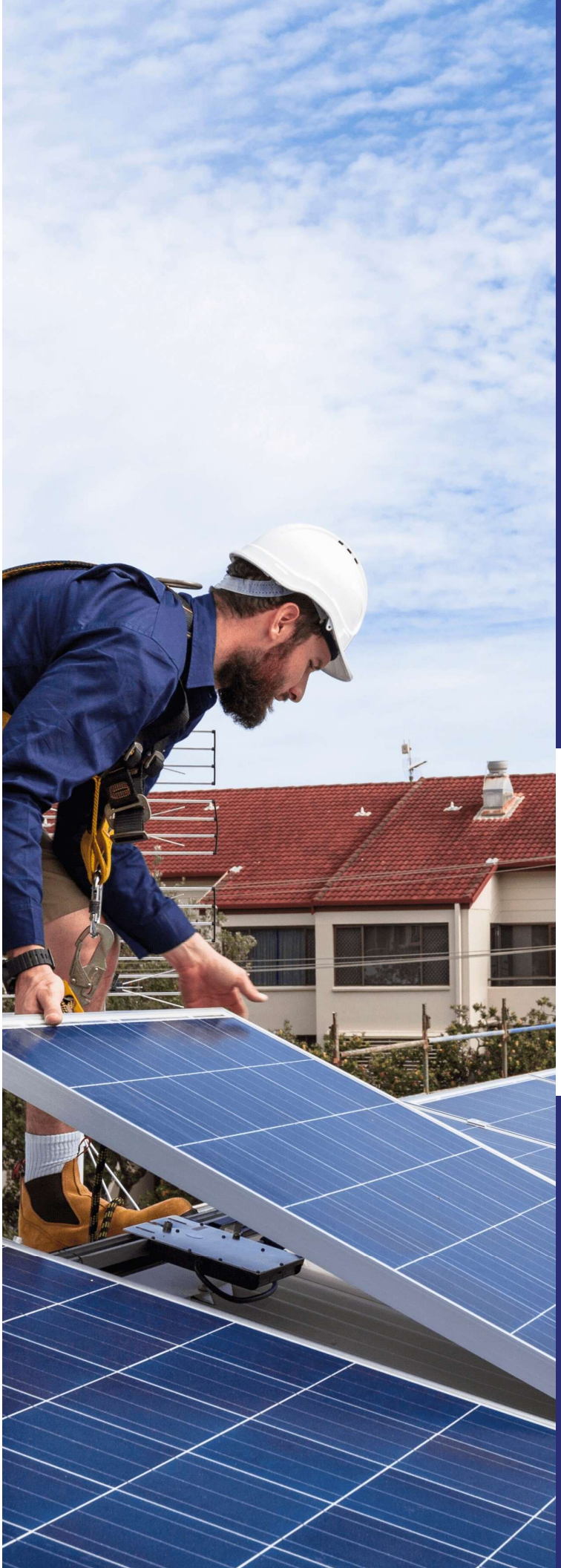


- **Solar Power Plant** ***(Residential / Industrial / commercial)***
- **Solar Ground Mount**
- **Solar Water Pumping System** ***(Agriculture | Drinking)***
- **Solar Hybrid System**
- **Electric Submersible Set**
- **Solar Submersible Set**
- **Submersible Motor-pump parts**

AN ISO 9001-2015 COMPANY

ZMR®

SOLAR ENERGY

# RANJAN INDUSTRIES

Street No.3 Corner, B/H. S.T. Workshop, Samrat Industrial Area Main Road, Gondal Road, Rajkot-360004, Gujarat.

**E-Mail: info@ranjanindustries.in**

**www.ranjanindustries.in**

AN ISO 9001-2015 COMPANY

# ZMR®

## SOLAR ENERGY

Investing in solar energy not only protects the environment but also helps you save money. Solar photovoltaic power plants can be used for residential, industrial, commercial, agricultural, and institutional projects. This allows you to live more energy-efficiently, increase your savings, and contribute to a sustainable future.

SOLAR
**WE DO IT ALL**

- Solar Power Plant
- Solar Water Pumping System
- Submersible Motor and Pump
- Solar Motor and Pump Parts

## Who we are

We are young group of engineers and highly interested in Renewable Sources of Power Generation. As you Know the Electricity is big issue of world.

The demand for energy is rising with the rapidly increasing Indian population. Moreover, most of the rural belts of India have inadequate, minimal or no electricity, which is a vital ingredient in the development of any community.

We are focusing on solar energy, one of the best options in green solar renewable energy, to provide sustainable and economical power supply.


## Introduction:

We Ranjan Industries (ZMR) manufacturer of Electrical Submersible Pump Set, Solar based submersible Motor-Pump set, All type of Spare parts for submersible pump and leading EPC company of Solar power plant (Residential, Industrial, Commercial) and Solar water pumping system as per MNRE.

Owing to the superior quality of the product range offered, we have carved a firm foothold in the domain. The products offered by us are in compliance with industrial standards and are offered at most affordable prices. The professionals appointed by us invest their long working hours in manufacturing products as per clients' specifications and details to meet their exact requirements.

## Vision

"Empowering a Sustainable Future with Clean Solar Energy"

## Mission

"Our mission is to lead the transition to a sustainable and renewable energy future through the widespread adoption of solar power. We are committed to delivering innovative, reliable, and affordable solar solutions that not only reduce our carbon footprint but also provide economic and environmental benefits to our customers and communities. With unwavering dedication to quality, innovation, and customer satisfaction, we aim to make solar energy accessible to all, contributing to a greener planet and a brighter tomorrow."

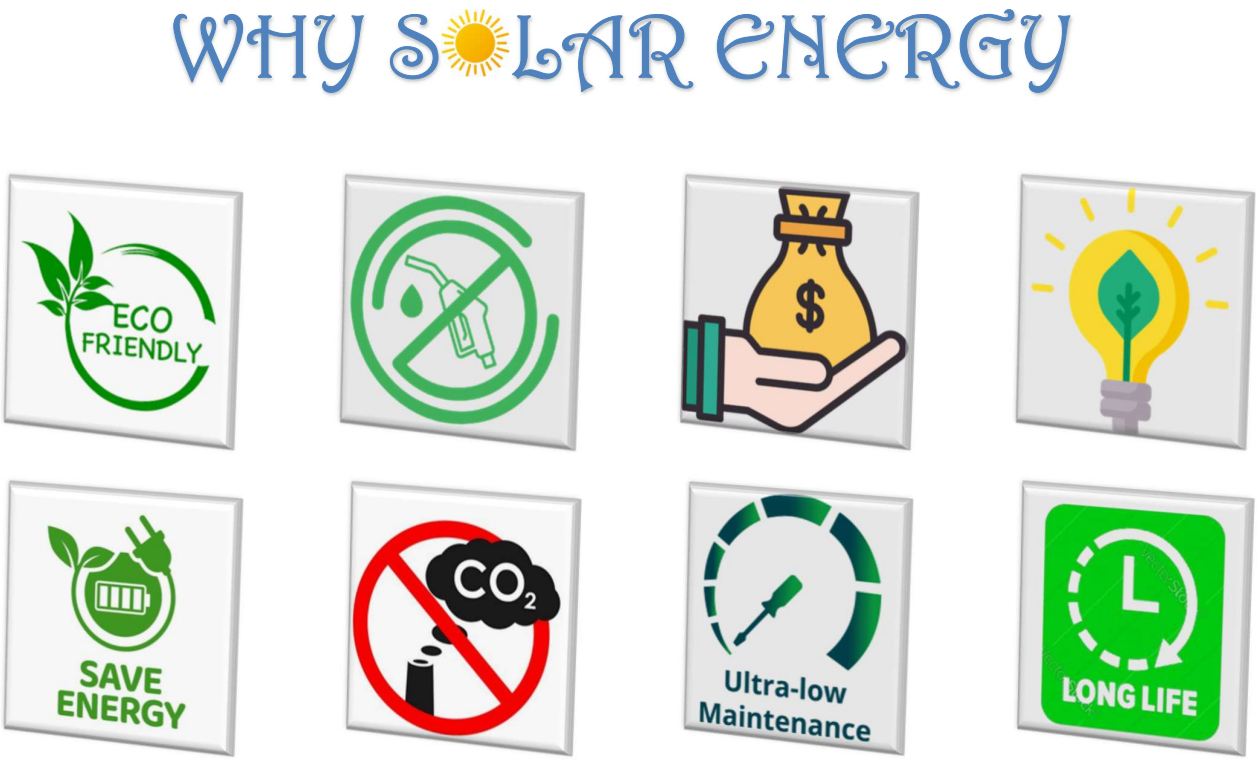

## We are Leading EPC, Manufacturer and Supplier Company of:

- Solar Power Plant (Residential, Industrial, Commercial, Institutional projects)
- Solar Submersible Pump Set
- Solar Pump Controller
- Electric Submersible Pump set
- All type of Submersible Parts manufacturer

## Why choose "ZMR"

Owing to the superior quality of the product range offered, we have carved a firm foothold in the domain. The products offered by us are in compliance with industrial standards and are offered at most affordable prices. The professionals appointed by us invest their long working hours in manufacturing products as per clients' specifications and details to meet their exact requirements.

- Experience and Qualified manpower
- Ready for Quick and fast Installation
- Quick and fast service
- Proper knowledge of process and continues improvement
- No hidden charges – cost efficient solar power plant
- Value added service – Proper guidance on load extension, Name change and bank loan process etc….



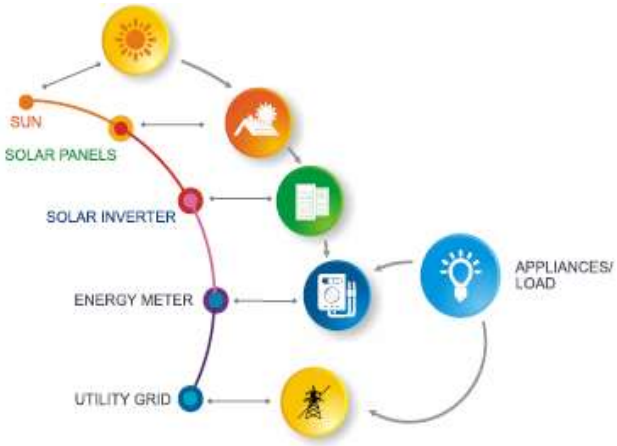

# ABOUT SOLAR POWER PLANT

A solar photovoltaic (PV) system mounted on a rooftop of a building is a mini-power plant that converts solar energy into electricity to meet the property's power requirements or feed into the grid. Although anyone can install a solar rooftop system,
The size of the installation varies significantly depending on availability of space, amount of electricity consumed by the property, and the ability or willingness of the owner to invest the capital required.


- In grid connected rooftop or small SPV system, the DC power generated from SPV panel is converted to AC power using power conditioning unit and is fed to the grid either of 33 kV/11 kV three phase lines or of 440V/220V three/single phase line depending on the local technical and legal requirements.

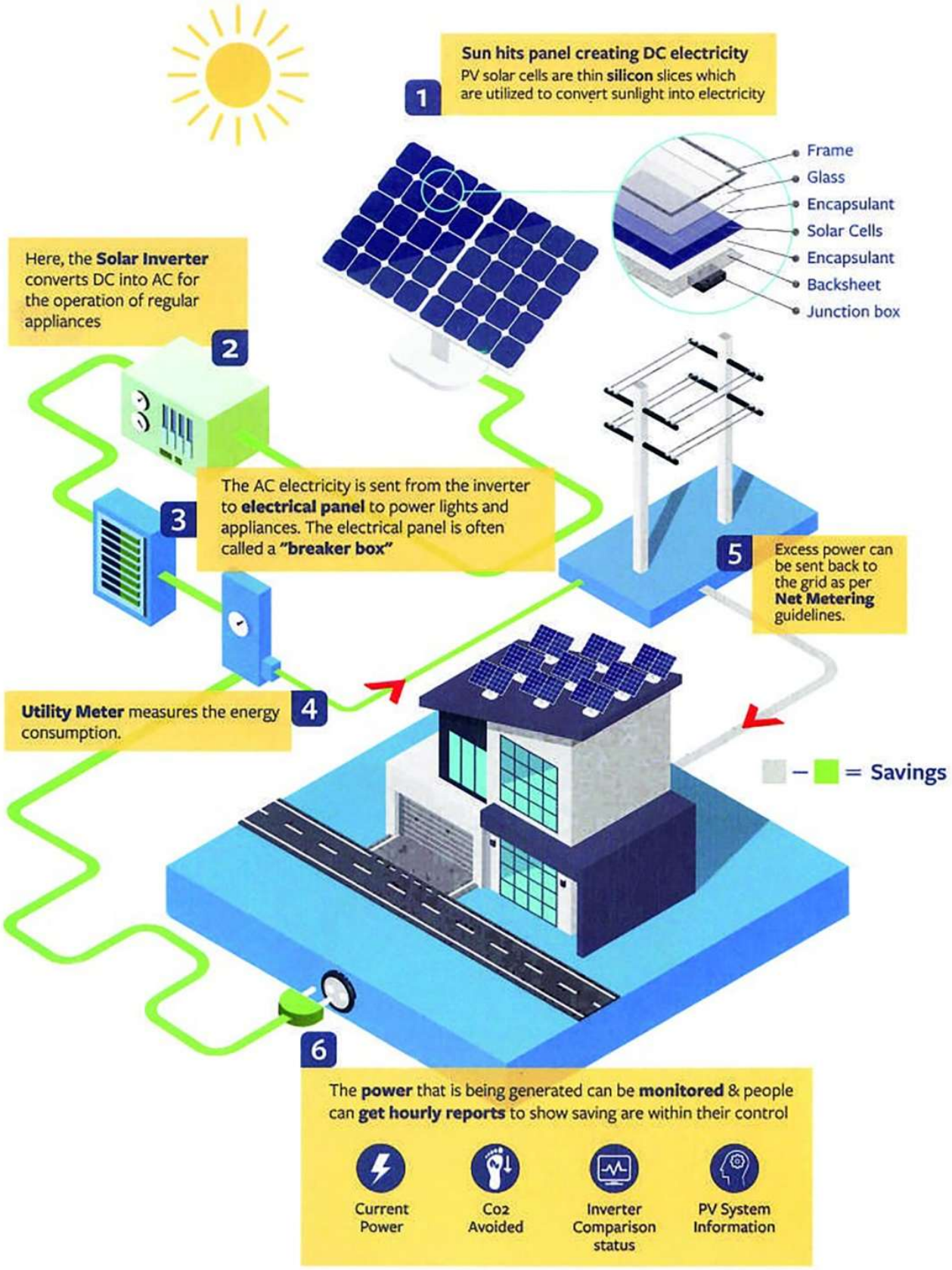
- These systems generate power during the day time which is utilized by powering captive loads and feed excess power to the grid. In case, when power generated is not sufficient, the captive loads are served by drawing power from the grid.

- The concept of rooftop solar is based on the scale of the PV plant rather than the fact whether it is situated on a roof/terrace or not. Hence, the definition of RTS also includes small solar plant on

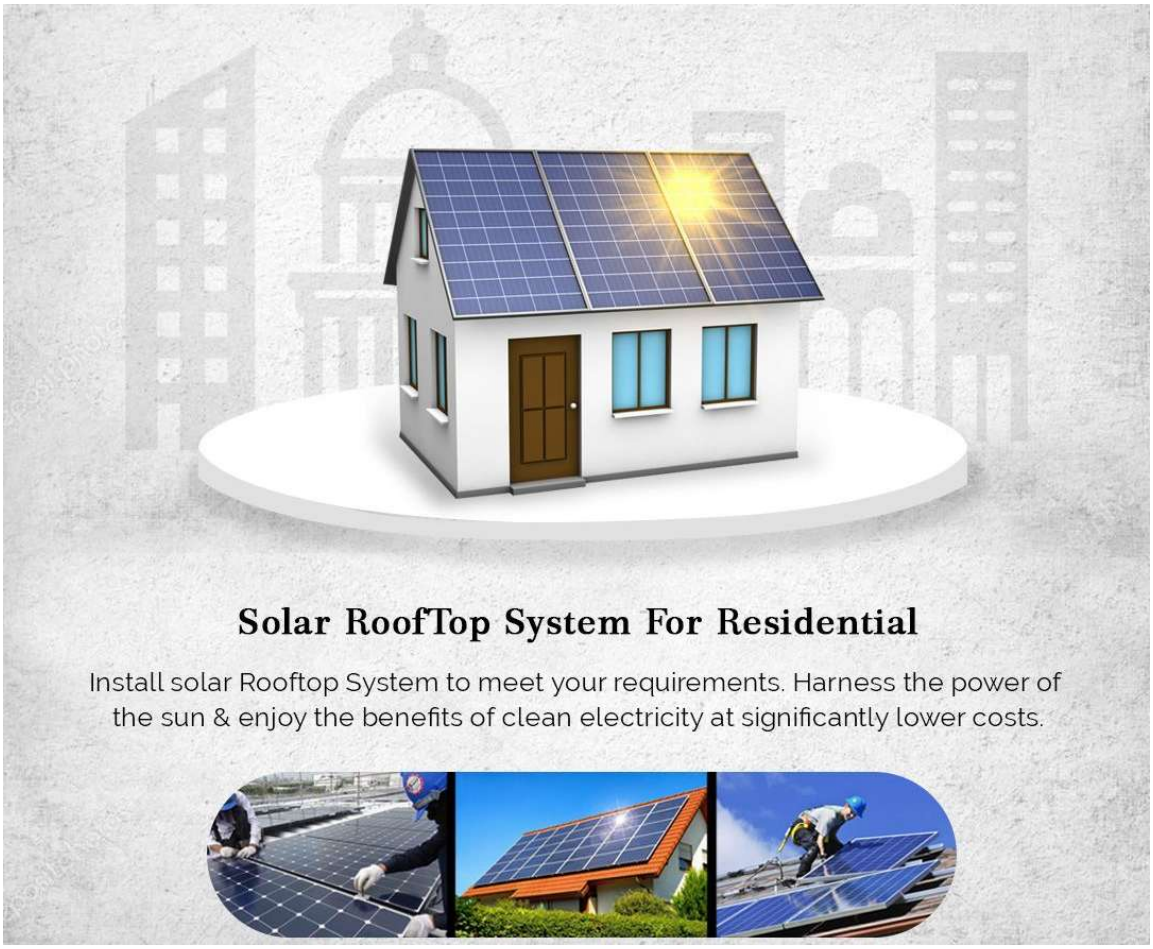



- A ground-mounted solar panel is the same as a rooftop solar panel. The only difference is ground-mount solar panels get set up on the ground and use a standard installation or a pole mount installation. Some ground-mount solar panel systems can move with the sun in order to capture the most sunlight they can each day.
- With technological advancement, it is possible to install solar systems in various areas. A barren ground is one common place to install a ground mounted solar power plant and produce solar power with high efficiency.
- So, if you own a commercial business and have an open space, you can set up your solar power generation system to meet your power requirements or connect it to the utility grid. Ground-mounted solar panels offer one of the best methods to generate solar energy on a large scale. Moreover, the high efficiency balances their initial investment in the minimum time duration.

# How does On-Grid Solar work?



- **Solar Rooftop – Domestic:**




Preserves Environment and Resources for Future Generation

| Main Components | Benefits |
|---|---|
| • Solar photovoltaic panels<br>• Support structure for solar module<br>• Inverter<br>• Cables & Other Accessories | • No electricity cost as your solar system fulfills all your Electricity require<br>• Availability of electricity even in the event of a power outage<br>• Empowers you to become independent for your electricity need<br>• Raises value of your home or building<br>• Reduces greenhouse gas emission<br>• Preserves environment and resources for future generation |

- **Solar Rooftop – Industrial / Commercial:**

When it comes to commercial solar installation, we take the lead with its state of the art production facility, quality products and its EPC solutions. It's the prime responsibility of an EPC Company to familiarize business owners about Renewable energy before it is being endorsed.

However, this is not the only gain. The reason why the concept of commercial solar park and solar rooftop in India is popularity gaining is because of its endless opportunities to earn better profits, by saving Electricity as well as Accelerated Depreciation on purchased system. Rooftop solar power plant, commonly known as rooftop solar system, is a photovoltaic (PV) plant that has its PV panels installed at rooftop of a building. The urban environment provides a large amount of empty rooftop spaces and can inherently avoid the potential land use and avoid environmental concerns.

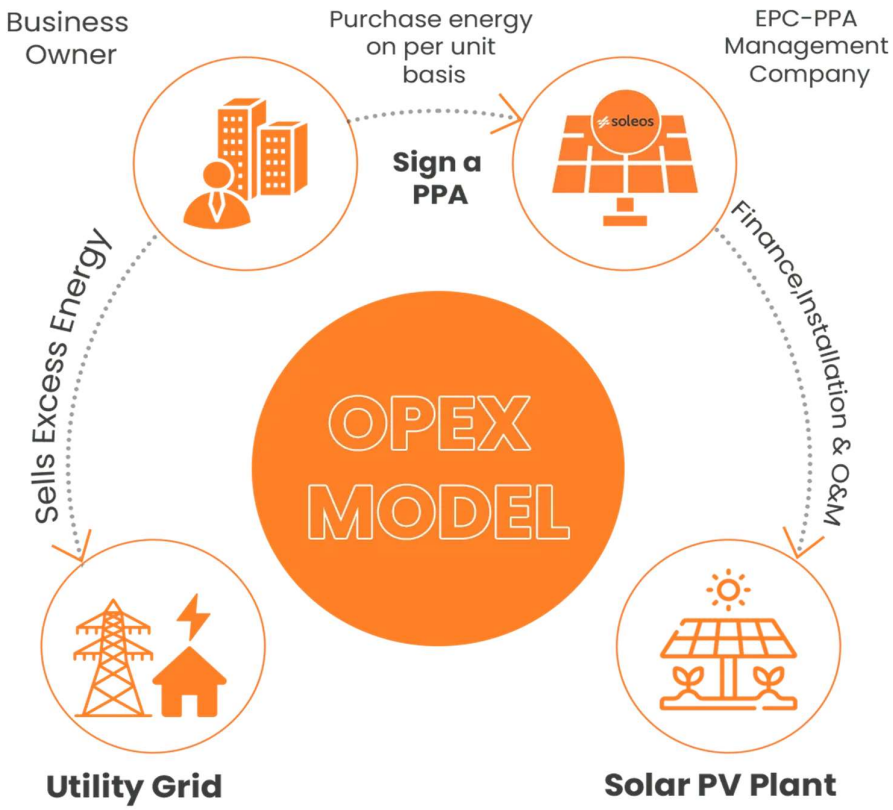
The maximum dimension of a rooftop solar system depends on the shadow free area available on the rooftop, so rooftop solar systems are usually smaller as compared to ground-mounted photovoltaic power plants.

Rooftop solar systems on residential buildings typically feature a capacity of about 3 to 10 kilowatts (kW); but on commercial or industrial buildings it can be installed in Megawatts, depending on requirement / captive consumption.

## OPEX Model

The OPEX, or operating expenses, model is a solar energy financing model that allows customers to use solar power without an upfront investment. In this model, the customer pays a monthly fee to lease the solar equipment and use the electricity it produces, rather than paying a utility provider. The developer or installer retains ownership of the solar plant and is responsible for maintenance and upkeep.

The OPEX model is also known as the RESCO model, which stands for Renewable Energy Service Company. It's a good option for businesses that want to switch to green energy without a large upfront investment.




## Here are some key features of the OPEX model:

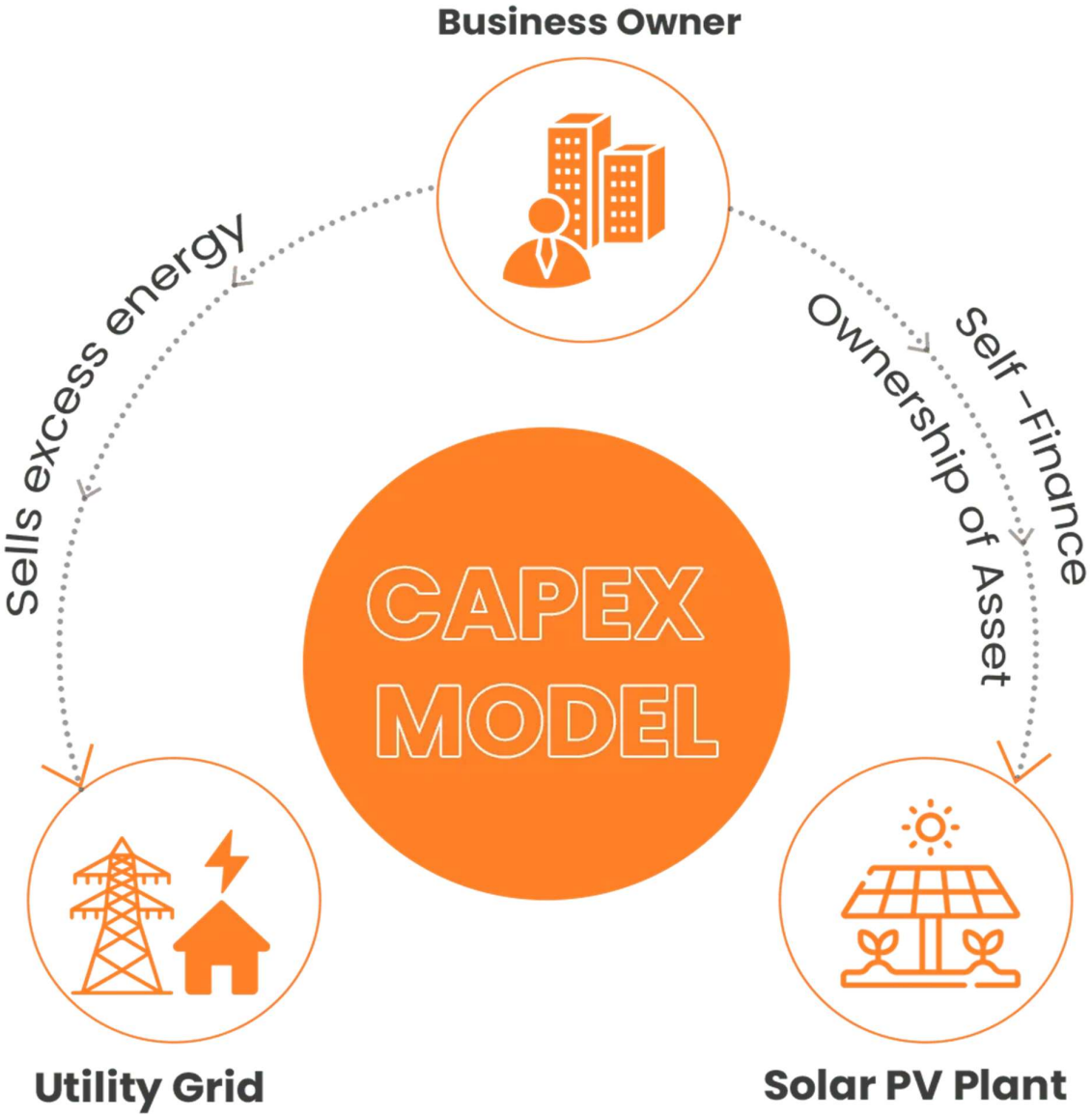
- No upfront investment: The customer does not need to pay for the solar equipment or installation
- Pay-as-you-go: The customer pays a monthly fee based on how much electricity they use
- Long-term agreement: The customer enters into a Power Purchase Agreement (PPA) with the developer for a fixed term, usually 15–25 years
- Developer owns the asset: The developer is responsible for the solar plant's maintenance and upkeep
- No ownership: The customer doesn't own the solar system, so they don't qualify for tax credits or other incentives
- Lease ends: When the lease ends, the customer doesn't have ownership of the equipment and may need to negotiate a new lease or buyout

## CAPEX Model

The capital expenditure (CAPEX) model is a business model for installing solar energy systems where the consumer pays for the equipment, installation, and maintenance of the system. The consumer owns the system and keeps all the benefits, including:

- **Tax credits:** The consumer can claim accelerated depreciation and tax benefits.
- **Electricity savings:** The consumer keeps all the electricity savings.
- **Improved property value:** The consumer can see an increase in the value of their property.
- **Excess energy:** The consumer can choose to return excess energy to the utility and get paid.

The CAPEX model is a good choice for consumers who have the funds to invest in solar energy and want to maximize their long-term profits. However, the upfront costs can be prohibitive for some consumers.



## Open Access Model

Open access solar is a policy that allows consumers, businesses, and industries to buy solar energy directly from solar power generators that are located off their property. It's a way to access renewable energy without having to install solar panels on your own property.

Open access solar is a **popular** choice for businesses that want to reduce their environmental impact and incorporate more renewable energy into their energy mix. It can also be a good option for businesses that don't have enough space on their property to set up a solar power system.

**Here are some key features of open access solar:**

**Power purchase agreements**

Consumers sign power purchase agreements (PPAs) with the solar power generator to buy a specific amount of solar electricity at an agreed-upon price.

**Cost savings**

Open access solar can offer lower electricity costs than traditional grid power.

**Reduced emissions**

Open access solar can help businesses reduce their emissions and have a more sustainable energy profile.

# Difference Between Opex and Capex model

| Feature | Opex model | Capex model |
|---|---|---|
| Feature | Provider owns and manages the solar system. | Business owns the solar system. |
| Upfront cost | No upfront cost; payment is based on usage. | High upfront investment for installation. |
| Maintenance responsibility | Provider takes care of maintenance and repairs. | Business handles maintenance and repairs. |
| Financial risk | Lower risk as there's no initial investment. | Higher financial risk due to initial investment. |
| Control | Limited control; provider manages the system. | Full control over the system and its operation. |
| Long-term savings | Savings are more gradual; based on usage fees. | Potential for greater savings over time |
| Flexibility | Flexible; easier to scale energy needs. | Less flexible; upgrading requires new investment. |
| Tax Benefits | Typically, the provider benefits from tax incentives. | Businesses can claim tax credits and depreciation. |

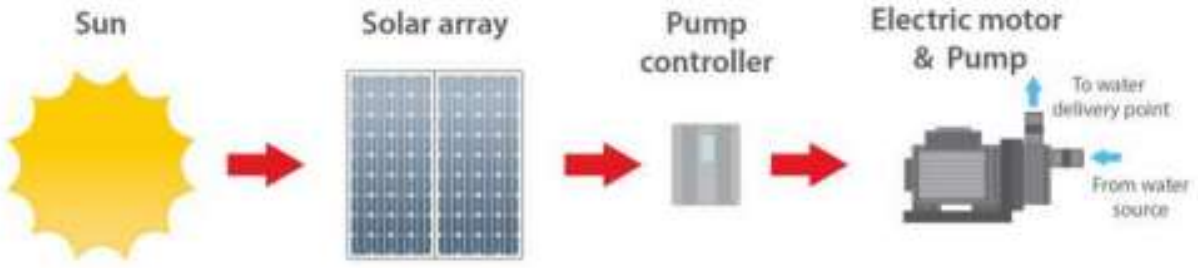
Industrial Shed


Ground Mount

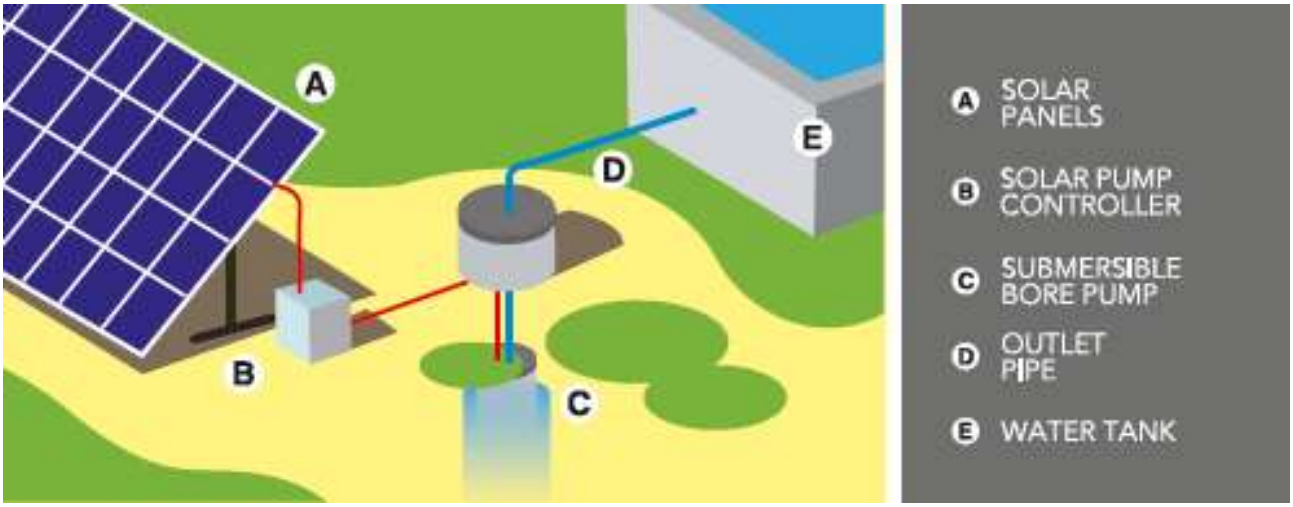
# SOLAR WATER PUMPING SYSTEM

## Standalone Solar Powered Ac & Dc Submersible & Surface Pumping System

Pumping water is a universal need around the world and the use of photovoltaic power (PV) is increasing for this application. A Solar powered pump is a pump running on power of the sun. A solar powered pump can be very environmentally friendly and economical in its operation. The system operates on solar photovoltaic (PV) system power generated. The photovoltaic array converts the solar energy into electricity, which is used for running motor-pump set.



## WHAT IS SOLAR PUMP?




A solar pump is an application of photovoltaic technology which converts solar energy into electricity to run motor and pump. The motor powered by solar energy draws water out of the bore well, river, lake or pond.

A Solar-powered water pumping system is like any other pumping system, except its power source is solar energy. Solar pumping technology covers the entire energy conversion process, from sunlight, to electrical energy, to mechanical energy, to stored energy. A solar water pumping system contains: - a solar array, which convert sunlight into electricity, pump controller which controls array and pump, an electric motor (either AC or DC), which drives pump, which moves the water as per it's application.

The photovoltaic cells in solar modules convert sunlight into Direct Current (DC) electrical energy. This DC energy is then fed to the Motor Pump Set via Pump Controller in case of DC pump or via Variable Frequency Drive (VFD) in case of AC pumps (VFD controls speed of Motor). The Pumping system is a combination of an impeller and a motor; the impeller propels water movement and the motor drives the pump. The water is propelled out of the bore well/river/lake/pond through the pipe so that water can then be fed to the fields for irrigation and other purposes. Water output varies during the day depending upon varying solar irradiance.

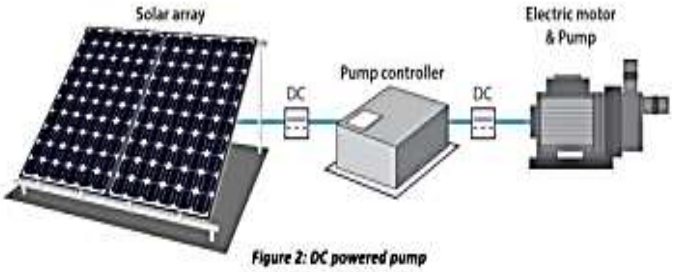


Figure 2: DC powered pump

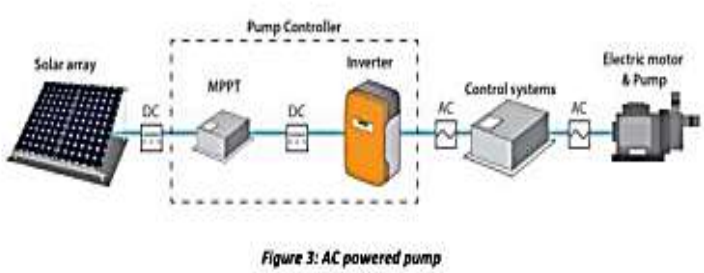


Figure 3: AC powered pump

## Category of Solar Water Pumping System:

Boreholes and wells are the technology measures for providing water supply during times of water shortages and drought. They are used to extract water from subsurface or deeper groundwater with submersible pump set.

Submersible solar pumps are typically used in areas where water is available at a greater depth and where open wells are not available. The hermitically sealed motor-pump is completely immersed into water. Solar submersible pumping system operates directly on the solar panels as power source and classed as DC/AC depending on type of motor.

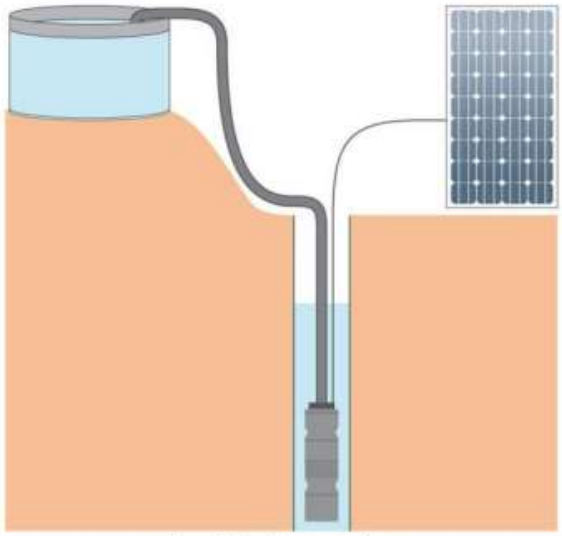


*Figure 4: Borehole pump system*

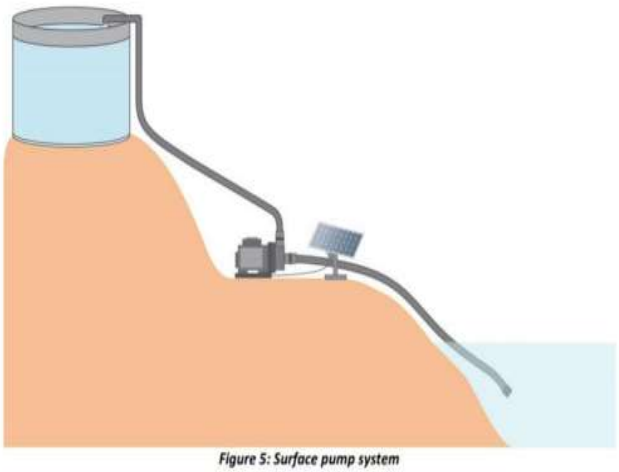


*Figure 5: Surface pump system*

For open source/floating water surface water pumps are installed at ground level to lift water from shallow water sources as wells, ponds, storage tanks.

Surface water pumps can also be used to provide pressurized water for irrigation or home water system.

| Features | DC Solar Pump | AC Solar Pump |
|---|---|---|
| Efficiency | It is more efficient than AC pump and requires less panels than AC motor pump | AC pumps are relatively less efficient and are comparable for 5HP motor and above. |
| Service Life | DC pumps have longer life, but are difficult to maintain in remote areas as it requires specializes technicians. | Relatively have less service life, but easy to maintain. |
| System configuration | A DC solar pumping system consists of solar panels, a controller, and a DC pump. No inverter is required as it can be directly coupled with solar panels that generate DC power. | AC solar pumping system consist Solar Panels, controller and AC pump. Controller required converting DC supply to AC to run AC Motor. |

## Benefits of Solar Pumps:

- No dependence on erratic grid power and saving on expensive diesel
- Higher yield during the day time when crop gets all the necessary ingredients – sunlight and water
- Water output across all seasons to cultivate multiple crops every year
- One time investment and then zero running costs (free sunlight) for many years to come
- Easy for farmers to cultivate the land during daytime rather than at night time when grid is erratic
- Drip and sprinkler system can be connected with the solar system to further improve crop yield
- Solar system needs no maintenance except regular cleaning of the modules – no consumables; easy to operate
- As water can be harnessed any time of the day, the user can plan his other activities independently
- Contribution to reduction of carbon emission and pollution

## Solar Pumping System Consist of

- Solar PV modules with 25 years power warranty
- Galvanized iron module mounting structures with a provision to adjust module towards sun 3 times in a day.
- Pump controller (in DC) or variable frequency drive (in ac pump).
- Solar motor pump set (dc/ac) mode of stainless steel which remains rust-free
- Suitable accessories – pipe, cable, rope etc.
- Remote monitoring option available on request.
- Warranty against manufacturing defect on pump, controller, and module and pump kit.
- Contribution to reduction of carbon emission and pollution

## Various Key application of Solar Pumping System

**Agriculture:**

- Crop irrigation in remote areas
- Watering livestock
- Orchard and high-value crop irrigation

**Domestic Water Supply:**

- Providing clean drinking water for households
- Maintaining garden irrigation systems

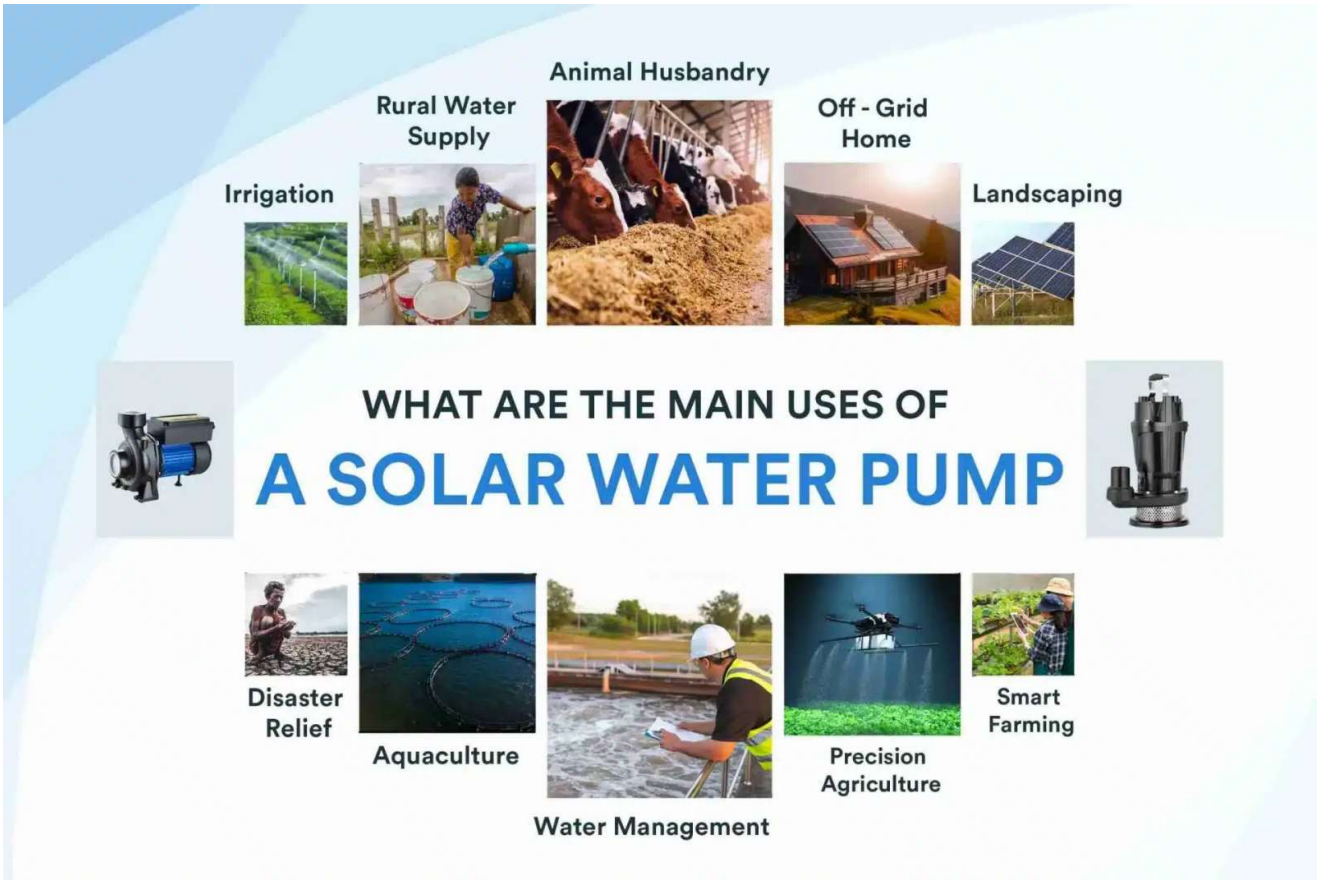
**Community Water Supply:**

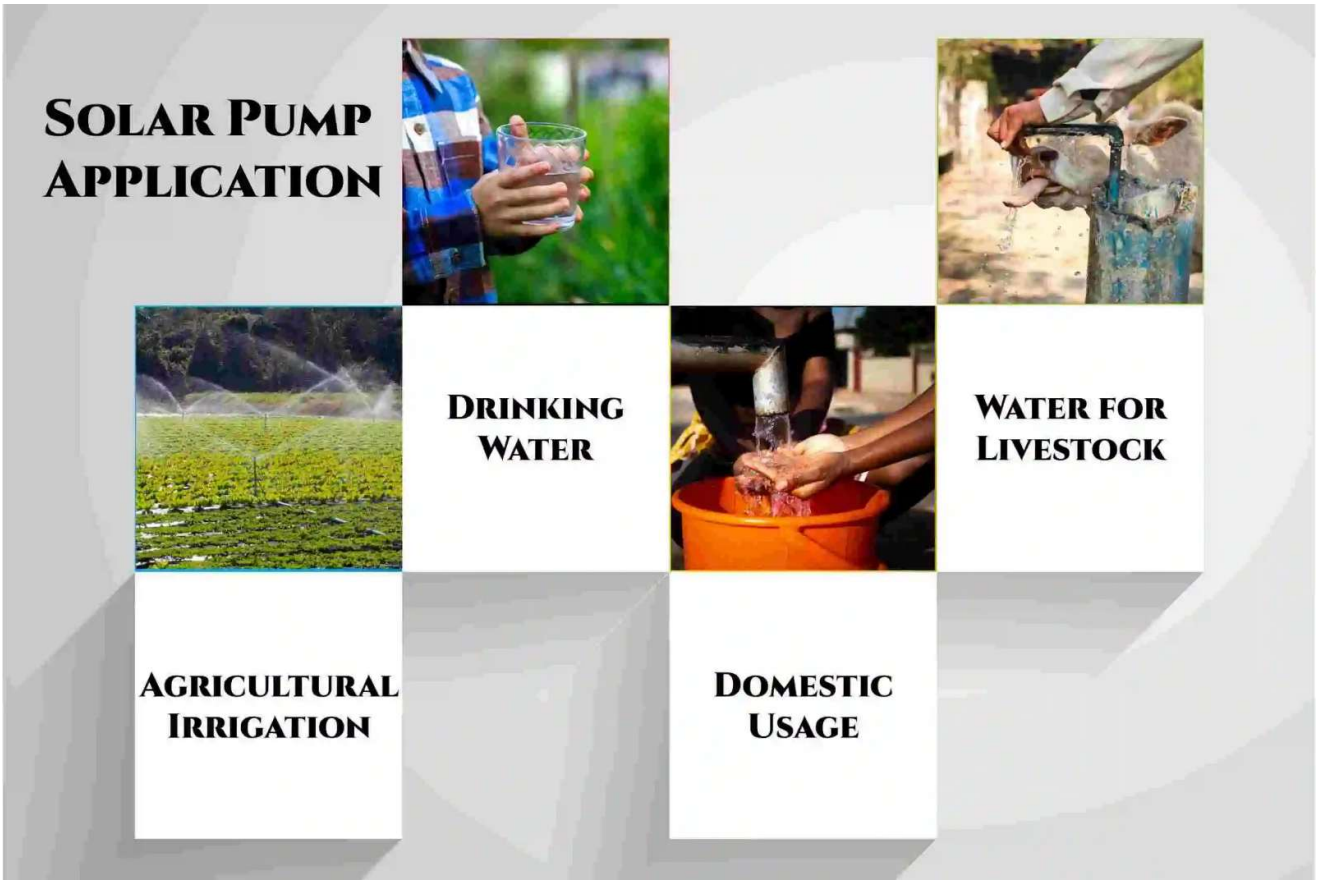
- Delivering clean water to entire communities in areas with limited access

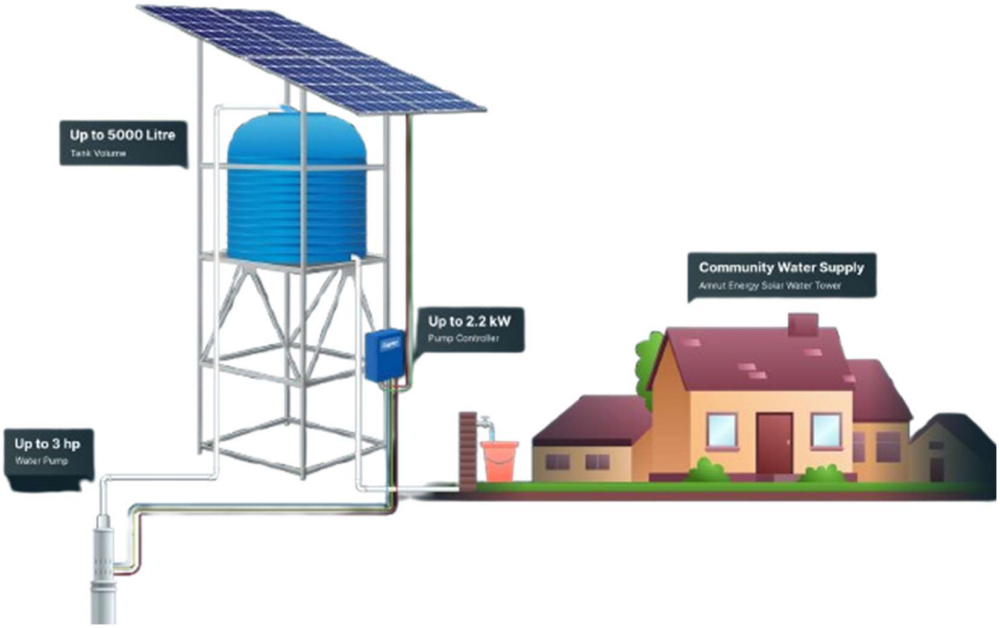
**Other Applications:**

- Fountains and waterfalls in gardens
- Swimming pool water circulation
- Aquaculture
- Mountain restoration and vegetation recovery

Agriculture | Irrigation | Industries | Domestic | Drinking


Animal Husbandry
Rural Water Supply
Off - Grid Home
Irrigation
Landscaping
WHAT ARE THE MAIN USES OF
A SOLAR WATER PUMP
Disaster Relief
Aquaculture
Water Management
Precision Agriculture
Smart Farming


SOLAR PUMP APPLICATION
DRINKING WATER
WATER FOR LIVESTOCK
AGRICULTURAL IRRIGATION
DOMESTIC USAGE


Up to 5000 Litre
Tank Volume
Community Water Supply
Amrut Energy Solar Water Tower
Up to 2.2 kW
Pump Controller
Up to 3 hp
Water Pump

# ZMR SOLAR PUMP CONTROLLER


## ZMR Solar Pump Controller (IP68/IP54)

A transformer-less Inverter system with 3-phase output, and V/F control to manage pump starting condition (for soft start). The equipment is microcontroller based and operated with software for digital control of inverter parameters, fault finding-diagnostics.

## MPPT Controller

With the Inbuilt MPPT (Maximum Power Point Tracking) function, it regulates the output frequency according to irradiation in real time to achieve the maximum power. Adopting the proposed dynamic VI maximum power point tracking (MPPT) control method, fast response and stable operation, better than the conventional methods, which may lead to the problems including poor tracking performance, unstable or even cause water hammer damaging when the irradiation on the array changes rapidly.

## Salient features

- Dry Run protection (Sensor Less), Over Voltage, Over Current, Over Load, Reverse Polarity Protection. Including SPD & DC Breaker.
- High quality, Low Cost, Compact Design and High Reliability.
- Can be integrated with the existing system.
- Remote Monitoring System (Optional).
- When solar power is not available customer can be manually switched to an alternating single phase or three phase input ac supply.
- High Resolution LCD display shows speed (%), input DC voltage, Output AC/PWM voltage and current system status.
- MPPT maximize power points tracking for maximizing the efficiency of input power.
- GSM option also available to controls and monitor remote locations pumps.
- Remote telemetry capability through RS485 continuous data points (optional).
- Simple installation and easy maintenance.

# All type of submersible parts / Kit

Manufacturer & suppler – Stainless steel 304 & 202 investment casting of Pump Kit/ Spares by using lost wax process. Have a full-fledged & well-equipped foundry with machining shop, managed by well qualified & experienced personnel.


V3-Base


V3-Lower


V3-Upper 3PCD


V3-Upper 4PCD


V4-Base


V4-2” NRV


V4-Suction


V4-Suction


V4-1.5” NRV


V4-Lower


V4-Upper


V6-Suction


V6-Upper


V6-Lower


V6-Base


V6-Suction


V6-2” NRV


V6-2.5” NRV


V4/V6-Suction


Suction Plate

# Testimonials


I recently installed solar on my rooftop. Thank you, team, for neat and clean installation on my rooftop and also received my subsidy. Great work team.

Thanks
- *Vegda Sunil Mansukhbhai*

★ ★ ★ ★ ★

One of the best decisions of my life to go solar! I really appreciate your product quality and workmanship. I strongly recommend everyone to go solar from ZMR as soon as possible.

Thank You.
- *VIPULBHAI CHHAGANBHAI VAISHNAV*

★ ★ ★ ★ ★



When you have empty roof then why to pay for electricity bill? Thank you for end to end guidance.
Thanks for making my roof solarize!
Superb work by the team

- *DIPAKBHAI CHHAGANBHAI VAISHNAV*

★ ★ ★ ★ ★

Installed a solar rooftop system at my home, and the results have been incredible!
My electricity bills have significantly reduced. Highly recommended!

— *NIKUNJ BHUPATBHAI BHALARA*

★★★★★

Installed a solar rooftop system at my Factory, and the results have been incredible!

My electricity bills have significantly reduced. Highly recommended!

*— AMBITION PIPE*

★★★★★

Our factory's solar rooftop installation was seamless, thanks to their expert team. They are Reliable, professional and efficient.

*— Praful Welding Works*

★★★★★

ZMR has executed an 80Kw Solar Plant at our Unit, we really appreciate the team's dedication and how quick the execution was completed. The generation of solar power units is above our expectations. The system is working very well and we are very happy with the on time service for any of the queries.

we can strongly recommend to go for ZMR (Ranjan Industries).

*— M/S TRIDENT ENTERPRISE*

★★★★★

# Empanellment

नवीन एवं
नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF
NEW AND
RENEWABLE ENERGY
सत्यमेव जयते

JHARKHAND RENEWABLE ENERGY DEVELOPMENT AGENCY
JREDA
RANCHI

झारखण्ड सरकार
GOVERNMENT OF JHARKHAND

GEDA
ગુજરાત ઊર્જા વિકાસ એજન્સી
GUJARAT ENERGY DEVELOPMENT AGENCY
A Government of Gujarat Organisation

TPCODL

आरईसी
REC
रूरल इलेक्ट्रीफिकेशन कारपोरेशन लिमिटेड
Rural Electrification Corporation Limited
(भारत सरकार का उद्यम / A Government of India Enterprise)

MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.

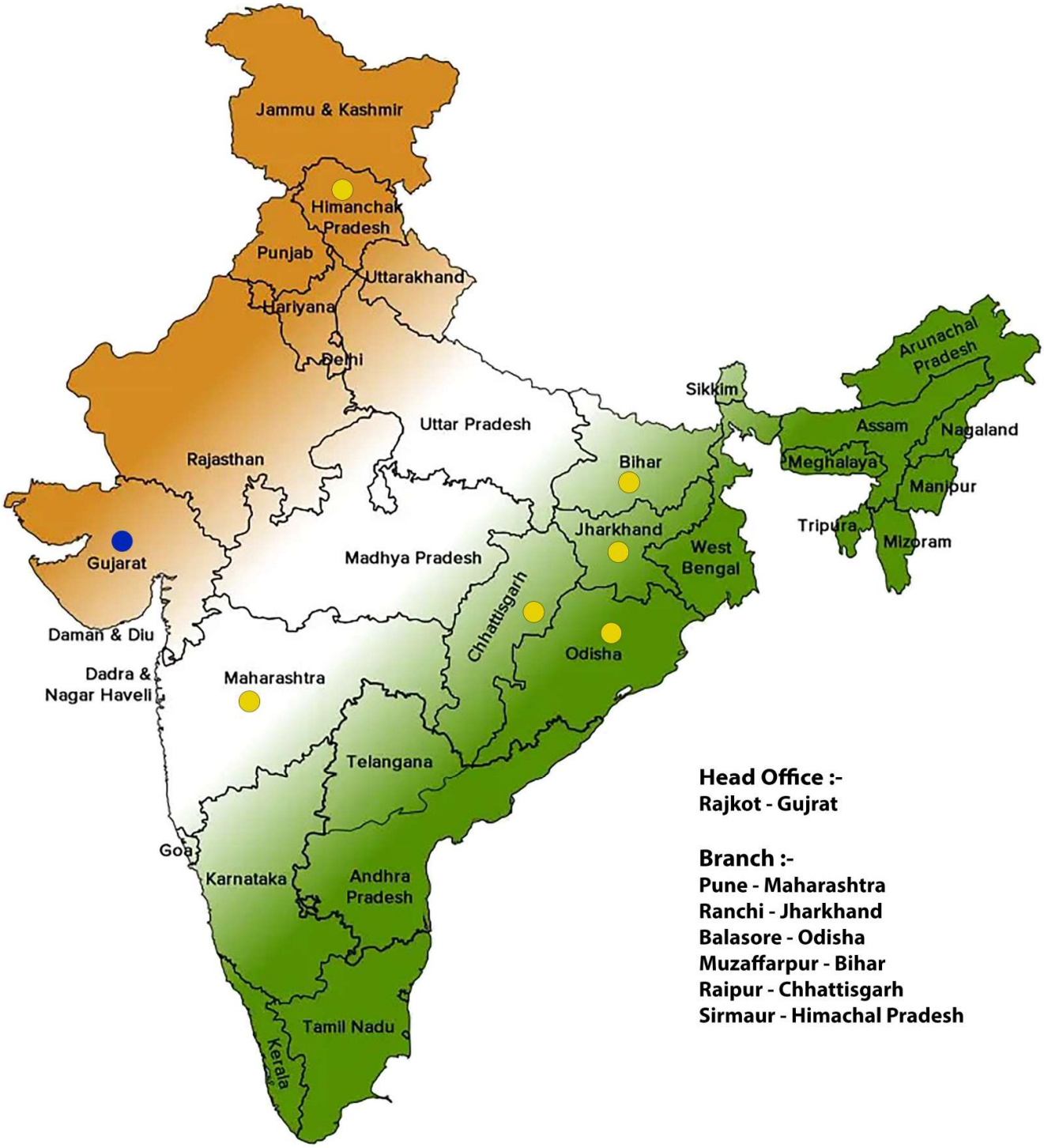
Department of Agriculture
Government of Himachal Pradesh

सत्यमेव जयते
ગુજરાત સરકાર
Govt of Gujarat

GUVNL
Gujarat Urja Vikas Nigam Limited

GSECL
GETCO
DGVCL
MGVCL
PGVCL
UGVCL

# Our Presence:-




**Head Office :-**
**Rajkot - Gujrat**

**Branch :-**
**Pune - Maharashtra**
**Ranchi - Jharkhand**
**Balasore - Odisha**
**Muzaffarpur - Bihar**
**Raipur - Chhattisgarh**
**Sirmaur - Himachal Pradesh**

# For a sustainable future. Conserve Energy

## THANK YOU

Street No 3 Corner | Samrat Industrial Area Main Road |
B/H ST Workshop, Rajkot – 360 004
E-mail: info@ranjanindustries.in | www.ranjanindustries.in
Toll Free: 1800 1234 181

Switch off, when not in use!