank** to store the hot water and a **supporting structure** to support the hot water tank. The Solar Collector is an integrated assembly of Fin and Copper tubes assembly, a high transmittivity toughened Glass and a frame to hold the Glass and Fin tube assembly.

#### II. How does the Solar Water Heating System works?

The water to be heated up will be supplied from a overhead tank to the Stainless Steel Tank (Hot Water Tank) of the Solar System. The water from this SS tank flows through the copper fin tubes fitted under a high transmissivity toughened glass. The copper fin tubes are selectively coated with black chromium to collect maximum sun radiation through glass. The water flowing through these copper tubes will get heated up and by forced gravity circulation it again enters into the SS Tank of the Solar System.

#### III. Description of the accessories of the system :

- a. **Stainless Steel Tank** : The hot water storage tank is a Stainless Steel tank insulated with sufficient thickness of Rock Wool material so that the temperature of the hot water should not be decreased during nights / cloudy days / rainy days / when the sun rays are not available.
- b. **Solar Collector (Heat Absorber)** : The solar collector is an assembly of high transmissivity toughened glass, copper fin tubes and a frame to hold the glass and tube assembly. The high transmissivity toughened glass allows to pass more number of sun rays through it than an ordinary glass. The copper fin tubes absorbs sun radiation through glass and heats up the water flowing through these tubes. The frame used to fix this assembly is made up of aluminium frame with sufficient thickness and strength to hold the total assembly.

#### IV. Technical specification of the accessories of the Solar Water Heating System :

The collector (Heat absorber)	: Copper - Copper sufficiently coated with Black Chromium to absorbs more number of sun rays
Absorption capacity of the collector	: $0.95 \pm 0.1$
Heat loss through absorber	: $0.15 \pm 0.1$
Tubes	: Copper tubes of 12.5 mm diameter
Hot water storage tank	: Stainless Steel Tank with insulation
Cladding	: Aluminium sheet of 0.7 - 0.75 mm thick
Heat loss through tank	: 5-8% (per 12 hours)
Insulation of hot water tank	: Insulated with Rockwool material (Density - 45 kg/m, Thickness of Insulation is around 150-175 mm)
Insulation of Coper tubes	: Insulated with Rockwool material (Density - 45 kg/m, Thickness of Insulation is around 25-30 mm)
Frame used for collector assembly	: Aluminium
Collector Area	: 1.8-2.0 Sq. mtrs.
Collector Weight	: 55-70 Kgs.
Supporting Structure	: Mild Steel - Rust Free
Transmissivity	: 0.80 (In general)
Back up Electrical heater	: Thermostat electrical heater

#### V. Generally asked Questions (or) Doubts :

##### 1. How much time is required to raise the temperature of the water to the required level?

The Solar Water Heating System requires minimum of 3-5 hours of sun radiation to heat the water upto 50-60°C. More the availability of the sun rays higher the temperature of the water raised.

##### 2. How water stays hot during nights / cloudy days / non sunny days / rainy days?

The Storage tank consists of two layers. The first layer (Inside layer / hot water storage tank) is a stainless steel tank (which is not visible outside) is used to store the hot water and this layer is insulated with Rockwool material for about 150-175 mm thick. The second layer (which is visible) is a Stainless Steel sheet (Aluminium Cladding) cladded over the first layer and insulation material. So the stainless steel tank is covered by insulation material and Stainless Steel sheet to avoid heat losses. The maximum temperature decrease of the hot water is about 8-10°C per day.



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**3. What are the minimum requirements like space etc. to install a Solar Water Heating System?**

- a. The minimum space required for 100 LPD system is 2-2.5 Sq.mtrs. and increases proportionately with the capacity of the system.
- b. The over head tank (Cold water tank) should be at a height of minimum 5-7 feet from the roof top / terrace level.
- c. The space where the collector is to be kept should be free from shadows and the collector should be kept facing south side at some inclination.

**4. How to select the capacity of Solar Water Heating System?**

As a thumb rule minimum of 20-25 Ltrs. of water is required per head. So for a 4-5 member family - 100 LPD system is required and for a 6-10 member family - 200 LPD system is required.

**5. What are the advantages by using a Solar Water Heating System?**

- a. Solar energy is a Renewable energy
- b. Longer life
- c. Free from pollution
- d. No fuel costs
- e. No maintenance
- f. No dangerous emissions
- g. No shocks and no moving parts

**6. How is Solar Water Heating System superior to / useful than conventional energy?**

The below calculations will explain how a Solar heater is better than an ordinary conventional energy.

The power required to heat 100 Ltrs. of water from 25°C to 50°C (or) 75°C by using a 2 KW heater for about

2 hrs per day is = 2 KW x 2 Hrs/day	= 4 KW = 4 Units/day	
The power required per month	= 30 days/month x 4 units/day	= 120 units/month
The power required per year	= 12 months/year x 30 days/month x 4 units/day	= 1440 units/year
The cost of the power per year	= 1440 units/year x Rs. 5 / unit	= Rs. 7200/-
The Solar Water Heating System cost	= Rs. 18,000/-	
Pay back period	= 18,000 / 7200	= 2.5 years

- \* The pay back period represents that the cost of the Solar Water Heating System is equivalent to the power used in 2.5 years. As the Solar Heating System can work for more than 12-15 years, it is very well justified to purchase a Solar Water Heating System.
- \*\* The pack back period for higher capacity systems is less than 2 years.



100LPD at Sitafalmandi - Secunderabad



100 LPD at Sikh Village - Secunderabad



200 LPD at Sanjeeva Reddy Nagar - Hyderabad



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200 LPD at Gun Rock Avenue - Secunderabad



300 LPD at Alwal - Secunderabad



300 LPD at Banjara Hills - Hyderabad



375 LPD at Ameerpet - Hyderabad



1000 LPD at "WHISPER VALLEY", Jubilee Hills-Hyd



2000 LPD at "MANTRALAYAM TEMPLE", Mantralayam-Kurnool Dist



3000 LPD at Andhra Pradesh Police Academy



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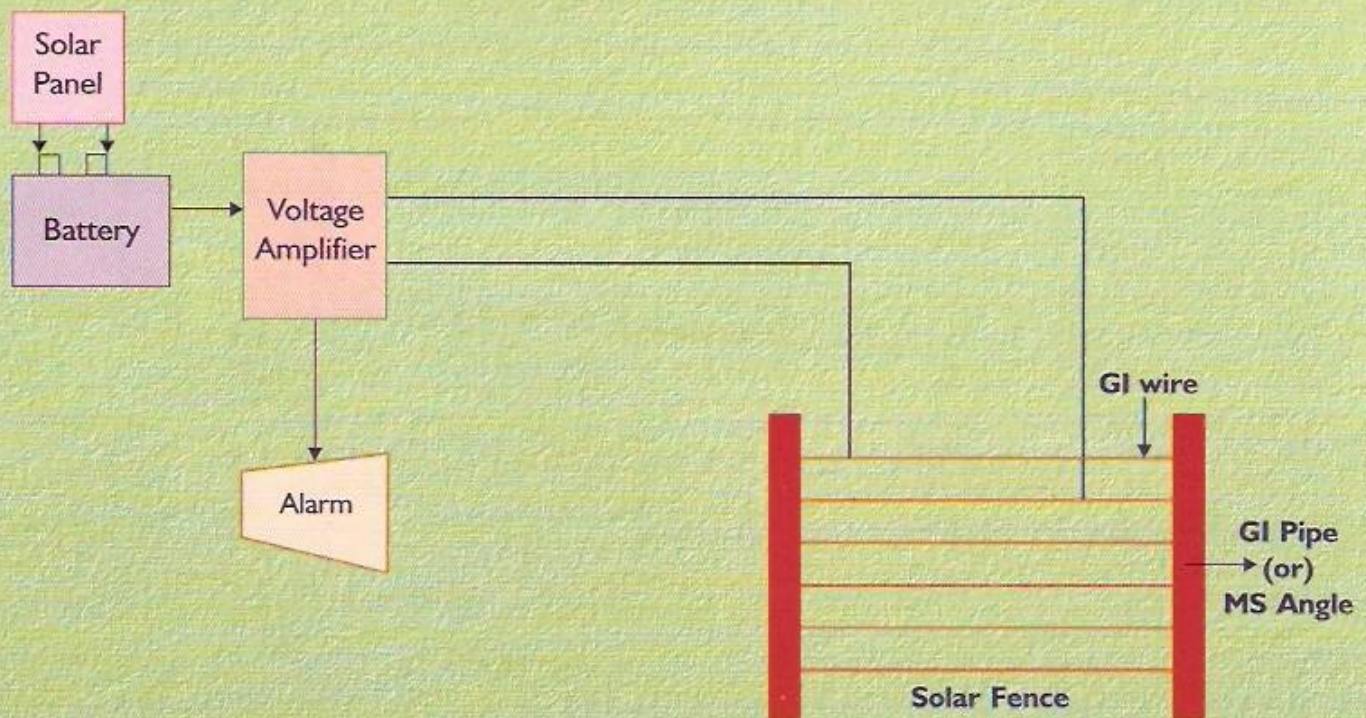
# SOLAR POWER FENCING SYSTEM

**The solar power fencing system** provides solution to all sorts of security needs. By using the solar power fence one can protect their premises (like residences, establishments, godowns, stadiums, agricultural lands, forest lands, villages ect.) from intruders, thieves, animals etc. The system completely depends on solar energy and hence no electrical energy is required to run the system.

## The Solar Fencing system consists of

- 1) Solar Panel
- 2) Voltage amplifier (Energizer)
- 3) Battery
- 4) Alarm with circuit
- 5) Fence with GI wire, MS angles, GI poles, Insulators, Wire Tightners

*The schematic diagram of Solar Power Fencing system is given below.*



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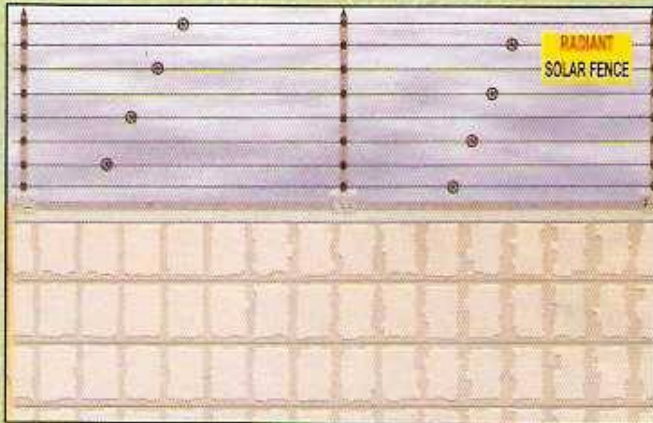
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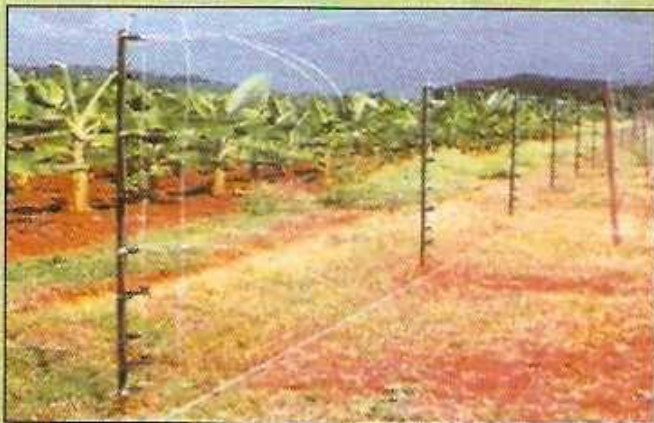
E-mail : radiantenergy2002@yahoo.com

## The following are the different types of solar fences for different types of applications.

1. **Security Fence** : This type of fence will be used to protect residences, offices, establishments, godowns, and stadium etc. from any sort of intrusions. This type of fences can be laid on the compound walls or from the ground level. An alarm will be connected to the fence and when a intruder touches the fence, alarm will be ranged immediately so that the security people/ house dwellers will be alerted.



2. **Agricultural / Forest fences** : This type of fences will be used to protect the agricultural lands and forests from animals like elephants, bears, monkeys etc.. Generally this type of fence will be laid from the ground level.



3. **High Security fence** : This fence is designed to protect the premises, which needs high security / vigilance. This type of system can also be integrated with other security systems like CCTV cameras, Random lights, Auto dialers, intruder alarms etc.

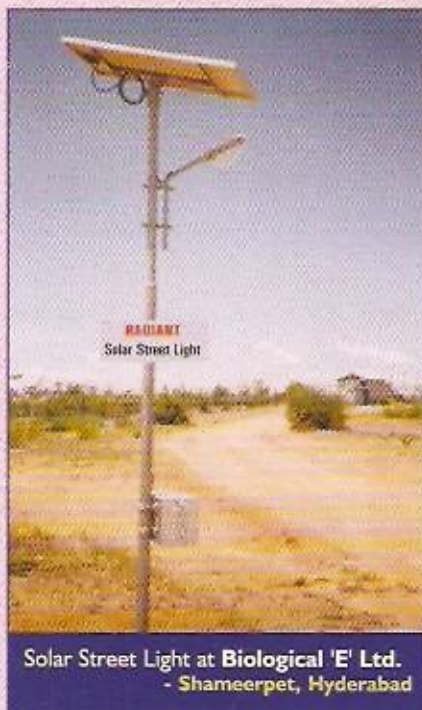


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# SOLAR STREET LIGHTING SYSTEM

Solar Street Lighting System is a most efficient system, which provides light for the whole night. It consists of a Solar Photo Voltaic Module, Battery, Street light pole and Luminary with CFL. The brief description of these parts is as follows :

1. **Solar Photovoltaic Module** : which receives solar energy and converts into electricity (DC current)
2. **Battery** : is a charge storage device which stores power for a longer time.
3. **Street Light Pole** : is a mounting structure for the Luminary assembly, battery box and SPV Module.
4. **Luminary Set** : consists of CFL & Electronic circuit and gives the actual required light.



The Street Lighting System will be provided with an automatic sensor mechanism so that a) it switches "ON" when the sun light goes off and b) it switches "OFF" when the sun light is available. This system can provide light from Dawn to Dusk operation.



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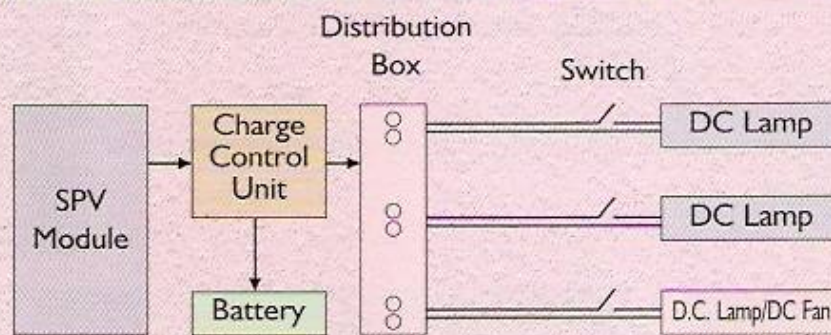
# SOLAR HOME LIGHTING SYSTEM

## (D.C. Lighting System)

**Solar Home Lighting System** is a complete solution for all the domestic lighting needs. It consists of Solar Photo Voltaic Module, Battery, set of Luminaries (Lamps) and Charge Control Unit. The brief description of these parts is as follows :

1. **Solar Photovoltaic Module** : which receives solar energy and converts into electricity (DC Current).
2. **Charge Control Unit (CCU)** : which takes care of charging of the battery and controls distribution of specified voltage and current for the Luminaries / Fan.
3. **Battery** : is a charge storage device which stores power for a longer time.
4. **Luminaries Set** : consists of CFLs and gives the actual required light.

### SCHMATIC DIAGRAM OF HOME LIGHTING SYSTEM



# SOLAR POWER PACKS (Invertors)

## (A.C. Lighting System)

Solar Invertor is AC lighting source and by using this, accessories like tube lights, fans, TV can be run on Solar power. In consists of Solar Photo Voltaic Module, Power conditioning unit (Inverter) and Battery. The brief description of these parts is as follows :

- 1) **Solar Photovoltaic Module** : which receives solar energy and converts into electricity (DC current)
- 2) **Inverter (PCU)** : which takes care of charging the battery and controls distribution of specified voltage and current for the Luminaries / Fan.
- 3) **Battery** : is a charge storage device, which stores power for a longer time.

