India Grid-Forming Inverters Market Assessment, By Operating Mode [Droop Control, Hierarchical Control, Virtual Synchronous], By Power Rating [Below 50 KW, 50-100 KW, Above 100 KW], By Application [Microgrids, Large Scale Grids, Renewable Energy Integration, Energy Storage Systems], By Region, Opportunities and Forecast, FY2019-FY2033F

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Report description:

India grid-forming inverters market is projected to witness a CAGR of 9.87% during the forecast period FY2026- FY2033F, growing from USD 78.18 million in FY2025 to USD 166.02 million in FY2033. The grid-forming inverter market has experienced significant growth in recent years due to the growing penetration of renewable energy in the energy mix which necessitates the deployment of technologies which could provide synthetic inertia and fast frequency response to maintain grid reliability. In addition, the Indian government is prioritizing establishing green energy corridors and grid modernization investment which would support the growth of advanced inverters that can manage power fluctuations and enhance grid resilience, thereby creating a grid-forming inverter market opportunity in the coming years. Moreover, grid-forming inverters help in integrating and transmitting of renewable energy in the battery energy systems which drive its demand in the market.
Furthermore, rising adoption of decentralized energy systems and rising solar-plus-storage microgrids and hybrid projects driving the demand for efficient grid-forming inverter solutions in the market. In addition, rising government initiatives such as Smart Cities Mission and large-scale solar projects in several states further highlight the growing demand for grid-forming inverters. Additionally, rising investment in the energy storage plant further boosts the integration of grid-forming inverters in the market. As of March 2025, India's installed renewable capacity reached to 220.10 GW, which comprises of both solar and wind energy. With the government incentives and sustainable goal, India is scaling up the solar and wind capacity at a rapid rate. This development will increase the demand of grid-forming inverters in the market.
Inclination Towards Urbanization and Smart Cities Propelling the Market Growth

With the rise in urbanization in the country, a corresponding rise in energy demand is expected in the coming years. The country is encountering population growth, industrialization, and commercialization which is resulting in excessive usage of renewable energy. Additionally, increasing energy demands, decarbonization targets, and the demand for resilient power infrastructure caused the increasing need for utility grid-forming inverters. Grid-forming inverters help deal with the enhanced requirement by feeding supplied energy stored up and maintaining an assured supply power. Additionally, the country is looking to upgrade grids which could tolerate variance linked to green energy resources and maintain stable supply power against poor or weak grid conditions.

Smart city development entails the integration of innovative technology into power infrastructure to make the sector more efficient and sustainable. IoT-enabled smart inverter innovations improve real-time grid management, which is in line with the digital transformation of smart cities. The grid-forming inverters also facilitate improved energy resource management, enhance demand response, and facilitate electric vehicle (EV) charging infrastructure in the nation. Grid-forming inverter integration into the utility system is important to help meet the aims of smart city projects, therefore increasing its demand in the market. Moreover, large utility companies in the country are looking to invest in renewable energy generation which boosts the demand for grid forming inverters in the market.

For instance, in February 2025, Indian state-owned power company National Thermal Power Corporation (NTPC) announced its plan to invest around USD 23.07 billion in renewable energy projects such as solar, wind, pumped hydro, and other carbon-neutral sectors in Madhya Pradesh. This development highlights the rising investment in renewable energy which drive the demand for grid-forming inverters in the market.

Rapid Growth of Renewable Energy Integration Creates Market Opportunity

The growing investment towards renewable energy integration projects in India creates an opportunity for grid-forming inverter market growth. The country is looking to increase the share of renewable energy in the energy mix and create ambitious clean energy targets which drive the demand for grid-forming inverters in the energy sector. Innovative technologies are required for proper integration of renewable energy sources in the grid which could increase the efficiency of the grid. Grid-forming inverters assist in the integration of renewable energy sources in the grid and help in overcoming the issues related to unstable voltage and frequency of the renewable energy sources.

In addition, the country is looking for the adoption of decentralized renewable energy systems such as solar and hybrid renewable energy projects with battery storage, which will increase the demand for grid-forming inverters market size in the forecast period. In addition, the Indian government is investing in new renewable energy power plants and modernizing the grid infrastructure which supports the growth of grid-forming inverters, thereby creating market opportunity in the coming years. Moreover, grid-forming inverters will play a significant role in integrating battery systems with renewables which creates upward momentum in the market.

For instance, as of June 2024, India was gearing up for a major investment influx in the energy storage and advanced battery sector with over USD 232 million expected channelized into various smart projects thereby driving the demand for grid-forming inverters in the coming years.

Droop Control to Dominate the India Market

The droop control segment experienced a high adoption rate in the forecast period due to rising investment in the energy control system which makes the segment dominate the market. The droop control is able to regulate grid voltage and frequency which makes the technology essential for managing and integrating renewable energy sources into the electric grid. Furthermore, the increasing penetration of intermittent renewable energy sources in the energy sector has created a need for technologies in the forecast period. The rise of decentralized energy systems and microgrids, especially in regions with weak or underdeveloped grids which require a grid for maintaining stability and reliability thus creating the opportunity for droop control grid-forming inverters in the market.

Furthermore, droop control is a well-established method with extensive field validation in multi-inverter setups. Droop control allows seamless integration with existing grid infrastructure which drives its demand in the market.

West and Central Region Leads the Grid-Forming Inverters Market Share in India

In India, the west and central region is dominating the renewable projects, which led to the dominance of west and central region in the grid-Forming inverter market. The is high penetration of the solar projects in the region which makes it ideal for renewable

energy generation. States like Rajasthan, Gujarat and Maharashtra are contributing the highest due to the high solar project setup. Furthermore, the state governments provide various incentives such as subsidies, tax incentives, and net metering policies which increase the economic feasibility of solar installations in the region. In addition, western India has witnessed high investment in utility-scale solar projects like the Rajasthan-based Bhadla Solar Park and solar farms in Gujarat. Grid-forming inverters are necessary in these large-scale applications to ensure a stable power supply and grid connection.
For instance, in January 2024, Asian Development Bank (ADB) and SAEL industries Limited has signed a loan of USD 147 million for the development of 400-megwatt solar power plant in Gujarat. The investment is made through the subsidiary and support the country's aim towards the clean energy and carbon emission target.
Future Market Scenario (FY2026 - FY2033F)
-The push towards advanced solar and wind technologies is significant trend which drives the demand for the grid-forming inverters market.
-Government policies aimed at promoting renewable energy production are set to boost the demand for grid-forming inverters in the country.
-Integration of renewable energy sources in large-scale power plants creates the opportunity for grid-forming inverters market growth in coming years.
-Grid-forming inverters align with government goals regarding energy efficiency and sustainability energy policies which drive its market in the forecast period.
Key Players Landscape and Outlook
Continuous innovation characterizes the landscape of grid-forming inverters, as the companies compete in terms of energy efficiency, product life, and unique features. The market outlook remains positive, owing to increased demand for the integration of renewable energy and automation in the industrial sector. Grid-Forming Inverters players are concerned with supply chain resilience, energy efficiency, and environmental practices, which will define the industry's future. Product launches, agreements, business expansions, collaborations, and developing technologies are projected to increase competition in the fast-paced market.

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