

Grid Scale Inverter Market Forecasts to 2034 – Global Analysis By Inverter Type (Central Inverters, String Inverters, and Modular Inverters), Power Rating, Voltage, Technology, Application, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Grid Scale Inverter Market is accounted for \$15.1 billion in 2026 and is expected to reach \$22.4 billion by 2034 growing at a CAGR of 5% during the forecast period. Grid scale inverters are power electronic devices that convert direct current (DC) electricity generated by renewable energy sources such as solar photovoltaic systems, wind turbines, and battery energy storage systems into alternating current (AC) electricity suitable for grid integration. These advanced systems provide voltage and frequency support, enabling stable grid operation in low-inertia, high-renewable environments. The market encompasses various inverter types including central inverters, string inverters, and modular inverters, catering to power ratings ranging from below 500 kW to above 5 MW. Growing utility-scale renewable energy installations, grid modernization initiatives, and the transition toward smart, digitally connected grids are key drivers of market expansion.

Market Dynamics:

Driver:

Massive expansion of utility-scale renewable energy capacity

The unprecedented global build-out of utility-scale solar and wind projects is a primary driver for the grid scale inverter market. As countries commit to ambitious renewable energy targets, utility-scale installations have become the dominant segment for inverter

demand. China's commitment to achieving 1,200 GW of cumulative solar capacity by 2030 exemplifies this trend, with utility-scale projects accounting for 65-70% of annual additions. Grid scale inverters are essential for converting the massive DC power generated by these facilities into grid-compatible AC power, and they are increasingly required to provide grid-stabilizing functions. The replacement and retrofit market for aging inverter fleets installed during the 2010–2015 period also represents a significant and growing demand driver.

Restraint:

Geopolitical trade restrictions and supply chain fragmentation

Escalating geopolitical tensions and emerging trade restrictions pose significant challenges to the grid scale inverter market. Policy measures are moving beyond trade protection into a more complicated mix of cybersecurity concerns, industrial strategy, and grid risk management. Proposed restrictions on equipment from certain manufacturing origins could affect a substantial portion of solar PV demand in major markets, creating procurement complications, system redesign requirements, and forced unbundling of integrated systems. Additionally, the lack of mutual recognition across countries means suppliers must invest in multiple certification processes, adding 6–12 months and significant costs. These geopolitical pressures create uncertainty, raise costs, and may delay project timelines.

Opportunity:

Transition to grid-forming inverter technology

The industry-wide transition from grid-following to grid-forming inverter technology presents significant opportunities for market expansion. Grid-forming inverters provide synthetic inertia and voltage support essential for maintaining grid stability in systems with high renewable penetration. This advanced technology is projected to become the standard for new utility-scale projects, driven by evolving grid codes and the need for grid stability in high-renewable environments. While currently a premium feature costing 10-30% more than conventional equivalents, grid-forming technology will become a regulatory requirement, creating substantial new market segments for advanced control hardware and software.

Threat:

Rapid technology evolution and regulatory compliance complexity

The rapid pace of technology evolution and increasing regulatory complexity pose significant threats to grid scale inverter manufacturers and project developers. The shift from 1,000 VDC to 1,500 VDC architecture for utility-scale string inverters, the emergence of silicon carbide (SiC)-based inverters, and the premium requirement for grid-forming capabilities create continuous pressure for R&D investment and product updates. Manufacturers must ensure that inverters remain usable, updateable, and policy-safe over the life of the asset. The forced unbundling of integrated battery-inverter systems presents additional design challenges. These dynamics increase product development costs and shorten product lifecycles, challenging manufacturers' ability to maintain profitability and market share.

Covid-19 Impact:

The COVID-19 pandemic had a mixed impact on the grid scale inverter market. Initial disruptions included supply chain interruptions, manufacturing slowdowns, and project delays during lockdown periods. However, the pandemic reinforced the importance of resilient energy infrastructure and accelerated renewable energy investment as governments included clean energy in economic recovery packages. The crisis highlighted supply chain vulnerabilities, leading to increased focus on regionalization and supplier diversification. Post-pandemic, the market has shown strong recovery with continued growth in utility-scale renewable installations, grid modernization, and the accelerating transition toward smart, digitally connected grid infrastructure.

The Central Inverters segment is expected to be the largest during the forecast period

The Central Inverters segment is expected to account for the largest market share during the forecast period, driven by their widespread adoption in large-scale utility and commercial installations requiring high power output and proven reliability. Central inverters are favored for their cost-effectiveness in large centralized solar farms, where they offer high efficiency and simplified maintenance compared to distributed architectures. The segment benefits from the massive scale of utility-scale solar projects globally and the established manufacturing infrastructure supporting central inverter production. As utility-scale renewable capacity continues expanding rapidly, central inverters maintain their dominant market position throughout the forecast period.

The Above 5 MW segment is expected to have the highest CAGR during the

forecast period

Over the forecast period, the Above 5 MW segment is predicted to witness the highest growth rate, fueled by the increasing scale of utility-scale solar and wind projects requiring high-capacity inverter solutions. These high-power inverters are essential for large renewable energy facilities, offering superior power density and reduced balance-of-system costs. Battery energy storage projects, where over 65% of new installations require bidirectional power conversion systems rated between 500 kW and 5 MW, are further accelerating demand in this power rating category. The trend toward larger, more efficient renewable projects and the transition to 1,500 VDC architecture favor higher-rated inverters, making this the fastest-growing power rating segment.

Region with largest share:

During the forecast period, the Asia-Pacific region is expected to hold the largest market share, supported by rapid industrialization, urbanization, and massive utility-scale renewable capacity additions. China leads the region with ambitious solar and wind targets, while India and Southeast Asian countries are rapidly expanding renewable capacity. Japan and South Korea represent mature, high-value markets with growing replacement and repowering demand. The region's large manufacturing base and strong government policy support for renewable energy create substantial opportunities for inverter deployment. With the world's largest renewable capacity additions, Asia Pacific maintains its dominant market position.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by continued renewable energy capacity expansion, grid modernization initiatives, and strong policy support for sustainable energy. China's commitment to achieving 2,000 GW of cumulative solar capacity by 2035 ensures sustained inverter demand. India's growing utility-scale solar pipeline and Southeast Asia's emerging renewable markets offer substantial growth potential. Government programs promoting domestic manufacturing and technology development are accelerating local production capabilities. As the world's fastest-growing renewable energy market, Asia Pacific delivers the fastest grid scale inverter market growth globally.

Key players in the market

Some of the key players in Grid Scale Inverter Market include Sungrow Power Supply

Co., Ltd., Huawei Technologies Co., Ltd., SMA Solar Technology AG, Sineng Electric Co., Ltd., Power Electronics S.L., TMEIC Corporation, Delta Electronics, Inc., Hitachi Energy Ltd., Siemens AG, Schneider Electric SE, GE Vernova Inc., Ingeteam S.A., Ginlong Technologies Co., Ltd. (Solis), KACO new energy GmbH, KSTAR Science and Technology Co., Ltd., Hopewind Electric Co., Ltd., FIMER S.p.A., and Advanced Energy Industries, Inc.

Key Developments:

In August 2026, Huawei unveiled its SUN2000-506KTL-H3 utility-scale smart string inverter alongside the LUTERRA-6261-25 BESS in Bangladesh, establishing active voltage and frequency regulation for national grid stabilization.

In July 2026, Sungrow secured Germany's first VDE FNN prototype certificate for grid inertia capabilities, validating its utility-scale inverters for synchronous inertia and dynamic grid-support markets.

In July 2026, Sineng Electric released its SP-510K-H 510 kW high-power string inverter, supporting block configurations above 7 MW, 1,650V DC input, and grid-forming capabilities with an SCR tolerance down to 0.93.

In June 2026, SMA Solar unveiled its Stability Enhanced DC-Coupled Hybrid Solution at The Smarter E Europe, integrating the Sunny Central Storage UP-S inverter with the Sunny Central FLEX DC-DC skid to deliver 99.5% conversion efficiency and synthetic inertia.

Inverter Types Covered:

Central Inverters

String Inverters

Modular Inverters

Power Ratings Covered:

Up to 500 kW

Above 500 kW to 1 MW

Above 1 MW to 5 MW

Above 5 MW

Voltages Covered:

Up to 1,000 V

Above 1,000 V to 1,500 V

Above 1,500 V

Technologies Covered:

Grid-Following Inverters

Grid-Forming Inverters

Grid-Forming and Grid-Following Hybrid Inverters

Applications Covered:

Solar Power Plants

Wind Power Plants

Battery Energy Storage Systems (BESS)

Hybrid Renewable Energy Plants

End Users Covered:

Utilities and Grid Operators

Independent Power Producers (IPPs)

Renewable Energy Developers

Energy Storage Developers and Operators

Industrial Power Producers and Large Energy Consumers

Other End Users

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

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