

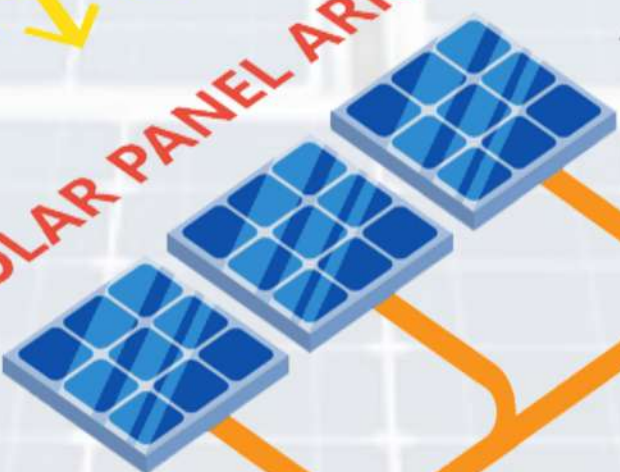


FUTURE ENERGY ASSESSMENT. SOLAR POWER ENGINEERING. EPC, PMC, O&M SERVICES.

BASIC SOLAR POWER SYSTEM



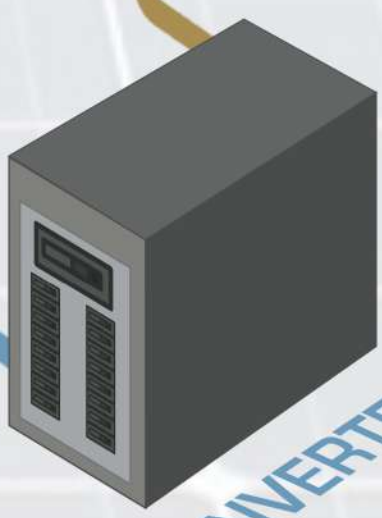
SOLAR PANEL ARRAY



CHARGE CONTROLLER



BATTERY BANK



INVERTER



CONSUMER

What Is Solar Energy

Sunlight is composed of photons, packets of solar energy. These photons contain varying amounts of energy that correspond to the different wavelengths. Photovoltaic cells convert sunlight into electricity. A photovoltaic (PV) cell, commonly known as Solar Cell is made of semiconductor material.

When photons strike a PV cell, some quantity of photons gets absorbed by the semiconductor material. Only the absorbed photons energy generates electricity.

When the semiconductor material absorbs enough solar energy, electrons come out from the material's atoms. Special treatment of the material surface during manufacturing makes the front surface of the cell more receptive to the free electrons so that the electrons naturally come out to the surface of the cell.

The movement of electrons toward the front surface of the Solar Cell creates an imbalance of electrical charge between the Cell's front and back surface. This imbalance of electrical charge across a Cell is called potential difference & thus creating a Photovoltaic (PV) Cell.

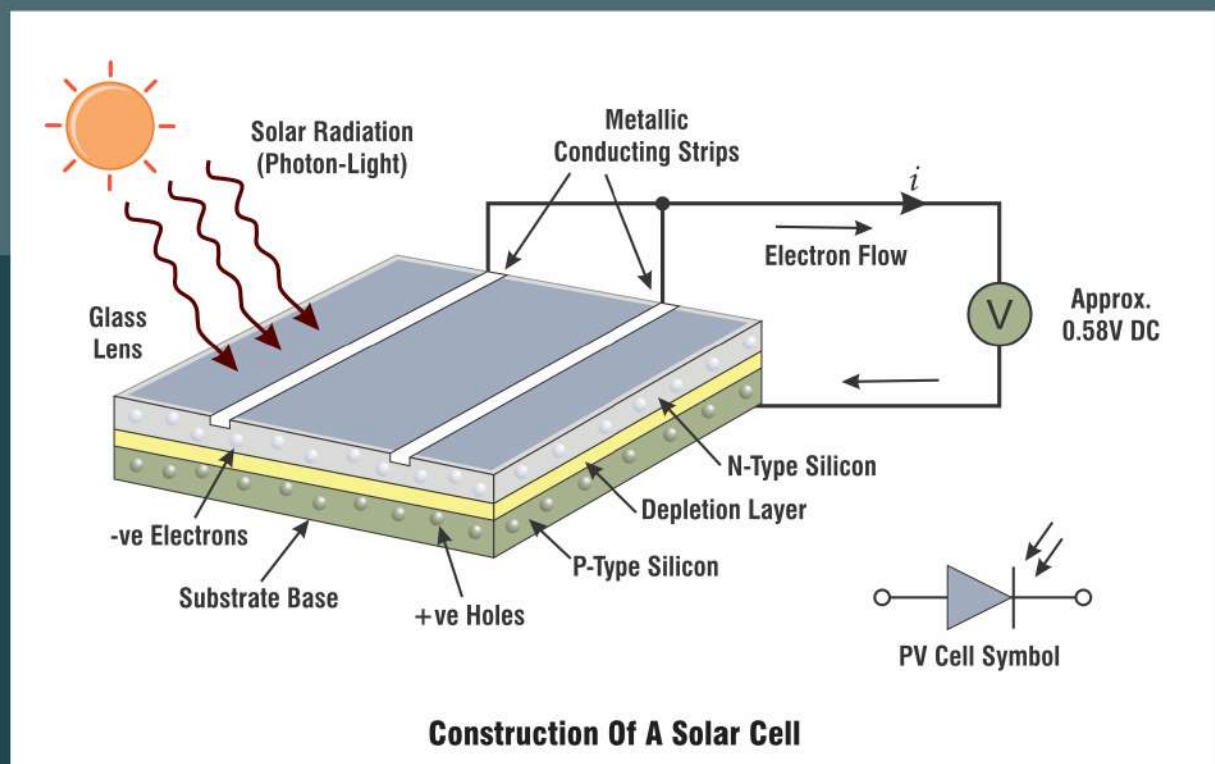
The efficiency at which PV Cells convert sunlight into electricity varies by the type of semiconductor material and PV cell technology. The efficiency of commercially available PV panels is varying in between 15% - 25% for State-Of-The Art Modules.

The PV cell is the basic building block of a PV System. However, one cell only produces 1 to 2 watts. A number of PV cells are electrically connected in a Packaged Weather-Tight PV Panel called as PV Module. A PV Modules vary in size according to the amount of electricity they can produce.

PV Panels can be connected in groups to form a PV Array. A PV Array can be composed of as little as two to hundreds of PV Panels. The number of PV Panels connected in a PV Array determines the amount of electricity the array can generate.

Photovoltaic cells generate direct current (DC) electricity. Devices called Inverters are used in arrays to convert the DC electricity into AC electricity.

Below picture shows how a PV Cell works when solar light falls on it.





About PG ENERGY

PG Energy is a leading expert in future energy assessment, solar power engineering and comprehensive energy solutions. Since our establishment in 2014, we have been dedicated to saving costs, safeguarding the environment and improving lives through sustainable energy practices. Our commitment lies in building long-term relationships, maintaining trust and upholding the highest standards of professionalism.

Having successfully serviced over 38 MW Solar Power Plants across Asia and Africa, we have become a trusted voice in global energy transformations.

Our vision is to continue leading the way in shaping the future of sustainable energy.

CORE SERVICES

- Future Energy Assessment: Expert evaluation and planning for future energy needs.
- Solar Power Engineering: Cutting-edge engineering solutions for solar power projects.
- EPC, PMC, O&M Services: End-to-end solutions from project conceptualization to commissioning with ongoing operations and maintenance.

VALUES AND APPROACH

At PG Energy, our values shape our performance. We believe in:

- Collaboration: Working closely with clients to share knowledge and experience.
- Innovation: Daring to experiment, explore and be different in the pursuit of solutions.
- Integrity: Respecting code of conducts, ensuring confidentiality and delivering on our promises.

SOLUTIONS BEYOND SOLAR

In addition to our expertise in solar power, we are a world-leading solutions provider for electric grids, battery energy storage systems (BESS) and more. Our goal is to contribute to the advancement of energy generation and power system performance.

CLIENT-CENTRIC APPROACH

We collaborate with our clients from project conceptualization, ensuring that our services align with their unique needs. This collaborative approach has fuelled our growth, allowing us to develop our skills alongside our valued customers.

Join us in shaping the future of sustainable energy. Contact PG Energy for unparalleled expertise, innovative solutions and a commitment to excellence.

OUR CAPABILITIES

Primarily we provides three type of services from PG Energy. These are :

Engineering, Procurement & Construction (EPC)

- Engineering Design
- Consultancy
- Equipment Supply
- Civil Planning & Construction
- Erection
- Commissioning
- Management & Hand-Over.
- Infrastructure And Training.



Project Management Consultancy (PMC)

- Turnkey PMC Solution
- Bid Process Advisory.
- Project Management Consultancy.
- Detailed Engineering Design.
- Project Quality Inspection.
- Plant Performance Audit Services.
- Lender's Engineer.
- Techno-Commercial Due Diligence.



Operation & Maintenance (O&M) Services

- PV Plant SCADA Remote Monitoring Systems With Real Time Data & Web Alerts To Minimize Downtime.
- Preventive And Corrective Maintenance.
- Inspection & Testing
- Cleaning, Repairs & Replacements.



Apart from all these three primary services, we also offers overseas Logistics/Transportation Service with complete delivery solution from Production Factory to Client Sites. All International Paper Clearance Work for ease of customer during transportation will be done by PC Logistics, a sister concern of PG Energy.



TYPE OF PV SOLAR POWER SYSTEMS

There are three basic types of PV Solar Power Systems with respect to its application & need. These are :

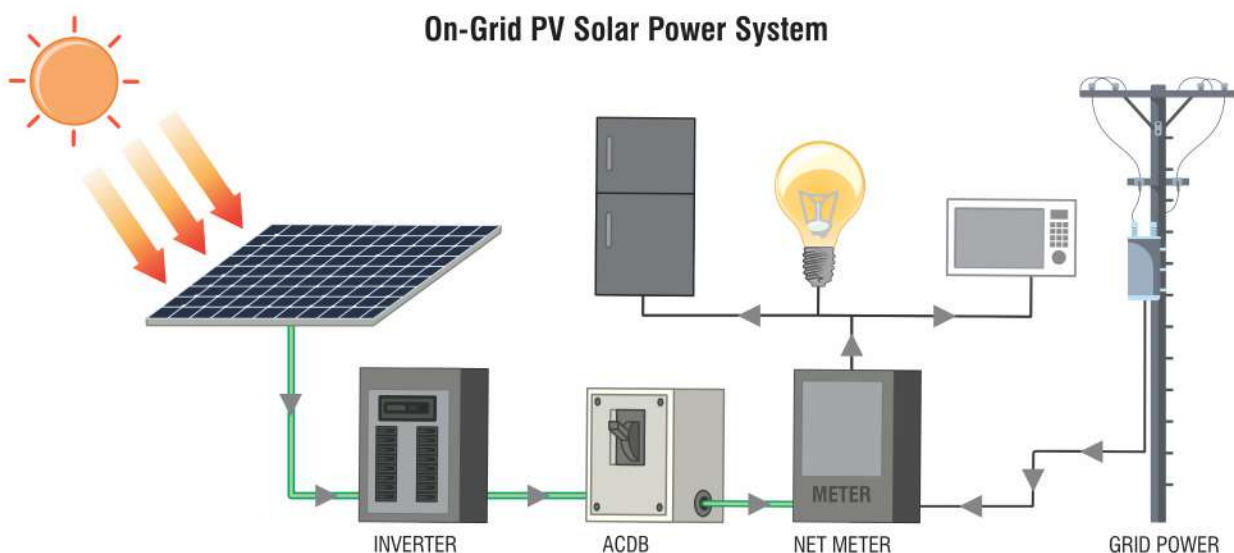
1. **Grid Tied / On-Grid PV Solar Power System.**
2. **Off-Grid PV Solar Power System.**
3. **Hybrid PV Solar Power System.**

1. Grid-Tied / On-Grid PV Solar Power System

A Grid-Tied / On-Grid solar system is a solar energy system which is connected to the main electricity grid to supply the energy generated from PV Solar Power System. These systems operate without being connected to a solar battery, making the most simple, cost-effective, and popular type of solar system.

Advantages of Grid-Tied / On-Grid PV Solar Power System

- Lower Capital Investment.
- Reliable Power For Long Term.
- Cheaper Electricity Cost With Reduced Energy Bills.
- Low Maintenance Cost.
- Better Returns On Investment.



2. Off-Grid PV Solar Power System.

An off-grid solar system is a solar panel system that generates electricity from sun through solar panels, stores that power in solar batteries, and runs independently without the power grid. These systems encourage off-the-grid living, a lifestyle centered around energy independence and self-sustainability.

The Off-Grid Solar Power Systems are generally installed in the areas where grid power is not reliable or where the grid power connection is not available easily. Living “off the grid” has become more popular recently because of the rising cost of energy, fuel and other necessities.

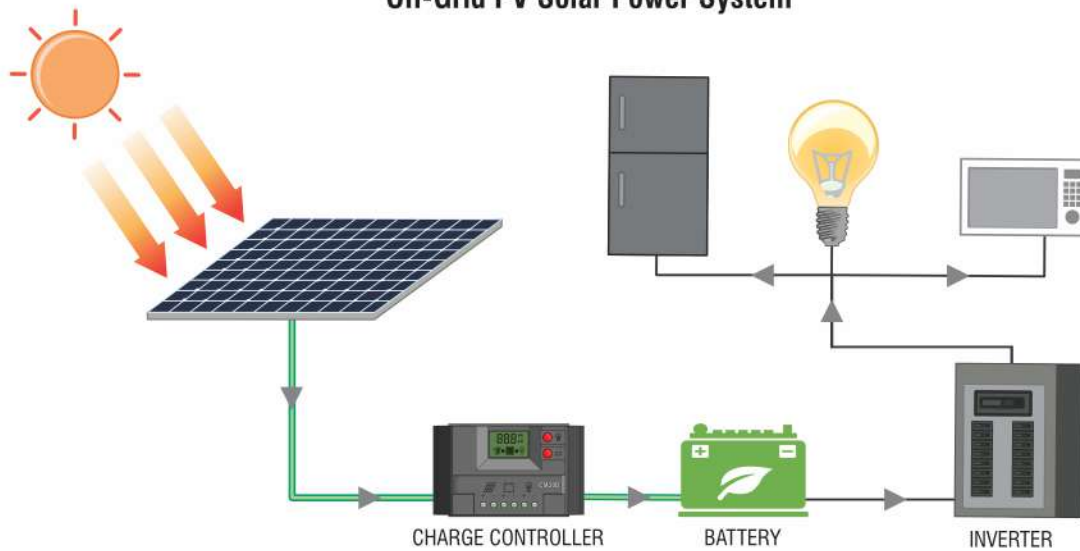
Advantages of Off-Grid PV Solar Power System

- Freedom From Electrical Bills.
- Energy Independence.
- Protection From Power Cuts.
- Provides Reliable Power In Remote Locations.

Disadvantages of Off-Grid PV Solar Power System

- High Capital Investment.
- Non Reliable Power During Rainy Or Cloudy Weather.
- High Maintenance Cost.
- Low Returns On Investment.

Off-Grid PV Solar Power System



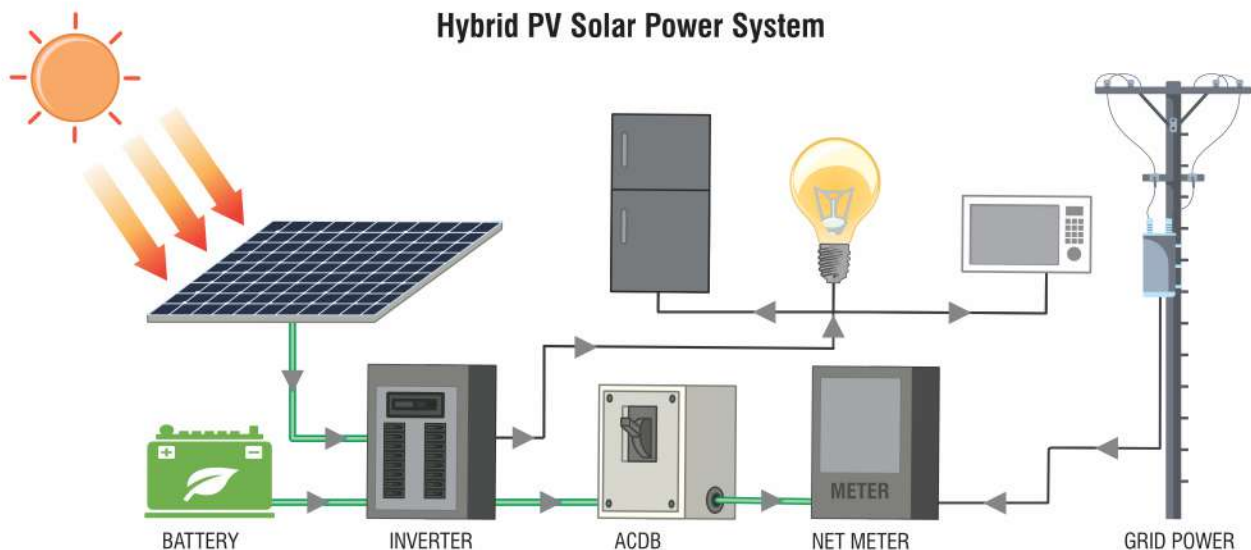
3. Hybrid PV Solar Power System

An Hybrid solar system is a solar panel system that generates electricity from sun through solar panels, stores that power in solar batteries and intelligently switches between using solar power, battery storage and grid power. It allows you to avoid using grid power at peak prices leading to bill savings. Hybrid solar systems have both on-grid and off-grid capabilities, allowing you to continue running on solar power even if the grid goes dark.

Advantages of Hybrid PV Solar Power System

- Cost Effective Energy Consumption.
- Flexibility and Scalability.
- Energy Independence.
- Protection From Power Cuts.
- Provides Reliable Power In Remote Locations.

Hybrid PV Solar Power System



SOLUTIONS FOR EVERY LOCATION

Where should solar panels be installed to generate maximum energy ?

PG Energy work closely with you to choose the best location and size for your energy needs.

There are different types of solar systems by installation :

Rooftop Solar Systems

Rooftop systems are the most popular option for homeowners. Many residential or commercial roofs have enough available space and are well-suited for optimal energy production, depending on roof direction and shading issues, PG Energy rooftop solar systems withstand extreme environmental conditions while maintaining the integrity of your roof.

These can be installed on nearly any roof.

Rooftop helps in keeping your home cooler in the summer by providing shade from the sun and warmer in the winter by creating a heat barrier.

Your roof may last longer due to being protected by the solar system.



Ground-Mounted Solar Systems

If you have a need for a larger solar system than your roof area may not accommodate the entire PV Solar System. In that case, a Ground Mounted PV Solar System may be right for you.

PG Energy ground-mounted solar systems withstand extreme environmental conditions & on lands having poor soil properties.

Can be installed on nearly any contour at a variety of heights and tilt angles.

Can also function as shade structures for the backyard or driveway.



REDUCED ENERGY COST WITH GREENER WORLD

Drastically reduces or eliminates your electricity costs. Say goodbye to increasing energy rates. Reduce your carbon footprint. All of this is possible with Solar Power.

Limiting the global temperature surge is a critical priority, and greening energy supplies is an important component in this process.

Making the switch to renewable energy sources will drastically reduce your operational emissions and – most importantly – when done properly it increases the demand for renewable energy in your area. This in turn stimulates the addition of new renewable to the local power grid, which is crucial to eventually matching the global demand for energy with sufficient renewable supply and phasing out fossil fuel.

Unfortunately, there are many energy providers that claim their energy is clean and renewable but eventually not.

So there are few things to keep in mind when choosing renewable energy sources to make sure they're truly sustainable and contribute to a fossil fuel-free world.

Wherever possible, opt for renewable energy sources that are installed onsite. These have the highest positive impact because they ensure that new clean energy is being added to the grid. The most common examples are solar panels.

In countries where it's not possible to install 100% renewable energy, you can still contribute to greener world by installing a small PV Solar System on your rooftop or in the space having limited use from companies like us that are working hard to make renewable energy available for you.

PG Energy helps you to guide for suitable selection of PV Solar Power System for your rooftop as per your energy demand & availability of rooftop.



SOLAR WATER HEATER

Solar Water Heating System

Solar water heating system is a device that helps in heating water by using the solar energy (sun rays). Water is easily heated to a temperature of 60-80°C. Solar water heaters (SWHs) of 100-300 liters capacity are suited for domestic use. Larger systems can be used in restaurants, canteens, guest houses, hotels, hospitals etc. A 100 liters capacity SWH can replace an electric geyser for residential use and may save approximately 1500 units of electricity annually. The use of a SWHs of 100 liters capacity each can contribute to a peak load saving of approximately 1 MW. A SWH of 100 liters capacity can prevent emission of 1.5 tones of carbon dioxide per year.

Main components of solar water heater system are

- Solar Collector (to collect solar energy)
- Insulated tank (to store hot water)
- Supporting stand
- Connecting pipes and instrumentation etc.

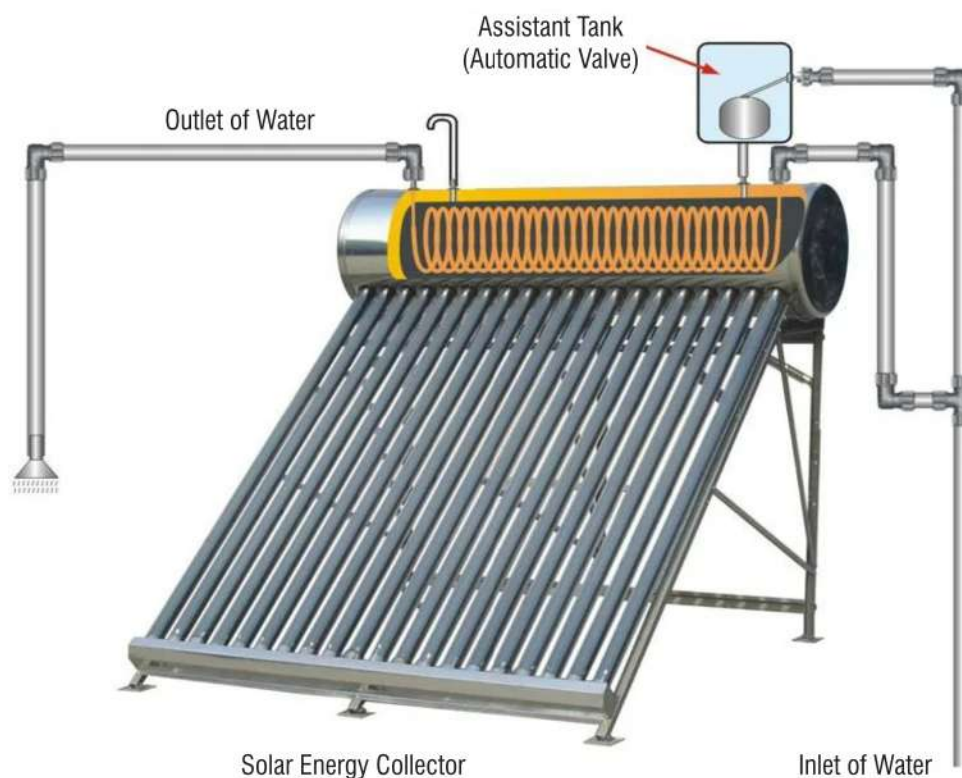
Applications Of Solar Water Heater

Water heating is one of the most cost-effective uses of solar energy. Solar water heaters can be used for Homes, Community Centers, Hospitals, Nursing homes, Hotels, Restaurants, Dairy plants, Swimming Pools, Canteens, Ashrams, Hostels, Industry etc.

Use of solar water heater can reduce electricity or fuel bills considerably.

Basically two types of solar water heater are available in the market

- Flat Plate solar water heater – Solar radiation is absorbed by flat plate collectors which consist of an insulated outer metallic box covered on the top with glass sheet.
- Evacuated Tube Collector – The Collector is made of double layer borosilicate glass tubes evacuated for providing insulation.



CODE OF CONDUCT

At PG Energy, we uphold the values of integrity, trust and long-term collaboration with our valued clients. Our commitment to ethical business practices is paramount and we strive to exceed expectations in every aspect of our operations.

Key Principles:

- **Long-Term Relationships:**
We are dedicated to cultivating enduring relationships with our clients, founded on mutual respect, transparency and shared success.
- **Trust:**
Trust is the cornerstone of our interactions. We pledge to uphold the highest standards of honesty and reliability in all our dealings.
- **Confidentiality:**
We recognize the importance of confidentiality in business relationships. All information shared with us by our clients is treated with the utmost discretion and safeguarded against unauthorized disclosure.
- **Respect for Code of Conduct:**
We deeply respect and adhere to the code of conduct established by our clients. Understanding and aligning with their principles guide our actions throughout the project lifecycle.
- **Continuous Improvement:**
We are committed to continuous improvement, actively seeking feedback to enhance our services and processes. This ensures that we not only meet but exceed the expectations of our clients.
- **Compliance:**
Our operations comply with all relevant laws, regulations, and industry standards. We are dedicated to conducting our business ethically and responsibly.
- **Open Communication:**
We foster open and honest communication with our clients, encouraging a collaborative environment where concerns are addressed promptly and solutions are sought together.

By embracing these principles, we aim to create an environment of trust, reliability and ethical business conduct.

PG Energy is dedicated to building a future where our clients can confidently rely on us as a trusted partner in their endeavours.



PRODUCTS

SOLAR PANELS

40W-670W | Poly-Crystalline,
Mono-Crystalline & Bifacial



INVERTERS

On-Grid, Off-Grid & Hybrid



SOLAR BATTERIES

Lithium, Gel & Lead Acid



SOLAR STREET LIGHTS



SOLAR STRUCTURES



SOLAR WATER HEATER



ACDB



DCDB



SOLAR WATER PUMPS



PRODUCTS

SOLAR WIRES



CHARGE CONTROLLER



SOLAR ACCESSORIES



CERTIFICATIONS

QRO
QUALITY RESEARCH ORGANIZATION

Certificate of Registration

This is to certify that

PERFECT GREEN ENERGY SOLUTIONS PRIVATE LIMITED
585, 6TH FLOOR, WEST END MALL, JANAKPURI DISTRICT CENTER, JANAKPURI, DELHI-110058, INDIA

has been independently assessed by QRO and is compliant with the requirement of

ISO 14001:2015
Environmental Management System

For the following scope of activities:
SOLAR, ELECTRICAL AND BATTERY MATERIAL TRADING, ERECTION, TESTING AND PROJECTS CONSULTANCY

Date of Certification: 15th September 2021
1st Surveillance Audit Due: 14th September 2022
2nd Surveillance Audit Due: 14th September 2023
Certificate Expiry: 14th September 2024

Certificate Number: 3050210915132

QRO **EGAC** **IAF**

Head of Certification

Validity of this certificate is subject to annual surveillance audits to be done, commencing from the date of issue of the certificate. If the surveillance audit is not done, the certificate shall be suspended. The validity of the certificate shall be voided in case of non-compliance. This certificate of registration is issued by QRO (Certificate L22) and QRO's website immediately upon request.

India Office: (QRO) Certification LLP
142, Badli Road, Anand Enclave, New Badli, New Delhi-110028, India. (MCA 21)
Website: www.qrocertification.com, info@qrocertification.com

UDYAM
Government of India
Ministry of Micro, Small and Medium Enterprises

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER: UDYAM-DE-15-0027072

NAME OF ENTERPRISE: PERFECT GREEN ENERGY SOLUTIONS PRIVATE LIMITED

TYPE OF ENTERPRISE:

SNo.	Classification Year	Enterprise Type	Classification Date
1	2022-24	Micro	09/09/2022
2	2022-23	Micro	26/09/2022
3	2022-22	Micro	27/09/2022

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR: GENERAL

NAME OF UNIT(S):

S.No.	Unit Name	Address	Pin Code
1	Perfect Green Energy Solutions Pvt. Ltd.	585, 6th Floor, West End Mall, Janakpuri District Center, Janakpuri, Delhi-110058	110058

OFFICIAL ADDRESS OF ENTERPRISE:

Field	Value
Plot/Door/Block No.	1411
Village/Town	West End Mall
Post/Office	Janakpuri
State	DELHI
Mobile	9810461223

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE: 26/09/2017

DATE OF COMMENCEMENT OF PRODUCTION: 26/09/2017

NATIONAL INDUSTRY CLASSIFICATION CODE(S):

S.No.	ISC 4 Digit	ISC 5 Digit	Activity
1	7310	73109	Architectural and engineering activities and related technical consultancy
2	4222	42221	Installation of building systems (electrical, gas and air conditioning, heating, cooling, ventilation, etc.)

QRO
QUALITY RESEARCH ORGANIZATION

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585, 6TH FLOOR, WEST END MALL, JANAKPURI DISTRICT CENTER, JANAKPURI, DELHI-110058, INDIA

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ISO 9001:2015
Quality Management System

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Government of India

#startupindia

ISO

9001:2015

MNRE
Approved

Govt. of India

EPR
CERTIFIED

MSME
MICRO, SMALL & MEDIUM ENTERPRISES
सूक्ष्म, लघु एवं मध्यम उद्यम
OUR STRENGTH • हमारी शक्ति
Ministry of MSME, Govt. of India

GeM
Government e Marketplace

MAKE IN INDIA

PROJECT GALLERY



OUR GLOBAL PRESENCE



OUR NATIONAL PRESENCE



- 📍 Himachal Pradesh (HP)
- 📍 Haryana
- 📍 Delhi
- 📍 UP
- 📍 Karnatka
- 📍 Rajasthan
- 📍 Bihar
- 📍 Maharashtra
- 📍 Madhya Pradesh (MP)
- 📍 Gujarat
- 📍 North East Seven Sister
- 📍 West Bengal
- 📍 Jharkhand
- 📍 Orissa
- 📍 Andhra Pradesh
- 📍 Telangana
- 📍 Bhiwandi
- 📍 Punjab
- 📍 Kerla
- 📍 All UT



A GREENER WORLD WITH ZERO CARBON FOOTPRINT



PERFECT GREEN ENERGY SOLUTIONS PVT. LTD.

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