Photovoltaic Power Station Market Assessment, By Type [Ground-Based Photovoltaic Power Plants, Rooftop Photovoltaic Power Plant, Facade Photovoltaic Power Plant, Others], By Grid Type [On-Grid, Off-Grid, Hybrid], By Application [Residential, Commercial], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global photovoltaic power station market is projected to observe a CAGR of 15.49% during the forecast period 2024-2031, growing from USD 105.35 billion in 2023 to USD 333.42 billion in 2031. The market has witnessed significant growth in recent years. It is projected to maintain a strong pace of expansion during the coming years due to the expansion of the agricultural sector, aerospace and defense sector, industrial sector, and others. Photovoltaic power stations, better known as solar power plants, produce no carbon emissions and avoid environmental damage, propelling the global photovoltaic power station market growth. An increase in awareness concerning the negative impact of fossil fuels, rising prices of fossil fuels, and favorable government policies are fostering the global photovoltaic power station market demand in the forecast period. Also, the government is investing significantly in the renewable sector and supporting domestic manufacturers through different policy measures, creating market growth opportunities for market players. The renewable sector has received a cumulative FDI of USD 8 billion in India from 2014 through 2021.

Advancements in solar energy technologies have supported the global market growth. Innovations in photovoltaic power stations have evolved into a major source of energy as it results in cost savings. In addition, solar power stations can produce power in any climate, have low maintenance costs, can reduce electricity bills, reduce carbon emissions, and improve home value are a few drivers driving the global photovoltaic power stations market growth in the forecast period. Furthermore, key participants in the global market are receiving orders, which increases their revenue.

For instance, in May 2024, Vikram Solar Limited announced that it had received a supply order of 250 MW modules from Gujarat Industries Power Company Ltd. to be installed at a renewable energy park near Khavda, Gujarat.

Significant Technological Advancements Drive Market Demand

The technological advancement in solar power plants resulted in greater electricity production and improved efficiency. Innovations in the designs enable them to use reflected sunlight from different surfaces to produce electricity effectively. The advancement in bifacial solar panel technology has contributed to their increasing market share in the global photovoltaic power stations market as it is helpful in cost reduction, improved efficiency, clean energy, and environmental benefits. The continuous advancement in manufacturing techniques and raw materials can produce energy from diffuse and make them appropriate for locations with low-light and cloudy conditions. The development of lightweight and flexible solar panels has transformed the usage of renewable energy and reformed its incorporation daily. These factors drive the global photovoltaic power stations market demand and creating new market growth opportunities for market players in the forecast period. In addition, key companies in the market are contracting with each other to address the rising demand for clean energy solutions.

For instance, in April 2024, Waaree Energies Limited signed a contract with Gujarat Industries Power Company Limited to provide solar PV modules integrating advanced bifacial technology for the 2,375 MW RE Park near Vill. Khavda, Gujarat.

Growing Requirement for Electricity Propels Market Growth

In emerging countries, the rate of power consumption is rising significantly due to economic development, boasting manufacturing sector, and an increase in population, which further propels the growth of the global photovoltaic power stations market. Expansion and infrastructure development and change in the living standards of individuals in developing countries are observing a surge in electricity demand. As the demand for electricity increases globally, different countries are improving their power generation capacity by either expanding prevailing facilities or constructing new plants. Governments globally have implemented strict carbon emission regulations, resulting in an increasing emphasis on the renewable energy sector, especially photovoltaic power stations. This shift is projected to accelerate market growth in the forecast period.

For instance, in September 2022, the Government of India approved the Ministry of New & Renewable Energy's proposal to implement the Production Linked Incentive Scheme on the 'National Programme on High-Efficiency Solar PV Modules' to accomplish a GW-scale capacity in High-Efficiency Solar PV modules with an expenditure of USD 23.3 million. Government Regulations and Favorable Regulatory Reforms Push Market Growth

The rising environmental awareness concerning greenhouse gas emissions and carbon emissions, coupled with global warming, has led to a significant increase in the demand for photovoltaic power stations. This surge in demand is a clear indication of the global need for sustainable energy resources. The growth of the global market is further bolstered by the rising installation of solar panels, a trend driven by the provision of government incentives and tax rebates. These incentives, along with favorable government measures, have fostered market growth. The government measures, which aim at decreasing dependency on fossil fuels and controlling environmental pollution, are a testament to the urgency and importance of the market growth. Furthermore, the regulations for decreasing the carbon footprint and the increasing demand for cost-effective energy generation are projected to drive the photovoltaic power stations market growth.

For instance, in February 2024, the European Union planned a major surge in solar PV capacity from 263 GW to nearly 600 GW by 2030. Europe implemented this to be able to contribute to eco-friendly economic growth.

Commercial Segment Dominates with the Largest Market Share by Application

The commercial segment holds the largest revenue share in the global photovoltaic power station market due to technological innovations in the photovoltaic technology to be utilized in power generation in the aerospace and defense industry, telecommunication, and industrial segments. In the aerospace and defense industry, the technology of photovoltaic is significantly utilized to generate electricity at a low cost and make a sustainable environment. In addition, in emerging countries, governments across the globe are increasing investments in different research and development activities to improve the civil and military purposes of photovoltaic power stations. Also, the continuous advancement in telecommunication technologies including 5G and 4G, drives the demand for photovoltaic power stations to maintain sustainability. Key companies in the market are promoting solar power plants for commercial operations.

For instance, in November 2022, Canadian Solar Inc. announced its Japan flagship mega project, located across the Fukushima Prefecture. The 100 MWp Azuma Kofuji solar project is powered by a Canadian Solar high-efficiency HiKu module to continue developing the business sustainably and responsibly.

Asia-Pacific Dominates with the Largest Market Size

Asia-Pacific registered the highest market growth due to an increase in population, a rise in installation of power plants, and

significant economic development. India is projected to dominate the photovoltaic power station as India has the world's largest solar park, which can produce 2,245 MW of electricity alone. This plant in India, named Bhadla Solar Park, is enough to produce power for 1.3 million homes. In addition, strict government rules and regulations over carbon emissions and increased awareness concerning sustainable environment drive the demand for photovoltaic power stations in Asia-Pacific. Key participants in the global market are investing in different renewable energy projects to produce power for the industrial and commercial sectors. For instance, in May 2024, Serentica Renewables India Private Limited announced an investment of USD 3.59 billion to target 10 GW capacity by 2027, primarily aiming at the commercial and industrial sectors.

Future Market Scenario (2024-2031F)

- Rapid urbanization and economic development, coupled with an increase in the installation of solar power plants, are propelling the global photovoltaic power plants market growth.
- Different initiatives and favorable policies launched by the legal authorities of emerging countries promote the usage of solar energy, further increasing the global photovoltaic power plant market demand.
- Significant technological advancements in photovoltaic power plants are driving solar panel sales and the growth of the global market.
- The negative effects of greenhouse gas emissions and growing awareness about global climate change are majorly attributed to the market growth in the forecast period.

Key Players Landscape and Outlook

Companies in the global photovoltaic power station market are significantly investing in different research and development activities to expand the product portfolio. Key market players are working on enhancing the functioning of photovoltaic power stations to address the rising demand for power generation. In addition, companies are adopting different market growth strategies, including joint ventures, new product launches, partnerships, collaboration, and others to expand their footprint.

In February 2024, BayWa r.e. AG announced the partnership with 3E NV/SA to choose the SaaS platform SynaptiQ by 3E as the new PV monitoring and analytics system for all its strategic PV and battery energy storage systems assets.

In June 2023, Cleantech Energy Corporation Pte Ltd announced the expansion of its regional partnership with Etika Group of Companies in Indonesia and Malaysia with rooftop solar PV projects totaling 3.4 MWp.

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