

Smart Solar Solutions - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Smart Solar Solutions Market is expected to register a CAGR of 14.8% during the forecast period.

Key Highlights

- The increase in urban population worldwide has created an increase in resource demand. The depletion of natural resources is making organizations innovate to utilize alternative resources to extract energy for the necessities of life. Further, government subsidies and increasing conversion efficiency drive the market's growth.
- Smart solar solutions help users reduce their electricity expenses and increase the efficiency of solar components by monitoring and communicating in real time. Traditional power generation techniques depend a lot on non-renewable energy sources and generate a lot of pollution. The limited supply of these resources triggered the need for renewable energy sources.
- Moreover, increasing power tariffs and government subsidies on solar power drive the smart solar solutions market. In addition, various trends, such as the proliferation of smart cities and growth in green energy initiatives, further spur the demand for smart solar solutions in developed as well as developing economies.
- Decreasing installation costs of solar photovoltaics (PVs) has led to the proliferation in the adoption of smart solar solutions for better efficiency and monitoring in real-time. For instance, according to the data from International Renewable Energy Agency (IRENA), the average installed cost of solar photovoltaics worldwide declined from USD 4,808 per kW in 2010 to USD 857 per kW in 2021.
- Moreover, renewable energy sources play a vital role in the energy sector due to the depletion of fossil fuels in the world. Solar power is emerging as a preferred solution to fulfill ever-increasing consumer demand and the need for a more reliable and low-cost energy supply. Market vendors in smart solar solutions are further making significant strides in integrating advanced technologies such as cloud-based offerings, Internet of Things (IoT), artificial intelligence (AI), and machine learning (ML), which is further expected to grow the demand for smart solar solutions in commercial, industrial, and residential applications.

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- Owing to the closure of various commercial and industrial sector businesses due to COVID-19 led to a significant fall in demand for smart solar solutions. On the other hand, with global activities returning to normal, the global market of smart solar is expected to grow considerably during the forecast period.

Smart Solar Solutions Market Trends

Government Subsidies on Solar Power to Drive the Market Growth

- The ever-growing energy demand from residential, commercial, and industrial end users and depleting natural resources have resulted in the need to control energy consumption and switch to more efficient and cleaner energy generation sources. Governments worldwide are introducing favorable policies and subsidies for deploying renewable power sources such as solar and wind power.
- Governments around the world are looking for cost-effective solutions. They are encouraging the public by giving subsidies and shifting to green solutions, pushing the adoption of smart solar solutions. For instance, several policy measures were set in place by the Ministry of New and Renewable Energy (MNRE) to support achieving India's 2022 solar goals.
- An amendment was made to the National Tariff Policy (NTP) to include provisions for renewable generation obligations (RGOs) and renewable purchase obligations (RPOs). The policy requires state-owned power distribution companies to purchase 8% of their energy from solar by 2022. It mandates thermal power plant operators to have a certain amount of renewable components in any newly installed capacity.
- The Chinese solar power industry has been the fastest-growing market for the past few years. China has taken giant strides in solar technology and manufacturing due to several policy changes and incentives. Even though it continues to use conventional energy as a major source in its energy mix, the country's role as a major producer of renewable energy cannot be underestimated. Further, under its climate pledge, the country aims to have 1,200 GW of solar power and wind capacity by 2030. Such developments further spur the market's growth.
- For instance, according to the data from China Electronics Corporation (CEC) and China Energy Portal (CEP), China's cumulative installed solar power capacity increased from 43.18 GW in 2015 to 306.56 GW in 2021. Moreover, according to the National Energy Administration (NEA) data, China installed 87.4 GW of solar in 2022.

Asia-Pacific to Witness a Significant Growth Rate Over the Forecast Period

- Smart solar solutions are gaining momentum extensively in Asia-Pacific. Many nations in this region consider smart solar solutions as a middle-out innovation growth. In addition, various government initiatives coupled with subsidies on solar power are analyzed to influence the market growth in the coming years.
- With the focus of the energy industry shifting toward renewable energy sources, the solar industry is witnessing increased demand from this region, as favorable policies like the feed-in tariff (FIT) scheme in Japan have shown in the recent past. Growing grid automation and demand response investments in Japan, India, and South Korea are helping this industry progress.
- Further, countries like China and India are significantly speeding up renewable installations such as solar and wind power to reach climate targets. Such developments are expected to boost these countries' demand for smart solar solutions. For instance, according to the data from China's National Energy Administration (NEA), installed solar capacity in China reached 360 GW at the end of October 2022, a 29% increase year-on-year. China's cumulative additions for the first ten months of 2022 were 58.2 GW, deploying more than 5.6 GW solar in October.
- Moreover, market vendors in the region are developing innovative solutions to upgrade the legacy solar system into smart solar systems, thus positively influencing the market's growth in the Asia-Pacific region. For instance, in June 2022, Servotech Power

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Systems developed a solar performance monitoring and controlling device called ComPort. The device will identify defects, issue notifications, diagnose issues and suggest operation and maintenance tasks. Further, the device can be integrated into any domestic hybrid/off-grid solar system and turn it into a smart solar system.

Smart Solar Solutions Industry Overview

The smart solar solutions market is highly fragmented, with many niche players and industry leaders like Siemens AG, ABB Ltd, General Electric, and Schneider Electric SE occupying the market share. The trend in the solar software space is towards fragmentation as companies are looking for multiple tailored solutions to their specific challenges instead of technology solutions that can do multiple things simultaneously.

In January 2023, Itron, Inc. extended its distributed intelligence (DI) platform to enable intelligence in any device, accelerating the energy transition. The company unveiled its new DI network interface card (NIC) that enables edge computing in third-party devices, moving grid analysis, decision-making, and control to the grid's edge, resulting in a significant improvement in time to action, greatly improved situational awareness, more accurate analysis, and advanced event detection. The first-of-its-kind DI NIC will be pivotal in creating new applications for integrating distributed energy resources, such as electric vehicles and solar, into the low-voltage network.

In December 2022, Nextracker, the leading global provider of intelligent solar tracker and software solutions, signed a master supply agreement (MSA) with Amara Raja Power Systems Limited to deliver its award-winning solar trackers for National Thermal Power Corporation (NTPC) Limited's Nokh Solar Project - soon to be one of India's largest solar parks.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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