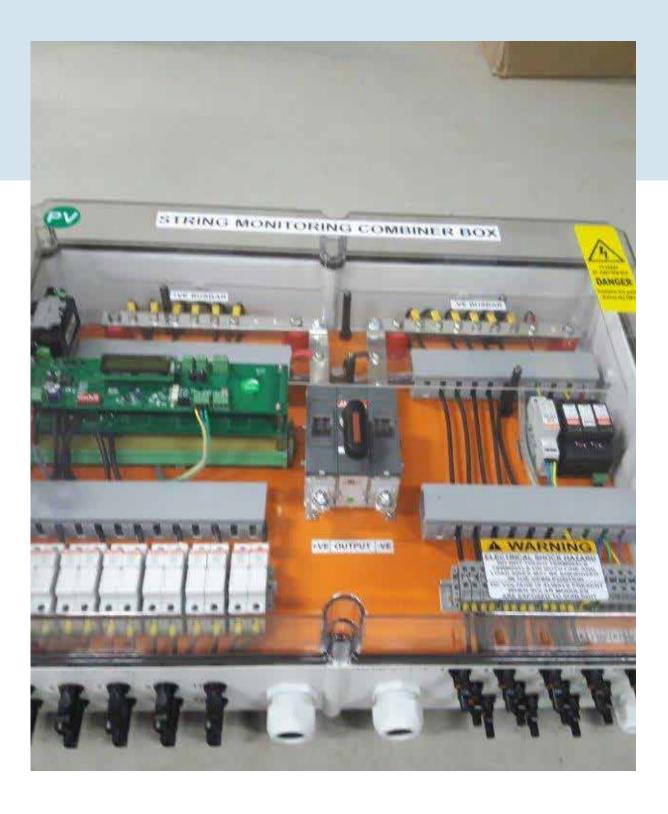
# ONE HOUR OF SUNLIGHT CAN POWER THE WORLD FOR A WHOLE YEAR.

Are you ready to make use of it?



# **String Monitoring**

GreenSol's string monitoring guarantees high level of reliability and precision, which enables our customers to efficiently monitor their solar energy yields.



# GreenSol Range of Products & Services Includes

- Solar BOS Components
- Solar Off Grid Inverters
- Solar Pumping System
- Solar LED Home Lighting System
- Solar LED Street Lighting as per MNRE
- Solar Power Generation Systems ONGRID/OFFGRID
- Solar Power Customised Applications for Offshore Oil exploration/pumping platforms,
- Telecommunications, Cathodic protection for pipelines, Gas detection & Telemetry systems

# SMB is a feature-rich junction box for PV plants and rated for 1000V System Voltage

### **Features**

- SMB with IP65/IK08 Enclosures & UV Resistant
- PV fuses at positive & negative side to protect the over Current fault
- Individual Type II SPD to arrest the Transient surges from PV plant
- Hall Effect sensors to reads current
- Self powered unit used with DC-DC Converter
- Standard RS-485 communication with Modbus RTU Protocol
- Communication SPD for RS-485 to arrest surges from field Cable
- SMB reads the Status of SPD
- Operating Temperature of 0°C to 70°C
- Reads & displays Internal Temperature
- Easy to install & terminate I/P and O/P cables via MC4 Compatible connectors
- Flexible mounting options; mounting on a support bracket or on a plinth for independence from the racking system;
   or attached to the racking system for less civil work
- Easy to service

# **Solar Hybrid Power Plants**

Greensol's Solar PV Solutions are ideal for powering remote areas where there are limited or no grid access. The power plant is comprised of solar PV modules, a battery bank and a power conditioning unit. The solar modules convert sunlight into energy and supply the dedicated load through a power conditioning unit. This unit in turn converts DC to pure 230V/415AC which is used to charge the battery bank.

The PCU is bidirectional and has a grid import/export function. The battery will support the dedicated loads during night time. Instances where the battery is low and energy is also not available, the PCU will work as a charger to charge the battery directly from grid power by feeding the loads simultaneously. The unit is capable of operating in standalone mode without any disruption in power flow when sunlight is not available for the number of days as stated in the design.

### **Salient Features**

- 24/7 power reliability
- Allows monitoring and management via GSM/ GPRS/Internet connection
- Features intelligent logic for optimum control of battery self-consumption, feed-in and storage of solar energy
- Secure supply in case of grid power outrage
- Short-term payback period
- Capability and Low maintenance

### **Benifits**

- Energy-saving
- Reduces fossil fuel consumption
- Carbon footprint size reduction
- Emission-less power production
- One-time investment

### **Application**

- Banks and ATMs
- Petrol pump stations
- Hospitals and Hotels
- NGOs
- Village Electrification
- Government Buildings and educational institutions

| Model                            | GSSPP1 - GSSPP100 (1 to 100kWp)   |
|----------------------------------|---|
| Solar Capacity                   | Please ask for System Configuration Details   |
| Solar Module                     | Highly Efficient Modules with IEC and UL Certification  |
| Array Junction Box               | With IP65 Dust, Water and Vermin proof and reverse blocking diode in each strings and MOV at the outputs for Lightning and Surge Protection |
| Module Mounting Structure        | Galvanized steel structures with optimum tilt angle for the given site  |
| Wind Speed                       | As per site requirement   |
| PCU Output Voltage and Frequency | 230/415V ±3%, 50Hz ±1% Hz   |
| Out Wave form and Distortion THD | Pure sine wave and THD <3% on linear load   |
| Line and Load Regulation         | < 3%  |
| Self Consumption                 | Automatic load shutdown under no load condition with sleep mode function  |
| OverLoad Capability              | 150% for 30 seconds   |
| Protections                      | Overload, Short Circuit, Battery Low/High and Over Current & Surge  |
| Battery Type                     | Tubular Lead Acid/VRLA GEL Type   |
| Self discharge                   | < 3% per month at 27°C  |
| Battery Racks and Container      | Battery stands and containers shall be provided as required   |
| DC Distribution Panel            | Suitable rating MCB/MCCB shall be provided in the Battery path for Isolation  |
| AC Distribution Panel            | Multiple feeders through MCB's and energy meter to measure the electrical consumption of the loads & automatic overload limit switch        |
| Load Limiter                     | 0-2000 Watts programmable   |
| Plant Monitoring (Optional)      | Monitoring and management via GSM/GPRS/Internet connection and data analysis  |
| Cables                           | Copper conductor with UV resistant for outdoor cables   |
| Installation Materials           | Shall be of high quality and sufficient to complete the installation at site  |
| Earthing Protection              | All the array structure and equipment in the system shall be grounded using super earthing kit in order to get very low resistance path     |
| Lightning Protection             | Adequate lightning protection shall be provided   |
| Operating Temperature            | -10° to +55° C  |
| Humidity                         | Up to 90% RH  |

### Note:

- 1) The above mentioned models are of standard systems and other ratings are available on request
- 2) The above system configuration is designed considering annual average sunshine/day of 5.0kWh/mm/day (it may vary depending on the locations as the temperature varies the system performance may vary slightly)
- 3) The battery bank is designed for C10 Capacity and 80% DOD cycle
- 4) Backup time and autonomy may change based on actual usage
- 5) All measurements and warranty/guarantee applicability under Standard Test Conditions based on OEM guarantee/warranty

# **Solar Hot Water System**

GreenSol solar thermal water heating systems are roof mounted hot water systems with the tank and the collector mounted as one unit. The hot water storage tank inner cylinder is made of steel and coated with special epoxy coating. The outer cylinder is made of precoated/galvalume sheet. The thermal insulation is provided by machine injected CFC free PUF foam to ensure uniform density.

For tanks upto 1000 LPD PUF is used, while larger tank >1000 LPD are rockwool insulated.

Industrial systems are customised design, as per customer requirement and site conditions.

### Flat plate collector specifications\*

| Technical Details               | Classic                                |   | Premium              |  |  |  |  |
|---------------------------------|--|---|----------------------|--|--|--|--|
| Collector size                  | 2014X1014X100±2mm 2014X1014X100±2mm    |   |                      |  |  |  |  |
| Collector box                   | Extruded Aluminu                       | Extruded Aluminum lindal / Global 6065 - T5 - 1.6mm |                      |  |  |  |  |
| Finish                          | Powder coated Anodized Screw less      |   |                      |  |  |  |  |
| Back sheet                      | Alumi                                  | num 0.5mm - Riveted -                               | Sealed               |  |  |  |  |
| Glass                           | Low iron content solar glass 4m        | m clear / texturized witl                           | n>90% transimisivity |  |  |  |  |
| Glass beading /sealing grommets |  | EPDM rubber   |                      |  |  |  |  |
| End connections                 | Brass flanges with EPDM rubber sealing |   |                      |  |  |  |  |
| Insulation                      | Rockwool 48 kg/m³ density              |   |                      |  |  |  |  |
| Reflective foil                 | Aluminum foil 50 microns thick         |   |                      |  |  |  |  |
| Certification                   | MKU MKU MKU/MNRE/BIS                   |   |                      |  |  |  |  |
|                                 | Absorber                               |   |                      |  |  |  |  |
| Coating                         | Selective Black c                      | hrome - NALSUN - Abs                                | sorbivity >90±0.02   |  |  |  |  |
| Bonding                         |  | Laser/Ultrasonic                                    |                      |  |  |  |  |
| Fin                             | Aluminium Copper Copper                |   |                      |  |  |  |  |
| No. of fins                     | 9 9 9                                  |   |                      |  |  |  |  |
| Test pressure                   | 5kg/cm²                                |   |                      |  |  |  |  |
| Header pipe                     | 99.9% copper 1" - 0.5mm thickness      |   |                      |  |  |  |  |
| Riser pipe                      | 99.9% copper 1/2" - 0.4mm thickness    |   |                      |  |  |  |  |

<sup>\*</sup>All technical specifications are subjected to change due to continuous technical improvements & design





### **Special Features**

- · Copper "Ultrasonic" welding
- · 100% TIG welded tanks
- Braided hose pipe connecting the tank and collector for high pressure applications
- · High tempered glass to ensure high transmittance
- · Sacrificial anode to prevent galvanic corrosion
- · High density, light weight machine foamed CFC free
- PUF insulation upto 1000 LPD
- · Powder coated support structure for a better finish
- SS304 Cage/Ladder type Heat Exchanger for hard water (>200 PPM)

### System specifications Flat Plate (FPC)\*

| Technical Details         |     | Economy Classic Premium  |     |     |     |     |     |     |     |     |     |     |
|---------------------------|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| System capacity LPD       | 100 | 200  | 300 | 500 | 100 | 200 | 300 | 500 | 100 | 200 | 300 | 500 |
| No. ofcollectors          | 1   | 2  | 3   | 4   | 1   | 2   | 3   | 4   | 1   | 2   | 3   | 4   |
| Inner tank                |     | CRCA 2mm with sand blasted & special epoxy airless spray coating/4mm for pressurized |     |     |     |     |     |     |     |     |     |     |
| Outer cladding            |     | GI 0.4 mm precoated sheets   |     |     |     |     |     |     |     |     |     |     |
| Insulation                |     | PUF 32 kg/m³ density Insulation  |     |     |     |     |     |     |     |     |     |     |
| Anode protection          |     | Magnesium/Aluminium  |     |     |     |     |     |     |     |     |     |     |
| Stand                     |     | MS angles with weather resistant powder coating                                      |     |     |     |     |     |     |     |     |     |     |
| Backup electrical heaters | 2kW | 2kW 2kW 2kW 6kW 2kW 2kW 2kW 6kW 2kW 2kW 2kW 6kW                                      |     |     |     |     |     |     | 6kW |     |     |     |
| Heat exchangers           |     | Only for hard water systems > 200ppm, ladder type SS 304 tubes                       |     |     |     |     |     |     |     |     |     |     |

### System specifications Evacuated Tube Systems (ETC)\*

| System Details            | 100LPD | 150LPD   | 200LPD | 250LPD | 300LPD |  |  |  |
|---------------------------|--------|--|--------|--------|--------|--|--|--|
| No. of Tubes R%8X1800 EVT | 10     | 15   | 20     | 25     | 30     |  |  |  |
| Inner tank                | CRCA 1 | CRCA 1.6mm with sand blasted & special epoxy airless spray coating |        |        |        |  |  |  |
| Outer Cladding            |        | 0.4mm GI precoated sheet   |        |        |        |  |  |  |
| Insulation                |        | PUF 32 kg/m³ density Insulation                                    |        |        |        |  |  |  |
| Anode protection          |        | Magnesium/Aluminium  |        |        |        |  |  |  |
| Satnd                     | М      | MS angles painted with weather resistant powder coating            |        |        |        |  |  |  |
| Eletrial back up          | 2kW    | 2kW  | 2kW    | 3kW    | 3kW    |  |  |  |

<sup>\*</sup>All technical specifications are subjected to change due to continuous technical improvements & design

# **Power Conditioning Unit**

### Solar PCU

DSP based design Pure Sine Wave, built in MPPT Change controller.

Maximum preference to Solar Power.

USB/Ethernet based monitoring with 30 days data storage, DC & AC energy meter.

Tested as per IEC 61683 and IEC 60068-2 (1, 2, 14, 30) standards.

Robust design - 20 yrs product life, 1-5 yrs of warranty

Available from 500VA to 100KVA

- · AC and DC Parameter configurable from LCD
- · AC Output Voltage/Input Voltage
- · DC Battery Voltage/Charging Voltage
- · Battery Charging Current, Battery Low Cut/High Cut

No Load Shut Down(NLSD) - Grid Charging, IT Load & Nomal Mode - Options



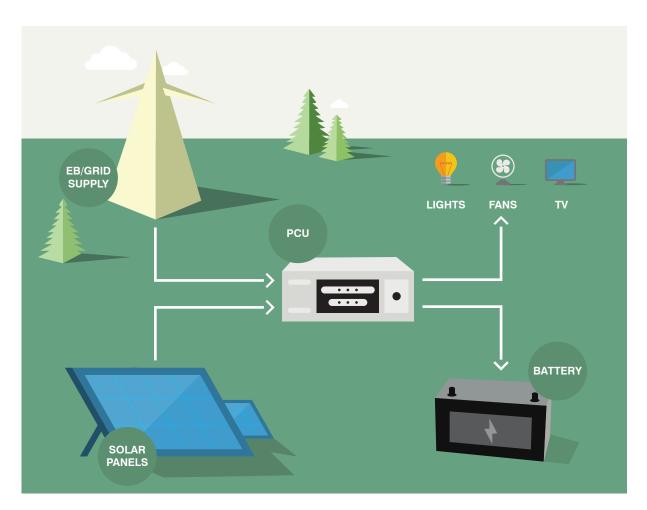
| Technical Specifications                |                             |                         |          |        |            |  |
|---|-----------------------------|-------------------------|----------|--------|------------|--|
| Parameters                              | Units                       | Rating                  |          |        |            |  |
| System Rating                           | KVA                         | 1                       | 2        | 3      | 5          |  |
| Operating DC voltage                    | V                           | 24                      | 48       | 48     | 96         |  |
| Photovoltaic input                      |                             |                         |          |        |            |  |
| Input voltage range (Min-Max)           | VDC                         | 36-90                   | 72-180   | 72-180 | 144-360    |  |
| Maximum PV power recomended             | KW                          | 1.0                     | 2.0      | 3.0    | 5.0        |  |
| MPPT based charge controller            |                             |                         |          |        |            |  |
| Switching element                       |                             |                         | IG       | вт     |            |  |
| Controller                              |                             | DSP                     |          |        |            |  |
| Type of charger                         |                             | MPPT                    |          |        |            |  |
| Effciency                               | %                           | 95                      |          |        |            |  |
| Configurable Parameter                  |                             |                         |          | Defa   | ault Value |  |
| Battery Low Buzzer                      | V                           | BATT LOW CUT +0.2 11.2  |          |        | 11.2       |  |
| Battery Low cut                         | V                           | 10-                     | 11.7     |        | 11.0       |  |
| Battery High cut                        | V                           | 15                      | -16      |        | 15.5       |  |
| Battery Charging Voltage by SPV         | V                           | 13.5                    | 5-15     |        | 14.5       |  |
| Battery charging current by SPV         | Α                           | 11                      | -40      |        | 18         |  |
| Battery Charging Voltage by Grid        | V                           | 13.0                    | -14.5    |        | 14.2       |  |
| Battery charging current by Grid        | Α                           | 3-12 10                 |          |        |            |  |
| Grid Low Cut Voltage (IT Model/Normal)  | V                           | 175-200/120-200 175/120 |          |        | 75/120     |  |
| Grid High Cut Voltage (IT Model/Normal) | V                           | 245-255                 | /245-280 | 2      | 55/280     |  |
| Grid Charging                           |                             | Enable                  | /Disable | E      | nable      |  |
| IT Load                                 |                             | Enable/Disable Enable   |          |        | nable      |  |
| Operating Mode                          | Mode Smart/PCU/Hybrid Smart |                         |          |        |            |  |

| Parameters                                    | Units | Rating   |   |  |  |  |
|---|-------|--|---|--|--|--|
| Changeover Time (Mains-Batt, Batt-Mains)      |       | <10ms  |   |  |  |  |
| Output Voltage Low                            | V     | 170-190  | 185   |  |  |  |
| Output Voltage High                           | V     | 250-260  | 255   |  |  |  |
| No Load Shut Down                             |       | Enable/Disable   | Disable   |  |  |  |
| Battery                                       |       |  |   |  |  |  |
| Grid Disconnect (Solar Availabe)              |       | @ 14.5/Battery for 2 minutes Or 1  | 3.5/Battery - 100% Current                      |  |  |  |
| Grid Connect (PCU Mode/Smart Mode)            | V     | 11-12  | 11.5  |  |  |  |
| Temp. Compensation                            |       | @ 3mv/cell; 18m  | nV/battery                                      |  |  |  |
| Inverter                                      |       |  |   |  |  |  |
| Switching element                             |       | MOSFET   | IGBT  |  |  |  |
| Control                                       |       | MPPT   |   |  |  |  |
| Nominal output voltage                        | VAC   | 220  |   |  |  |  |
| Output Supply Phase                           |       | 1 phase, 3 v   | wires   |  |  |  |
| Output Waveform                               |       | Sineway  | ve .  |  |  |  |
| Nominal Frequencey                            | Hz    | 50.0   |   |  |  |  |
| Load power Factor                             | lag   | 0.8  |   |  |  |  |
| Voltage regulation                            | %     | 1.00   |   |  |  |  |
| Output volatge distortion 100% liner load     | %     | <3   |   |  |  |  |
| Overload Capacity                             | %     | 100-200(3times auto reset): 60sec<br>120-150(3times auto reset): 3sec<br>150-200%: 2sec  | 200-300%: 1sec<br>300-400: 250ms<br>>400%: 20ms |  |  |  |
| Peak effciency                                | %     | >85  |   |  |  |  |
| Noise @ I meter                               | db    | 60   |   |  |  |  |
| Cooling                                       |       | Temp Controlled Fan  |   |  |  |  |
| Protections                                   |       | Overload, Battery low, Battery high, Output low, Output high,<br>Output short ckt, Input short ckt, Overheat, Under frequency,<br>Over frequency, Solar panel reverse, Battery reverse |   |  |  |  |
|   |       | Battery voltage, Charging current, Discharging current, Charging AH, Discharging AH, Battery status bargraph   |   |  |  |  |
| Display parameters                            |       | Solar voltage, Solar current, Instantaneous power, Cumulative  |   |  |  |  |
| Display parameters                            |       | Grid voltage, Grid current, Cumulative power, Instantaneous p  |   |  |  |  |
|   |       | Output voltage, Output current<br>Cumulative p   |   |  |  |  |
| Switches                                      |       | Rest for system on/off, up,<br>(for LCD Config   |   |  |  |  |
| Indication                                    |       | System on, Inv on, SPV Charging, Grid charging, Batt low/high, Overload, Overheat, Mains low, Mains high, Under frequency, Over frequency  |   |  |  |  |
| Environment                                   |       | , ,,,  | · •   |  |  |  |
| Operating temperature                         | °C    | 0-50   |   |  |  |  |
| Max relative humidity @ 25°C (Non condensing) | %     | 95   |   |  |  |  |
| Standard compliance                           |       | IP 21  |   |  |  |  |
| Data logging                                  |       | 30 days data   | storage   |  |  |  |
| Dimension (LXWXH)                             | Inch  | 18 X 10 X 20 23 X 13 X 26  |   |  |  |  |
| Weight  | Kg    | 35 43 50   | 60  |  |  |  |



# **Solar Power Backup System**

The systems offered provide support for operating critical loads(AC 230V) like fans, lights, TV and mobile phones, in case of utility grid failures.





### System Operating Priority

**Charging:** The solar powered backup system will charge the battery from sunlight during bright sunny days. In case of low sunshine or rainy days, the battery will be charged by the electricity available from the grid. Please note, the priority to charge the battery will be given to Solar energy.

### Backup

The system will provide backup only during grid electricity failures

### Supplied Loads In Hrs







### Supplied Equipment Details

- 1) Solar modules multicrystalline 300Wp IEC certified, Tier-1 module
- 2) Low maintenance tubular Lead acid batteries -12V 150Ah As per IEC
- 3) Solar/PCU with MPPT charge controller-12VDC-230VAC-800VA pure sine wave as per IEC
- 4) Plastic rack for battery and PCU
- 5) Related interconnecting wires between Solar-PCU-Battery



## **Trusted Solution for Solar Power**

# **Solar BOS Component**

Supply & service of components for Solar products and projects

### Charge Controllers - PWM/MPPT

Nominal Battery Voltage: 12/24/48V

Solar Charging and load current: 20A/30A/

40A/50A/100A (Max)

Charging Topology: 3 stage (Boost, Float & Trickle)

Advance Microcontroller Technology with accurate

voltage settings

Built-in Temperature compensation

### Solar Array Junction Boxes

Models: 4 In/1 Out, 6 In/1 Out, 8 In/1 Out

Maximum current per input: 10A

Output Maximum Current Range: 40A/60A/80A

Outdoor Applications: IP-65
Cable Entry through cable glands

Reverse polarity and Lightning protections

### RTU - Telecom Panels

System Voltage: 24/48 VDC

System Capacity: 3/6/9 kWp System suitable for

1/2/3/BTS with DG/Grid Hybrid System

Type of solar charge controller used: MPPT with 95%

efficiency

Display and user interface:

A128X64 graphic LCD with navigation keypad

Protections: Surge, Lightning (Class B+C), Wrong

and reverse connections

Power Consumption: <5W (RTU) and < 1W (CCU)

Cellular Network Interface: Qudraband EGSM 850/

900/1800/1900 MHz

### AC Distribution boards - 1-500 Kw

Copper bus bars and terminals of suitable rating

Outdoor panel meeting specification IP 54

Street light feeders with timers

Timer with multiple time zones

IP65 cable glands for incoming and outgoing cables

Calibrated energy meters for accurate measurement

and billing

Communication link on the AC RM for remote

monitoring

Suitable for wall mounting and floor mounting

GreenSol provides solutions for PV installations with latest technology, superior quality and customised products. Based on the proven competencies on technical proficiency and customer service, the company aims to support the high demands on quality oriented requirements from the customers.

Focusing on Solar & Renewable Energy, the emphasis is primarily on manufacturing Renewable energy solutions for Domestic, Commercial and Industrial applications.

### DC Distribution Boards - 1-100 Kw

Copper bus bars of suitable rating

Metering to monitor solar and battery parameters

Calibrated shunts and meters for accurate

measurement

Communication link on the DC Energy Meter IP65 cable glands for incoming and outgoing cables

Protection against secondary fire hazards Increased safety of Operating personnel Application in Solar power plant/packs, Charging systems



Charge Controllers - PWM/MPPT



Solar Array Junction Boxes



RTU - Telecom Panels



AC Distribution boards - 1-500 Kw



DC Distribution boards - 1-100 Kw

# **Solar Street Light**

Solar LED StreetLight 7W to 55W

### Overview

It is an ideal system for public lighting, park campus and cross roads located in areas where there is no grid or unstable grid power. This system is fully integrated and automated with the latest and most innovative technologies available, providing years of convenient and trouble free lighting.

### Salient Features

- Low power consumption and energy efficient LED lamps
- Long life >50,000 Hours
- Solar Panel and battery with IEC certification compliance
- Easy installation and maintenance free
- Dusk and dawn load operation with programmable option for night timer
- Smart advanced micro controller technology with accurate voltage settings
- Mechanical structure with hot dip galvanisation and powder coating for long life
- · High efficiency series regulation with three stage charging technique
- Built in temperature compensation for proper battery charging
- The system can work normally for two days continuously even in rainy days when there is little to low sunshine

### **Applications**

- Pathway and perimeter lighting
- Yard lighting
- Park lighting

### Benefits

- · Return on investment in 5 years
- 100% green power
- N electric bills
- · Zero operation and minimal routine maintenance cost
- No grid connection for a improved safety factor
- No trench Reduced installation and labour cost





# **Specifications**

| Model   | GSSS-7  | GSSS-15                                     | GSSS-30                | GSSS-55     |  |
|---|---|---|------------------------|-------------|--|
| Solar Module                                  | 40Wp  | 80Wp  | 160Wp                  | 250Wp       |  |
| Battery @ C10 and Maximum DOD 80%             | 12V, 40Ah   | 12V, 75Ah                                   | 12V, 110Ah             | 24V, 110Ah  |  |
| Battery Type                                  | VRLA Gel/Tubular  | Flooded                                     |                        |             |  |
| Lamp Output Wattage                           | 7W  | 15W   | 30W                    | 55W         |  |
| Light Output (Typical)                        | 850 Lumens  | 1500 Lumens                                 | 3100 Lumens            | 5700 Lumens |  |
| Equivalent Conventional Light (approximate)   | 15W CFL   | 30W CFL                                     | 70W WSV                | 150W HPS/MH |  |
| IP Rating of the Luminary                     | IP65  | IP65  | IP65                   | IP65        |  |
| Operating hours (Varies by Location)          | 10-12 Hrs daily   |   |                        |             |  |
| Autonomy Days (Varies by Location)            | 3 Days  | 3 Days                                      | 3 Days                 | 3 Days      |  |
| Recommended pole Height Above Ground          | 3-4 meters  | 3-4 meters 5-6 meters 6-7 meters 7-8 meters |                        |             |  |
| Pole and Module Mounting Structure            | Galvanized Steel Structures - Optimum Tilt Angle for Modules  |   |                        |             |  |
| Battery Box                                   | CRCA Enclosure P  | owder Coated and A                          | cid Resistant for Inne | r Surface   |  |
| Charge Controller Type and Rating             | PWM - 12V, 5A PWM - 12/24V, 10A   |   |                        |             |  |
| Self Consumption of the CCU                   | <10mA   |   |                        |             |  |
| Protections                                   | <ul> <li>Transient / Surge</li> <li>Over Charging / Deep Discharge</li> <li>Reverse Polarity Protection</li> <li>Electronic Over Load Protection</li> <li>Reverse Current Protection from Battery at Night</li> </ul> |   |                        |             |  |
| Cables  | Copper Conductor With UV Resistant for Outdoor Cables   |   |                        |             |  |
|   | Shall be of High Quality and Sufficient to Complete Installation at Site  |   |                        |             |  |
| Installation Materials                        | Shall be of High Q  | uality and Sumcient to                      | o complete mstallatio  | on at one   |  |
| Installation Materials  Operating Temperature | -10° to +55° C  | uanty and Sunicient to                      | o complete installatio | on at Oile  |  |

### Note

- 1. Above system configurations are our standard systems. They are suitable for areas where average peak sunshine is 5-6 hrs per day. Other customised system design according to client's specific requirement is also available on request.
- 2. All measurements and applicability under standard test conditions based on OEM guarantee/warrantee.
- The pole height is recommended to get the optimum light output, can be changed based on client's specification/ requirement.
- 4. Specifications are subject to change without prior notice.

# **Solar Pumping Solutions**

Based on current power positions in remote villages, and farm fields, where agriculture is the backbone source of income to farmers, GreenSol provides certified government approved solar pumps to farmers to avail them subsidy provided by various state/central agencies.

### Salient Features

- Durable and rugged construction
- Environmental friendly operation
- Can be used for surface and submersible pumping application
- Mechanical structure with hot dip galvanisation and powder coating for long life
- DC brushless motors, designed for solar with over 90 % efficiency
- Very strong ROI against diesel powered pumping
- Fast and simple installation
- DC Submersible pump total lift up to 300ft (92mts)
- DC Surface pump total lift up to 70ft (21mts)

### Application

- · Village/Drinking water supply
- · Residential/Industrial well pumping
- · Irrigation pumps

### Benefits

- Reduces energy overhead through low energy cost
- Promotes a sustainable, green environment
- Reduces carbon footprint via emissionless power production
- Independent system





### Approved/Certified Solar Pump Models

| Туре                                | CAPACITY<br>WITH<br>CONTROLLER | MNRE-MODEL   | SOLAR ARRAY | SHUT OFF<br>DYNAMIC<br>HEAD | WATER OUT PUT**                              |
|-------------------------------------|--------------------------------|--------------|-------------|-----------------------------|--|
| AC                                  | ЗНР                            | MODEL-III/IV | 3000 Wp     | 45/75 MTS                   | 96-57.6 K LTRS<br>PER DAY -HEAD<br>45-75 MTS |
| Submersible 5H                      | 5HP                            | MODEL-VI     | 4800 Wp     | 70 MTS                      | 91.2 KLTRS<br>PER DAY -HEAD -<br>50MTS       |
| DC                                  | ЗНР                            | MODEL-III    | 3000 Wp     | 45 MTS                      | 105 KLTRS<br>PER DAY -HEAD -<br>30MTS        |
| Submersible                         | 5HP                            | MODEL-VI     | 4800 Wp     | 70 MTS                      | 100.8 KLTRS<br>PER DAY -HEAD -<br>50MTS      |
| DC Surface                          | ЗНР                            | MODEL-III    | 2700 Wp     | 25 MTS                      | 135 KLTRS<br>PER DAY -HEAD -<br>20MTS        |
| Drinking Water-<br>Dual-Submersible | 1HP -WITH<br>HAND PUMP         | MODEL-V      | 900 Wp      | 45 MTS                      | 20 KLTRS<br>PER DAY -HEAD -<br>30MTS         |

<sup>\*\*</sup> Water output figures are on a clear sunny day with three times tracking of SPV panel, under the "Average Daily Solar Radiation" condition of 7.15 KWh/ sq.m. on the surface of PV array (i.e. coplanar with the PV Modules).

### Commercial Models

Greensol can provide solution for existing/new borehole-surface pumps with solar as an alternate option for electricity driven pumps.

| TYPE-AC -1φ/3φ | Controller  | Solar With<br>Manual Tracking | Pump * Reputed<br>Brands |
|----------------|-------------|-------------------------------|--------------------------|
| 1-5 HP         | 1-5 KW VFD  | 1-5kWp                        | SURFACE/SUBMERSIBLE      |
| 5-10 HP        | 5-10KW VFD  | 5-10kWp                       | SURFACE/SUBMERSIBLE      |
| 10-30 HP       | 10-30KW VFD | 10-30kWp                      | SURFACE/SUBMERSIBLE      |

### General Technical Specifications of Major components

Solar modules : Crystalline solar modules - IEC CERTIFIED/MNRE APPROVED

: 250Wp and above with >15% efficiency >0.7 FF

Tracking structures : Manual with hot dipped galvanised MS structures with holding clamps rated for

80-150Kms/Hr.

Controllers /Drives : Solar control -MPPT -97% efficient VFD drives /ABB/Schneider/Toshiba/Shakthi/

reputed

# Notable Project Footprints in India

Jammu and Kashmir 4.1Mwp 1.2 Mwp Punjab Chhattisgarh 2.25 Mwp Nashik **Q** 2.25Mwp Maharastra 🔾 2.2Mwp 2.65 Mwp Telangana 9.2Mwp Karnataka 🗣 Tamilnadu 1.72 Mwp Kerala 🗣 1.10 Mwp

### Jammu and Kashmir

1.J & K – 1MW grid connect - JKEDA
2.Kargil – 2MW Off grid - KREDA
3.Leh & Ladakh - 1.1 MW off grid - KREDA6

### Punjab

- 1. Bhatinda 1.2MW ground mounted grid connect
- TR Energy

### Chhattisgarh

- 1.Dantewada -Offgrid 0.75MW
- 2.Bijapur- Off Grid -0.6MW
- 3.Baster- Off grid pumps-0.5MW
- 4.Sukama- Off grid 0.4MW

### Rajasthan

1. Jaipur -0.5 MW grid connect- BOSCH

### Maharashtra

1.Nahik - 2.2MW RT grid connected - Bosch

### Karnataka

- 1.Mysore 2.2MW ground mount tracking grid connected Surgi
- 2.Bangalore -1.8 MW RT grid connected-Various / FeatherLite
- 3.Hubli -2.1 MW RT grid connect SWR Renew
- 4.Bangalore -1MW RT grid connect-TVS
- 5. Hubli- 1MW RT grid connect -cotton ginners
- 6.Bangalore -0.45MW RT grid connected
- -MRO-KSCA
- 7.Bangalore /KGF -0.67MW RT grid connect /off grid BEL /BEML

### **♥** Kerala

1.Ettumanoor – 1.1MW ground mounted grid connected – KSEB

### Tamil Nadu

- 1.Thirunelveli 1MW gorund mount grid connect
   -MSU/ADANI
- 2.Coimbatore 0.3 MW RT grid connected Bosch
- 3.Chennai 0.42MW RT grid connect Sri Ram tech park

### Telangana

- 1.Hyderabad –2.15 MW RT grid connect -SCR/RE NEW
- 2.Hyderabad –0.5 MW RT grid connect -Bosch Tech park

### **Corporate Office & Factory**

28A, 2nd Phase, Peenya Industrial Area, Bangalore - 560058
 → 080-69999750 sales@greensolgroup.com

 www.greensolgroup.com

### **Regional Offices**

♥ Chhattisgarh

FF-19, 1st Floor, Shyam Plaza, Opp. new bus stand, Pandri, Raipur - 492 001

> ♥Jammu & Kashmir #56, New Rehari Jammu - 180 005

> > **♥** Odisha

Plot No.495, Ground Floor, Mahaveer road, Garage Chowk Bhubaneswar - 751002



















