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India Solar Inverter Market By Type (Central Inverter, String Inverter and Micro Inverter), By Connection Type (On-Grid and Off-Grid), By Phase (Single Phase and Three Phase), By End User (Residential, Commercial, Industrial and Utilities), By Region, Competition Forecast & Opportunities, 2018- 2028F

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Abstracts

India solar inverter market is expected grow during the forecast period due to rapid growth in installation of off-grid solar systems, growing demand for electricity from green and clean energy sources, increasing demand from rural area, rising government investment and policies to promote solar systems, etc. For instance, investment in renewable energy hit record levels in India in the 2021-22. A total of USD14.5 billion were invested in renewable energy, up by 125% compared with financial year 2020-21 and 72% higher than in the pre-pandemic period of the 2019-20 financial year. Additionally, in the Union Budget 2022-23, the government allocated USD 2.57 billion for a PLI scheme to boost manufacturing of high-efficiency solar modules.

An electrical converter known as a solar inverter converts the direct current (DC) electricity generated by solar panels into alternating current (AC), the regular flow of electricity needed for household appliances and electrical circuits. It enables the conversion of direct current (DC) into alternating current (AC), making the energy usable for a wide range of residential, commercial, as well as industrial applications, such as powering various instruments ranging from large industrial equipment to common home appliances like refrigerators, televisions, and microwaves.

India Solar Inverter Market: Drivers

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Rapid Growth in Installing Off-Grid Solar Systems- An off grid solar system is in great demand in India as it enables consumers to be power independent and self-reliant of the power grid and avoid facing power outages owing to shutdowns and grid failures. Moreover, remote locations with little or no electricity have been the main application areas for off-grid solar systems. These solar systems are necessary for farms, food processing mills, and other commercial and industrial locations that are away from main roads to reduce and optimize grid electricity use. Further, with the appropriate government initiatives such as Make in India and the entrepreneurial wave that has sparked innovations across the country, it is believed that 85% power from renewable energy can be reached by 2050, which positively augment the India solar inverter market in coming years.

Growing Demand for Electricity from Green and Clean Energy Sources- Electricity demand in India continues to grow exponentially, and the government wants to boost renewable energy generation capacity to partly meet the increasing demand. As a result, solar power is a cheap, clean, modular and flexible energy source. It is currently one of the cheapest renewable energies. Rooftop solar power system along with solar inverters, is one of the worthwhile investments when considering its long-term use. Millions of commercial and residential buildings in India have rooftops that receive plenty of sunlight and can be easily used to generate electricity by installing solar panels. Solar energy, as one of the most prominent sources of green and renewable energy, has the potential to play a critical role in meeting the soaring demand for rising electricity bills while maintaining environmental safety. Making it highly profitable and sustainable.

India Solar Inverter Market: Challenges

Solar Inverter Overheating Issue- The temperature within the inverter is the most crucial element affecting its lifespan. Several internal electrical components in solar inverters are vulnerable to temperature fluctuations. As a result, putting solar power inverter without ventilation or in direct sunlight might soon cause it to overheat. Therefore, solar inverter overheating issue can hamper the growth of the India solar inverter market during the forecast period.

High Maintenance- It is essential to frequently inspect them to make sure that no dust or debris have gathered. This will stop vents, heat sinks, and electrical parts from getting blocked or damaged. Making room for solar inverters is also essential since they need ventilation to prevent overheating. It is advisable to thoroughly inspect the inverter every few months, which should reduce the necessity for solar inverters.

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Solar Sector Initiatives from the Indian Government:

Solar inverters are necessary for every solar panel system to operate properly since batteries and solar panels need a DC to function. Installed solar producing capacity has rapidly increased in recent years, along with improvements in cost, performance, and technology. Yet, in order to increase solar power at a reduced cost, government support and encouragement in the form of projects and programs are required. The Jawaharlal Nehru National Solar Mission, rooftop programs, solar park programs, VGF (Viability Gap Funding) programs, government yojana solar energy subsidy programs, and UDAY programs are just a few of the top government initiatives the government has taken in the solar sector to encourage more and more people and businesses to go solar and 100% renewable. So, it is anticipated that the Indian solar inverter market will grow as a result of the government of India's solar projects and programs.

India Solar Inverter Market: Technology Trends

Since inverters are an essential component of a solar PV system and convert the DC electricity generated by solar panels into AC, which may be consumed in homes and businesses or provided to the grid, the rise in solar PV installations has also caused a stir in the India solar inverter industry. The creation of smart modules, or those that are integrated with power optimizers, is thus a major trend in the solar inverter industry. These are known as AC modules when solar modules and microinverters are combined. Both smart and AC modules are integrated at the manufacturing stage itself to bring down costs, reduce the time required for project installations and offer better power quality. However, the uptake of such technologies, which are considered premium products, is restricted to the residential, commercial and industrial segments, and it may take a long time for them to be accepted for utility installations due to the large size of utility projects.

In addition, smart hybrid inverters are being developed to bring in more flexibility and automate the management of energy supply from different sources like solar PV, grid and batteries. These inverters can work both on-grid and off-grid. They ensure negligible loss of energy as they store energy in batteries when the production of solar energy is greater than the consumption and give the option to choose when to store energy in batteries and when to provide it to the grid. In this way, they work as hybrid inverters, that is, they can work both on-grid and off-grid at the same time, as well as provide backup. These inverters can be deployed by residential rooftop owners to leverage net metering benefits and ensure uninterrupted quality power supply in their

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houses. Smart inverters will pave the way for future intelligent inverters.

Further, many large companies are investing in the development of large modular centralised solutions with much smaller central inverter blocks. This would maximize redundancy and increase flexibility. Another emerging trend in the inverter space is the development of virtual central inverters, which are a combination of string inverters and modular central inverters. A virtual central inverter consists of a number of strings in a large, containerized solution. This offers better control, as in the case of central inverters, while retaining the flexibility of string inverters. Hence, due to these technology trends, the India solar inverter market is expected to increase during the forecast period.

Market Segments

India solar inverter market is segmented into type, connection type, phase, end user, region and competitive landscape. Based on type, the market is segmented into central inverter, string inverter, and micro inverter. Based on connection type, the market is segmented into on-grid and off-grid. Based on phase, the market is segmented into single phase and three phase. Based on end user, the market is segmented into residential, commercial, industrial, utilities. Based on region, the market is segmented into south, north, west, east.

Market Players

Major market players in the India solar inverter market are Lento Industries Pvt. Ltd., Microtek, Delta Electronics, Inc., Sungrow Power Supply Co., Ltd., Asea Brown Boveri, Hitachi Hi-Rel Power Electronics Private Limited, Huawei Technologies Co., Ltd., Sineng Electric Co., Ltd., Luminous Power Technologies, Kehua Data Co., Ltd.

Report Scope:

In this report, India solar inverter market has been segmented into following categories, in addition to the industry trends which have also been detailed below:

India Solar Inverter Market, By Type:

Central Inverter

String Inverter

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Micro Inverter

India Solar Inverter Market, By Connection Type:

On-Grid

Off-Grid

India Solar Inverter Market, By Phase:

Single Phase

Three Phase

India Solar Inverter Market, By End User:

Residential

Commercial

Industrial

Utilities

India Solar Inverter Market, By Region:

South

North

West

East

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in India Solar

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Inverter Market

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Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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(Note: The companies list can be customized based on the client requirements.)

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