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Global Grid Forming Inverter Market Size Study & Forecast (By Type – Micro-Inverter, String-Inverter, Central-Inverter; By Power Rating – Below 10 kW, 10–50 kW, 50–100 kW, Above 100 kW; By Application – Solar PV Plant, Wind Power Plant, Energy Storage System) and Regional Forecasts 2025-2035

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Abstracts

The Global Grid Forming Inverter Market, valued at approximately USD 788.50 million in 2024, is projected to expand at a compelling CAGR of 9.10% through the forecast window of 2025–2035. As renewable energy infrastructure accelerates worldwide, grid-forming inverters have emerged as crucial enablers of next-generation power systems capable of autonomously establishing grid conditions, stabilizing frequency, and maintaining voltage. Unlike traditional grid-following systems, these advanced inverters create their own reference signals, allowing renewable plants—particularly those operating in weak or remote grids—to function with greater resilience and operational continuity. The market's upward trajectory is shaped by intensifying global decarbonization efforts, rapid adoption of solar and wind technologies, and massive investments flowing into grid modernization initiatives across industrial and emerging economies.

A sharp rise in renewable power capacity additions has amplified the demand for grid-forming inverters, which are increasingly being mandated to enhance system strength and prevent outages arising from inverter-based resource intermittency. With solar and wind plants continuing to outpace fossil-fuel power expansion, grid-forming technologies are being integrated to stabilize real-time power flows, reduce curtailment, and streamline hybrid power-plus-storage operations. According to multiple industry trackers, global renewable capacity additions continued breaking annual records in

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2023 and 2024, driven by unprecedented solar uptake and wide-scale deployment of utility-scale battery storage. As energy systems transition from synchronous to inverter-dominated grids, sophisticated control algorithms and advanced power electronics embedded in grid-forming inverters are unlocking new commercial opportunities. Yet, the market's long-term expansion faces headwinds from fragmented policy landscapes and the ongoing cost pressures associated with high-precision power electronics manufacturing.

The detailed segments and sub-segments included in the report are:

By Type:

Micro-Inverter

String-Inverter

Central-Inverter

By Power Rating:

Below 10 kW

10–50 kW

50–100 kW

Above 100 kW

By Application:

Solar PV Plant

Wind Power Plant

Energy Storage System

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By Region:

North America

- U.S.
- Canada

Europe

- UK
- Germany
- France
- Spain
- Italy
- Rest of Europe

Asia Pacific

- China
- India
- Japan
- Australia
- South Korea
- Rest of Asia Pacific

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Latin America

Brazil

Mexico

Middle East & Africa

UAE

Saudi Arabia

South Africa

Rest of Middle East & Africa

Micro-inverters are expected to dominate the market landscape due to their exceptional modularity, heightened safety profile, and ability to optimize power output on a per-module basis—an advantage increasingly prized in distributed solar installations. Their granular control and simplified installation processes have propelled widespread adoption, particularly across residential and small commercial sectors that require fine-tuned system efficiency and rapid fault detection. At the same time, string inverters continue to maintain strong utility-scale relevance, while central inverters are anticipated to gain momentum in large renewable complexes where grid-forming capabilities are being mandated to reduce systemic instability. The micro-inverter segment ultimately stands out as the commanding force, supported by intensified rooftop solar penetration and regulatory incentives that prioritize smart, flexible, and high-resilience energy architecture.

In terms of revenue contribution, central inverters currently lead the market owing to their broad deployment in large-scale solar parks, expansive wind installations, and high-capacity energy storage systems that demand robust power conversion and wide-area grid-support functionalities. Their ability to handle substantial power loads, coupled with ongoing engineering advances that enhance harmonic correction and autonomous islanding capabilities, has enabled central inverters to secure the highest revenue share. Meanwhile, string inverters—also benefiting from favorable cost-to-performance ratios—are positioned as the fastest-growing segment, especially within the commercial

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and emerging utility markets. This dynamic creates a landscape where central inverters dominate from a revenue standpoint, even as decentralized designs rise in adoption across distributed energy ecosystems.

The market's regional outlook reveals strong performance across developed and emerging economies. North America retained a commanding share in 2024, backed by expansive solar and wind rollouts, advanced grid resilience programs, and aggressive federal incentives aimed at stabilizing power networks amid rising climate-driven disruptions. Europe also remains a pivotal growth hub, powered by its stringent carbon neutrality mandates and substantial investments in inverter-based grid-support technologies. However, the Asia Pacific region is forecast to register the fastest growth rate, propelled by soaring electricity consumption, large-scale renewable diversification in China and India, and accelerated deployment of battery-integrated renewable plants. Latin America and the Middle East & Africa are likewise expected to gain traction as energy security initiatives and utility decarbonization policies create fertile ground for grid-forming inverter integration.

Major market players included in this report are:

ABB Ltd.

Siemens AG

Huawei Technologies Co., Ltd.

SMA Solar Technology AG

Hitachi Energy

Eaton Corporation

General Electric

Delta Electronics

Sungrow Power Supply Co., Ltd.

Schneider Electric

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Omron Corporation

Mitsubishi Electric Corporation

Toshiba Energy Systems

Enphase Energy

SolarEdge Technologies

Global Grid Forming Inverter Market Report Scope:

Historical Data – 2023, 2024

Base Year for Estimation – 2024

Forecast period – 2025–2035

Report Coverage – Revenue forecast, Company Ranking, Competitive Landscape, Growth Factors, and Trends

Regional Scope – North America; Europe; Asia Pacific; Latin America; Middle East & Africa

Customization Scope – Free report customization (equivalent to up to 8 analysts' working hours) with purchase. Addition or alteration to country, regional & segment scope*

The objective of the study is to define market sizes of different segments and countries in recent years and to project growth trajectories over the coming decade. This report blends quantitative measurements with qualitative insights to equip stakeholders with a multidimensional understanding of market forces shaping the global Grid Forming Inverter landscape. It evaluates prevailing drivers, industry challenges, and emerging opportunities across micro-markets to support informed investment decisions. The analysis further examines competitive strategies, product offerings, and the evolving technological architecture defining the next phase of inverter-driven grid modernization.

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Key Takeaways:

Market Estimates & Forecast for 10 years from 2025 to 2035.

Annualized revenues and regional-level analysis for each market segment.

Detailed analysis of the geographical landscape with country-level assessment across major regions.

Competitive landscape with information on major players operating in the market.

Evaluation of key business strategies and recommendations on future market approaches.

Structural analysis of market competitiveness.

Demand-side and supply-side assessment of the overall market.

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