

RAYSTEEDS ENERGY

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TECHNO-COMMERCIAL PROPOSAL

SOLAR OFF-GRID POWER PLANT

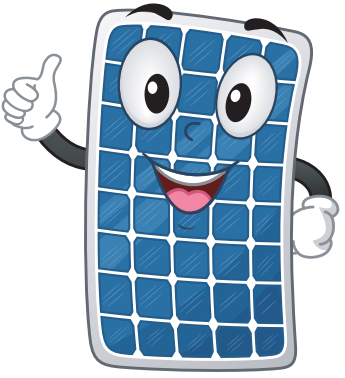
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WHAT IS A SOLAR OFF-GRID SOLAR POWER PLANT?

A solar off-grid power plant, also known as a standalone solar power system, is a type of solar energy system that operates independently from the electric grid. It is designed to provide electricity in remote areas or locations where grid connectivity is unavailable or unreliable. Unlike grid-connected solar power plants that rely on the utility grid for backup power and excess electricity export, off-grid systems are self-sufficient. Solar off-grid power plants are commonly used in rural areas, remote communities, camping sites, and other locations where access to the electrical grid is limited or non-existent. They provide a sustainable and reliable source of electricity, enabling the independence and self-sufficiency of the users. However, it's important to note that off-grid systems require careful planning and sizing to meet the energy needs of the desired load and ensure reliable operation throughout changing weather conditions.





Solar System Explained

Mounting System



Major components of solar power plant

Operating modes of off-grid rooftop solar PV systems can be explained by understanding its major components.

1. **Solar Panel:** The Solar PV modules/Solar Panels convert solar energy to DC (direct current) electrical energy. solar Panels use light energy that is photons from the Sun to generate electricity through the photovoltaic effect. Mainly two types of solar panels in the Indian market which are polycrystalline and monocrystalline. Multiple panels are connected together to form arrays as per the desired capacity of the system.
2. **Inverter:** The solar inverter is the heart of the PV System. The inverter converts the variable DC output of Solar PV panels into AC power which in turn needs to be converted into acceptable form (AC) to run electrical devices. Inverter also synchronizes with the grid so that generated power from the module can be injected into the grid.
3. **Module mounting structure:** The module mounting structure, is the support structure that holds the Solar PV panels in place for full system life and is exposed to all weather conditions. These are normally fixed at particular angles and orientations in the case of solar rooftop systems.
4. **Battery Bank:** Off-grid systems include a battery bank for energy storage. Excess electricity generated by solar panels is stored in batteries for later use during periods of low or no sunlight. The battery bank provides a reliable source of electricity when solar generation is insufficient.
5. **Balance of System:** These consist of cables, switchboards, junction boxes, earthing systems, circuit breakers, fuses, lightning protection systems, etc.



Rooftop Off-grid Solar Plant.



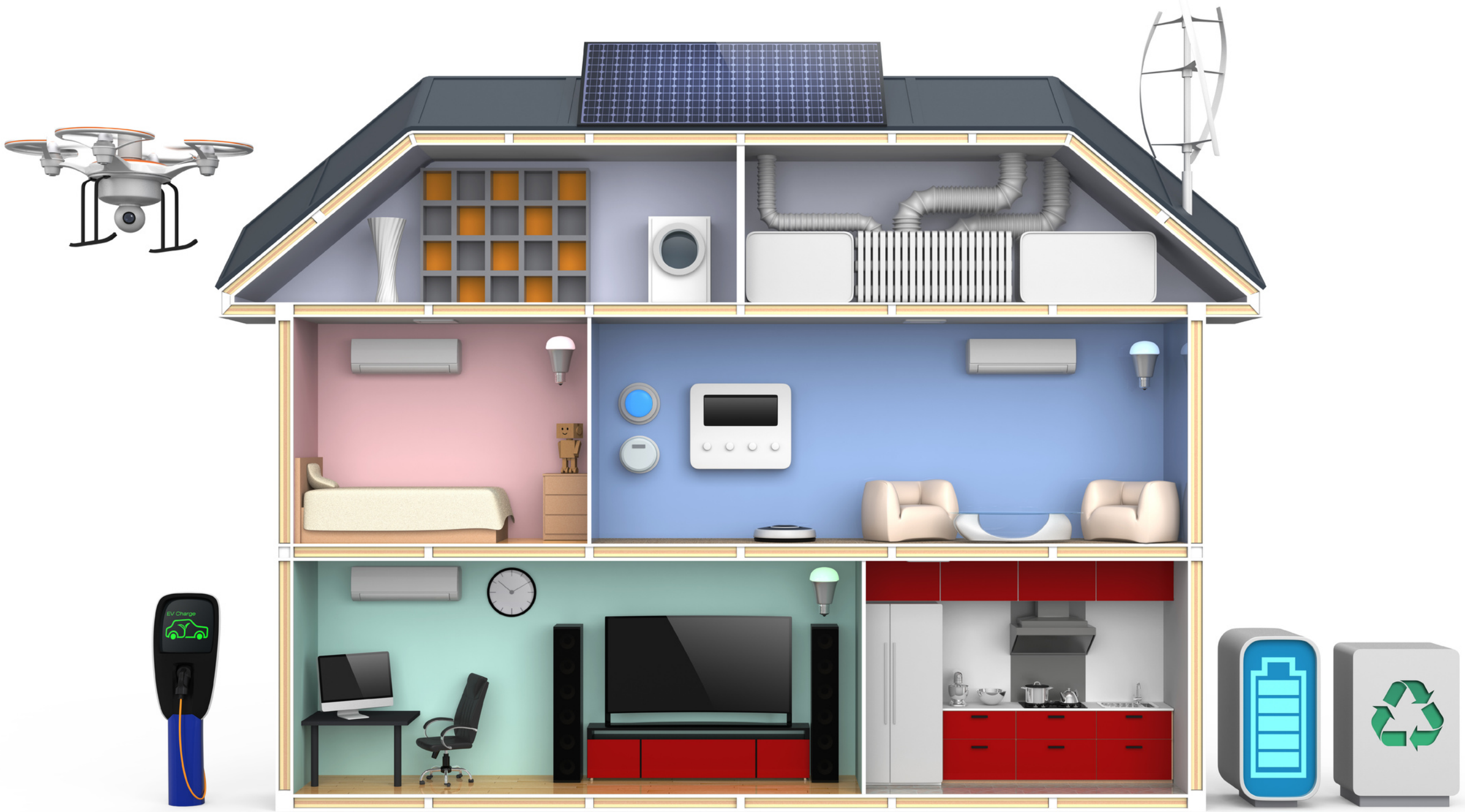
Rooftop Off-grid Solar Plant.



Rooftop Off-grid Solar Plant.



Rooftop Off-grid Solar Plant.



What advantages of Rooftop off-grid solar power plant

- **A photovoltaic power system is carbon negative over its lifespan. Long-term energy and ecological security by the reduction in carbon emission. Contribute to a clean and green environment.**
- **Energy Independence: Off-grid solar power plants provide energy independence as they operate independently of the utility grid.**
- **Reliability and Resilience: Off-grid solar power plants with battery storage offer reliable and continuous power supply even during grid outages or disruptions.**
- **Cost Savings: By investing in an off-grid solar power plant, users can save significantly on long-term energy costs. They eliminate or reduce the need to purchase electricity from the utility grid, especially in areas with high energy prices or where the cost of extending grid infrastructure is prohibitive.**
- **Environmental Benefits: Off-grid solar power plants are clean and renewable energy sources, producing electricity without emitting greenhouse gases or air pollutants.**
- **Versatile Applications: Off-grid solar power plants can be used in various applications, including remote homes, cabins, farms, telecommunication towers, research stations, and outdoor recreational activities.**
- **Utilization of available vacant roof space, no additional land required.**
- **The solar system is silent because they don't produce sound hence it doesn't create noise pollution.**
- **Solar reduces the need for finite sources, unlike other conventional-based power-generating systems.**



Empowering Your Solar Journey: Comprehensive End-to-End Turnkey Solutions

We provide end-to-end turnkey-based services from the first stage to the last stage. We streamline the process for our customers and provide them with a comprehensive solution, making it easier for them to adopt solar energy and realize the benefits of solar power plants.



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Happiness is
Power from
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