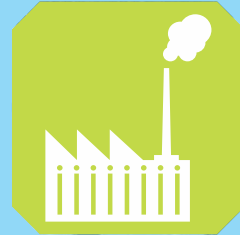




**SUNGRID**<sup>TM</sup>  
**ENERGY SYSTEMS** PVT.  
LTD.

POWERED BY NATURE



Engineering  
Procurement  
Commissioning

## WHAT WE DO

## PROCUREMENT

- Wide experience across the global supply chain.
- Long term component partnerships
- Excellent bargaining power
- Best access to the best of technologies

## SOLAR POWER GENERATION & WATER HEATING

### ENGINEERING

- Highest engineering standards.
- Adoption of best -in-class practices
- Dedication in-house design experts
- Continuous innovation
- Cutting edge technology software's
- Site selection & assessment
- Site specific technology selection

## CONSTRUCTION

- Single point responsibility.
- Fixed cost of the project
- Timely completion within budget
- Achievement of performance guarantees
- Project management and planning
- Safety programs

## WORKING PRINCIPLE OF SOLAR CELL OR PHOTOVOLTAIC CELL

Conversion of light energy in electrical energy is based on a phenomenon called photovoltaic effect. When semiconductor materials are exposed to light, the some of the photons of light ray are absorbed by the semiconductor crystal which causes a significant number of free electrons in the crystal. This is the basic reason for producing electricity due to photovoltaic effect. Photovoltaic cell is the basic unit of the system where the photovoltaic effect is utilised to produce electricity from light energy. Silicon is the most widely used semiconductor material for constructing the photovoltaic cell. The silicon atom has four valence electrons. In a solid crystal, each silicon atom shares each of its four valence electrons with another nearest silicon atom hence creating covalent bonds between them. In this way, silicon crystal gets a tetrahedral lattice structure. While light ray strikes on any materials some portion of the light is reflected, some portion is transmitted through the materials and rest is absorbed by the materials.

## BASIC WORKING PRINCIPLE OF SOLAR WATER HEATING

By gravity flow, water from the cold-water tank enters the solar tank and fills it up. The cold water from the solar tank in turn flows in the bottom header pipe of the absorber and into the copper tubes, until all the absorber tubes and the header at the top of the absorber are full.

When the sun rises to a certain level, its energy, which falls on the absorber fins and tubes, begins heating the water contained therein. The heated water being lighter than the cold water rises and via the top header pipe of the absorber, flows into the top of the solar tank. The more cold water from the solar flows into the absorber tubes, gets heated and rises to the top, and so on. This process is called as 'Thermosyphon Process'. This process continues until the temperature of the water in the solar tank and the absorber equalizes. Now the solar tank is full of hot water. (Note: - Average temperature is 60 degree centigrade at the end of 7-8 hours of bright sunshine.)

Further when the hot water is drawn from the solar tank outlet to the utilities point, cold water enters into the solar tank, thus lowering the overall temperature of the hot temperature between the water in the solar tank and the absorber tubes, the thermosyphon process starts once again, as explained earlier.

## Solar PV and Water Heating Systems

## ABOUT US

# SUNGRID ENERGY SYSTEMS PVT. LTD.

Established in 2013, offers the best range of Designing, Engineering, Procurement and Construction (EPC) services in the Solar Energy Sector. It is committed to exceed customer expectations.

Sungrid Energy Systems Pvt. Ltd. focuses on providing outstanding services and appropriate Solution in the areas of Solar Power Generation and Solar Water Heating Systems in the urban and rural areas. Powered by nature, we believe in maximizing the usage of abundant energy of nature which is coming from THE SUN and make that energy available in suitable and affordable format for daily usage.

Warranty on Solar power generation **20 YEARS**



Lighting up every individual's life by using ancient energy sources with new evolving techniques.

## VISION



**05 YEARS** Warranty on Inverter and Structure

## MISSION

Our mission is to educate about the use of which will be free every source of energy by source and can be used in different applications limit our dependency on fossil fuels.

Real Time Tracking of Power Generation



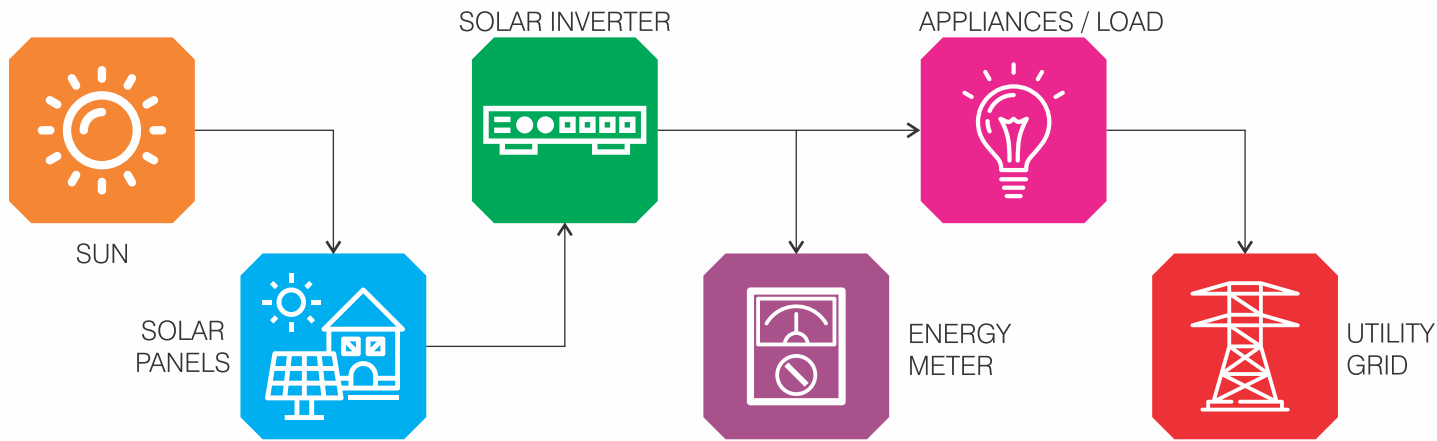
Staying close to nature, enrich life and life resources.

## VALUES



Creating more and more **sustainable lives** within the ambit of ethical business practices in support of our customers is the motto of

**Sungrid Energy Systems”**



## SOLAR PV ON-GRID SYSTEM

- Minimum equipment requires
- Simple system mechanism and easy to maintain.
- Most efficient system, Saves more money with Net Metering
- Lower ROI and attractive IRR rate.
- Requires continuous Grid Support or fails when grid not available

## SOLAR PV HYBRID SYSTEM

- It works like On-Grid, Off-grid system in single system.
- More useful when load is critical.
- In grids availability it charges batteries and excess units it feeds to load or grid.
- In grids absence it works as off grid system.
- Higher ROI and IRR

## SOLAR PV OFF-GRID SYSTEM

- Purely standalone system
- Works as support system as a personal Grid.
- Backs up to the load when grid is not available
- Little complex in design and for installation.
- Has recurring cost and requires regular maintenance.
- Higher ROI and IRR

### GENERAL CLASSIFICATION OF SOLAR PV POWER GENERATION SYSTEM

SYSTEM SIZE	SYSTEM TYPE	EVACUATION SPECIFICATION	GENERAL APPLICATIONS
1KW to 5KW	ROOFTOP	230V, 1Φ, 50Hz	Individual, bungalow, small Residences etc
5KW to 100kw	ROOFTOP	415V, 3Φ, 50Hz	Housing Societies, Hostels, Institutions, Small Scale industries etc
100KW to 1MW	ROOFTOP/ GROUND MOUNTED	11KV, 3Φ, 50Hz	Malls, multiplexes, Commercial buildings, Hospitals etc
1MW to 4MW	GROUND MOUNTED	11KV, 3Φ, 50Hz	Industries, Manufacturing Units etc
4MW	GROUND MOUNTED	66KC, 3Φ, 50Hz	Utility scale or Distribution

### REGIONWISE APPROXIMATE GENERATION OF 1KW SOLAR PV PLANT (YEARLY)

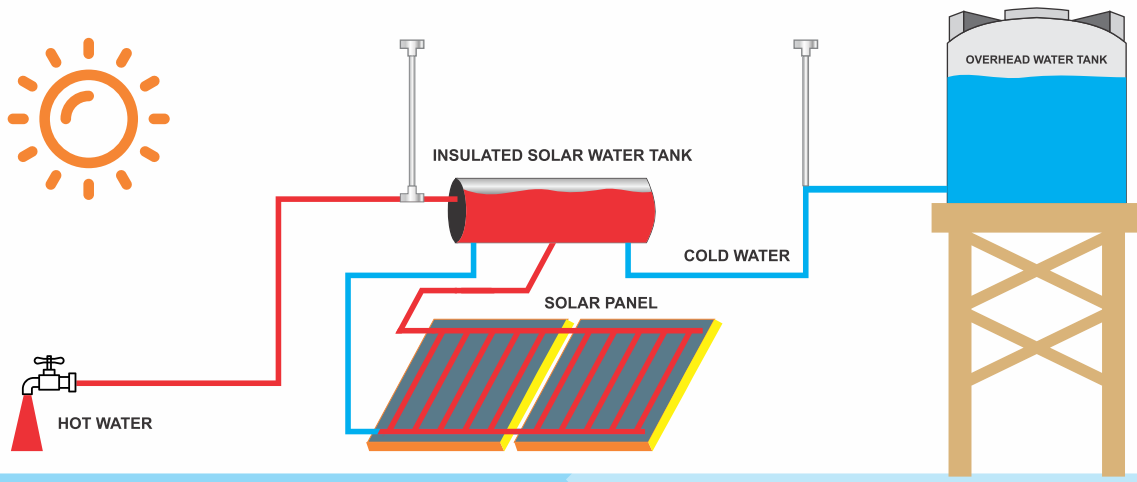
REGIONS	NORTH	EAST	SOUTH	WEST
Expected Saving of Electrical Units per KW (Yearly)	1350	1350	1450	1450

#### Applications of Solar

- Small Units for Individual bungalow, housing Societies, Hostels.
- Medium scale System for hospitals, Hotels,
- Large Scale system for Industries like dairy, Pharma, Chemical, Heavy Electric etc.

**Solar PV and Water Heating Systems**





## NATURAL CIRCULATION

When requirement of capacity hot water is not very high. Site space allows to break down the overall system in small systems. Lower side of cold water over head tank is higher than the upper height of solar water tank or atleast at 7 ft from the terrace level.

## FORCED CIRCULATION

If the capacity of hot water requirement is more than 4000 upto 100000 LPD, the water requires additional force to push the hot water collected in the solar collector. The DTC (Differential Temperature Controller) senses the inlet and outlet temperature of the water. If the thermal difference is more than 100C, the DTC switches on the pump and the hot water in the collector is forced to flow into the storage tank. This system requires continuous supply of electricity for the motor to operate..

## FIXED CIRCULATION

This system is used in process industries where in the hot water requirement is between 4000-100000 LPD at a fixed hot water temperature or when the collectors and the tanks are placed at different places. In this system, cold water flows into the collectors and waits till it gets heated up to the set temperature. The advantages of this system are:

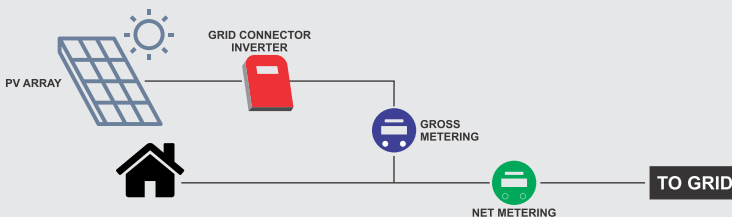
- Cold water wastage is not there.
- Hot water is readily available on the turn of the tap.
- Electricity is saved because wastage of cold water is minimized, thus saving precious resources.

## REGIONWISE APPROXIMATE SAVINGS FROM 100L SOLAR WATER HEATING SYSTEM (YEARLY)

REGIONS	NORTH	EAST	SOUTH	WEST
Expected Saving of Electrical Units per KW (Yearly)	1000	1000	1500	1250

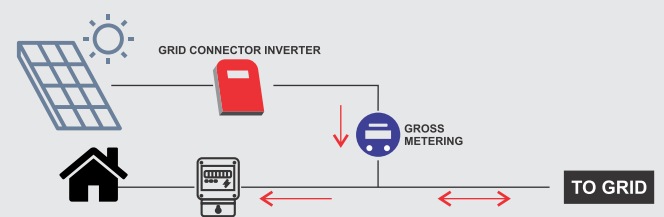
## NET METERING

A net meter (bi-directional meter) records the energy imported from the grid to meet the load and surplus energy exported to the grid after self-consumption. Both energy import and export are recorded in the net meter. The difference between export and import readings is the actual energy consumed/delivered



## GROSS METERING

Under gross metering, all the electricity generated by the Solar Rooftop System is exported to the grid and all the electricity required for consumption by the consumer is imported from the grid. The consumers are paid a feed-in tariff (FIT) for the electricity exported to the grid



**Solar PV and Water Heating Systems**

# SOLAR POWER BOOT MODEL

## PROJECT VIABILITY

- Rooftop / Land Owners enjoy cheaper power than their current power tariffs & cost including the use of DG sets.
- Getting rid of Power Tariff Escalations and inflation risks.
- Buy back the project on the 15th or 20th year at depreciated value and enjoy free power for the remaining life of the system which is expected to be 25 to 30 years.
- Minimum Capital Investment required.
- Social/Corporate Responsibility. Life of the system which is expected to be 25 to 30 years.
- Minimum Capital Investment required.
- Social/Corporate Responsibility.

## GENERAL CONDITIONS OF CONTRACT

<b>Complete Project cost borne by</b>	SESPL Group and affiliate Companies
<b>Rooftop/Land Right to Lease</b>	Rooftop/Land Owner shall provide the Right to Use of the Rooftop/Land to SESPL for the fixed term period from the date of handing over the project
<b>Meter Accounting</b>	Based on the Data logs (which accounts every unit of power supplied) SESPL shall raise the bill on the 1st date of every English calendar month. A separate meter may also be installed to verify the actual power supplied.
<b>Billing</b>	For all the kW/h of power supplied from the solar plant, Client shall pay the said dues to SESPL on or before 8th date of every English Calendar month failing which there shall be a penalty of 2% per month levied to the Rooftop/Land/Land Owner..
<b>Termination of the PPA</b>	The PPA shall be valid for the fixed lock in period. However, the condition wherein PPA may be terminated by the Rooftop/Land/Land Owner is after it compensates SESPL for the estimated power generation p.a. for the balance number of years i.e. term; in accordance with the defined power rates in the PPA.
<b>Bank Guarantee</b>	SESPL shall require a revolving Bank Guarantee of the amount equalling to the estimated power generation on yearly basis.
<b>Inverter Replacement</b>	On Part of SESPL
<b>Replacement of any defective equipment during the Term</b>	On Part of SESPL
<b>Operation &amp; Maintenance of the Plant.</b>	On Part of SESPL
<b>Installation of 3 Phase meter/ sub-Meters and all other necessary wirings from the Distribution point</b>	By Rooftop/Land Owner

## HOW IT WILL WORK?

- We lease Rooftop/Land of Clients premises for longer term at no cost and set up Solar Power Plant at our cost.
- Client should consume all power we produce from the power plant.
- We sign Power Purchase Agreement with Client and sell the power on monthly cycle for a fixed period.
- We maintain and operate total plant for entire tenure.

## REQUIREMENTS FROM CLIENT

- Last 3 years balance sheet produced in Income Tax Department
- Financial ratings given by any Credit Rating Institute
- Leasing agreement for Rooftop/Land
- Property ownership papers
- Any other legal paper which need to know for BOOT working
- Electricity Bill copy

<b>Technology</b>	Solar Photo Voltaic (SPV)
<b>Systems</b>	Grid-Tied System (Solar + Grid)
<b>Rooftop/Land Area</b>	Minimum 10000sqft for 100 Kw
<b>Solar Panel</b>	Mono/Multi Crystalline – 325/350 Wp – AAA rated with minimum efficiency 14.8%
<b>Solar Inverter</b>	Tier I – Multiple String Inverter, 3 Phase, Maximum Output efficiency of 98%
<b>Estimated Annual Generation</b>	For 100 Kw – 150000 KWh per annum (Leverage +/-10%)
<b>Project Completion</b>	Within 3 months

**BOOT Model and Client Services**



# GALLERY



Work related Quotes or  
key sight names





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**MINISTRY OF NEW  
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