

Grid-forming Inverter Market by Power Rating (Below 50 KW, 50-100 KW, Above 100 KW), Voltage (100-300 V, 300-500 V, Above 500 V), Type (Micro Inverters, String Inverters, Central Inverters), Application & Region - Global Forecast to 2028

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Abstracts

The global grid-forming inverter market is estimated to grow from USD 1,042 million by 2028 from an estimated of USD 680 million in 2023; it is expected to record a CAGR of 8.9% during the forecast period. The grid-forming inverters play a vital role in effectively managing the large influx of renewable energy and ensuring grid stability.

"Above 100 KW: The second largest- growing segment of the grid-forming inverter market"

Based on by power rating of grid-forming inverter , the above 100 KW segment is estimated to be the second largest-growing market from 2023 to 2028. Above 100 kW grid-forming inverters provide grid stability and resilience by offering grid support services, such as frequency regulation, voltage control, and reactive power compensation. These services are especially critical in regions with high renewable energy integration.

"String Inverters: The second largest segment by standard in grid-forming inverter market"

The string inverters segment, by type, is projected to hold the second largest market size during the forecast period. String inverters are generally more cost-effective than central inverters for smaller-scale solar PV installations. They offer a good balance between performance and affordability, making them an attractive choice for residential



and small commercial projects. The installation and maintenance of string gridforming inverters are relatively straightforward, and they typically have lower maintenance requirements compared to more complex central grid-forming inverters.

"Wind Power Plants: The second largest segment by application in grid-forming inverter market"

The wind power plants segment, by application is projected to hold the second largest market size during the forecast period. Grid-forming inverters are increasingly being utilized in wind power plants to support grid stability and enhance the integration of wind energy into the electricity grid. These specialized inverters play a crucial role in creating and maintaining a stable grid environment, allowing wind power plants to operate in grid-forming mode rather than relying solely on the stability of the existing grid.

"North America: The second fastest-growing region in grid-forming inverter market"

North America is estimated to hold the second fastest market share in the grid-forming inverter market. The increasing focus on grid resilience and preparedness for natural disasters is leading to a greater interest in microgrid solutions that incorporate grid-forming inverters. The interest in microgrids is rising in North America, particularly for critical facilities, military bases, and remote communities. Grid-forming inverters are vital components of microgrids, allowing them to operate autonomously or in coordination with the main grid.

Breakdown of Primaries:

In-depth interviews have been conducted with various key industry participants, subjectmatter experts, C-level executives of key market players, and industry consultants, among other experts, to obtain and verify critical qualitative and quantitative information, as well as to assess future market prospects. The distribution of primary interviews is as follows:

By Company Type: Tier 1- 35%, Tier 2- 45%, and Tier 3- 20%

By Designation: C-Level- 35%, Director Levels- 25%, and Others- 40%

By Region: North America- 40%, Asia Pacific- 30%, Europe- 20%, the Middle East & Africa- 5%, and South America- 5%



Note: Others include product engineers, product specialists, and engineering leads.

Note: The tiers of the companies are defined on the basis of their total revenues as of 2021. Tier 1: > USD 1 billion, Tier 2: From USD 500 million to USD 1 billion, and Tier 3: The grid-forming inverter market is dominated by a few major players that have a wide regional presence. The leading players in the grid-forming inverter market are Huawei Technologies Co. Ltd. (China), General Electric (US), SMA Solar Technology (Germany), Games Electric (Spain) and FIMER Group (Italy).

Research Coverage:

The report defines, describes, and forecasts the global grid-forming market, by power rating, voltage, type, application, and region. It also offers a detailed qualitative and quantitative analysis of the market. The report provides a comprehensive review of the major market drivers, restraints, opportunities, and challenges. It also covers various important aspects of the market. These include an analysis of the competitive landscape, market dynamics, market estimates, in terms of value, and future trends in the grid-forming inverter market.

Key Benefits of Buying the Report

Renewable energy sources, such as solar and wind, are intermittent, meaning they do not always produce power at the same rate. This can cause problems for the grid, leading to voltage fluctuations and frequency instability. Grid-forming inverters can help mitigate these problems by actively controlling the grid voltage and frequency. Grid-forming inverters are typically more expensive than grid-following inverters because of the extra complexity. The additional cost of grid-forming inverters is justified by the benefits they offer, such as improved stability and reliability of the grid and reduced cost of renewable energy integration.

Product Development/ Innovation: Advanced control algorithms are being used to improve the dynamic response of grid-forming inverters. This means that they can respond more quickly to changes in the grid voltage and frequency, which can help improve the stability of the grid. Improved communication protocols are being developed to allow grid-forming inverters to communicate more effectively with each other and the grid.

Market Development: The growing adoption of electric vehicles (EVs) is



increasing demand for smart charging solutions and grid integration technologies, where grid-forming inverters can play a role. rid-forming inverters can be combined with energy storage systems to enable efficient energy management and enhance grid stability. The growth of energy storage projects further drives the demand for these inverters.

Market Diversification: This strategy aims to explore new opportunities, reduce reliance on a single market segment, and spread business risks across multiple sectors. Expanding grid-forming inverter applications to residential and commercial microgrids can provide localized energy solutions and improve energy resiliency. As utilities and grid operators invest in smart grid technologies and grid modernization initiatives, grid-forming inverters can play a crucial role in enhancing grid stability and flexibility.

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players like Huawei Technologies Co. Ltd. (China), General Electric (US), SMA Solar Technology (Germany), Games Electric (Spain) and FIMER Group (Italy)





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