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Distributed Generation & Microgrids Market Forecasts to 2032 – Global Analysis By Component (Microgrids and Distributed Generation), Connectivity, Capacity, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Distributed Generation & Microgrids Market is accounted for $88.39 billion in 2025 and is expected to reach $228.07 billion by 2032 growing at a CAGR of 14.5% during the forecast period. Distributed Generation and microgrids are reshaping how electricity is produced and delivered, emphasizing localized energy solutions near consumers. DG systems include small-scale installations like solar arrays, wind generators, and combined heat and power units, which reduce dependence on large, centralized power networks. Microgrids are compact energy networks that can function autonomously or alongside the main grid, ensuring greater reliability and resilience during disruptions. These systems improve overall energy efficiency, decrease transmission losses, and facilitate the integration of renewable sources. By enabling flexible load management and quick adaptation to demand changes, the Distributed Generation (DG) and microgrids support sustainable, decentralized and secure energy infrastructures, playing a critical role in modern electricity networks.

According to the U.S. Department of Energy (DOE), the U.S. had over 500 operational microgrids by 2023, totaling more than 7 GW of installed capacity. These systems are increasingly deployed for resilience, renewable integration, and energy access.

Market Dynamics:

Driver:

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Increasing demand for reliable and resilient power

Rising needs for continuous and resilient electricity are fueling growth in the Distributed Generation and Microgrids sector. Aging grids, natural calamities, and frequent blackouts have stressed the importance of local power sources. Organizations and households are increasingly opting for systems that maintain operations during disruptions, which microgrids and DG technologies provide efficiently. By offering autonomous power supply, these solutions reduce reliance on centralized networks, enhance energy security, and minimize downtime. Their ability to support critical operations makes them highly valuable in regions with unreliable electricity, emphasizing the significance of resilient and self-sufficient energy infrastructures in modern power management.

Restraint:

High initial capital investment

High upfront costs pose a major challenge to the Distributed Generation and Microgrids market. Installing DG systems, solar panels, wind turbines, storage units, and control technologies demands substantial financial resources, which may deter small enterprises and households. Additional costs for integration, commissioning, and ongoing maintenance further increase the economic burden. Despite potential long-term savings in energy expenditure, the initial investment often limits adoption rates. Limited access to financing or favorable credit exacerbates the issue, restricting market expansion. As a result, financial barriers significantly hinder the broad deployment of distributed generation and microgrid solutions, especially in economically constrained regions or for small-scale consumers.

Opportunity:

Growing adoption of renewable energy

Rising renewable energy adoption offers substantial growth potential for Distributed Generation and Microgrids. Increasing emphasis on clean energy by governments, industries, and households drives demand for microgrids that integrate solar, wind, and other renewable sources efficiently. DG enables local power production, decreasing reliance on central grids and minimizing transmission losses. This supports global sustainability and carbon reduction initiatives. Moreover, advances in renewable technologies and energy storage enhance the efficiency and cost-effectiveness of

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microgrids. The worldwide shift toward decarbonization creates a robust market opportunity for distributed generation solutions, promoting resilient, eco-friendly, and sustainable energy infrastructure that aligns with modern energy goals and environmental responsibilities.

Threat:

Market competition and price pressure

High competition and pricing pressures threaten the growth of Distributed Generation and Microgrids. Traditional utility companies, alternative energy providers, and new entrants compete fiercely on cost, technology, and services. Price-sensitive consumers may opt for cheaper energy alternatives, squeezing profit margins for DG and microgrid operators. Fluctuating conventional energy prices and government subsidies can further reduce the appeal of distributed energy solutions. Companies need continuous innovation and value-added services to stay competitive. Failure to differentiate and manage costs effectively may result in loss of market share, restricted growth, and long-term sustainability challenges for players in the distributed generation and microgrid market.

Covid-19 Impact:

The COVID-19 crisis affected the Distributed Generation and Microgrids market by interrupting supply chains, delaying project execution, and impacting investment decisions. Restrictions and lockdowns hindered the production, transportation, and installation of distributed energy and microgrid equipment. Economic slowdowns and reduced industrial consumption lowered energy demand, resulting in postponed or scaled-back projects. However, the pandemic also underscored the critical need for resilient, decentralized energy systems, especially for hospitals, remote work setups, and essential service operations. While immediate growth was slowed by operational challenges, the long-term perspective became more favorable, reinforcing the strategic importance of microgrids and distributed generation technologies in ensuring reliable, flexible, and secure power supply worldwide.

The on-grid segment is expected to be the largest during the forecast period

The on-grid segment is expected to account for the largest market share during the forecast period, as they integrate effectively with existing power networks. These systems facilitate the use of renewable energy like solar and wind while maintaining a

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stable supply from the central grid. On-grid microgrids offer cost benefits by allowing excess energy to be fed back into the grid, enhancing efficiency and reducing expenses. They deliver consistent electricity to homes, businesses, and industries without needing large-scale storage systems. The popularity of on-grid solutions highlights their adaptability, ease of deployment, and compatibility with modern energy infrastructure, making them a preferred choice for decentralized power generation across global markets.

The healthcare facilities segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the healthcare facilities segment is predicted to witness the highest growth rate, driven by the essential requirement for constant, reliable electricity. Hospitals, clinics, and medical centers depend on uninterrupted power for critical equipment, emergency operations, and safeguarding sensitive medical data. Microgrids and distributed energy systems provide consistent power even during outages or natural calamities, ensuring operational continuity. Integration of renewable energy with storage solutions further strengthens reliability while reducing costs. Rising investments in healthcare infrastructure, emphasis on emergency preparedness, and the pursuit of sustainable energy solutions are accelerating the deployment of microgrids in healthcare settings, making this segment the fastest-growing globally.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, driven by its developed power infrastructure, emphasis on renewable energy adoption, and favorable government regulations. The region has experienced extensive deployment of microgrids and distributed generation across industrial, commercial, and residential applications. Technological innovations, growing investments in energy-efficient solutions, and the expansion of smart grid programs have bolstered market growth. Moreover, the need for continuous power during natural disasters, emergencies, and grid disruptions has increased microgrid installations. Collaborative efforts between public authorities and private enterprises, along with strong funding support, reinforce North America’s position as the dominant region in the global distributed generation and microgrids market.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest

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CAGR, driven by escalating energy needs, rapid industrial development, and emphasis on sustainable energy solutions. Nations including China, India, Japan, and Australia are heavily investing in renewable energy projects, smart grid technology, and microgrid systems to enhance power reliability. Off-grid and hybrid solutions are improving electricity access in rural and remote areas, enhancing resilience. Supportive government policies, international collaborations, and initiatives promoting clean energy adoption are boosting market growth. Growing environmental awareness and the urgency for energy security are further accelerating the deployment of distributed generation and microgrid technologies across the Asia-Pacific region.

Key players in the market

Some of the key players in Distributed Generation & Microgrids Market include Siemens, General Electric (GE), Eaton, ABB, Schneider Electric, Caterpillar Inc., Cummins Inc., Mitsubishi Heavy Industries, W?rtsil? Oyj Abp, Capstone Green Energy, Bloom Energy, Enphase Energy, Tesla Energy, Enel X and Hitachi Energy.

Key Developments:

In October 2025, Siemens and Airbus are strengthening their long-standing partnership with a new strategic contract to work toward the decarbonization of Airbus' major industrial sites in the U.S. and U.K. The initiative is a key milestone in Airbus' program to minimize the company's operational environmental footprint through targeted reductions in CO2 emissions and energy consumption, among other efforts.

In August 2025, General Electric (GE) is close to securing a $1 billion contract with India to supply 113 GE-404 engines for Light Combat Aircraft (LCA) Tejas Mark 1A fighters. This deal builds on an existing contract, bringing the total engines for the program to 212. India's state-owned Hindustan Aeronautics Ltd (HAL) plans to deliver 83 aircraft by 2029-30 and the remaining 97 by 2033-34.

In March 2025, Eaton has agreed to acquire Fibrebond, a US-based company that designs and builds modular power enclosures for data centres, industry, utilities and communications. Eaton will pay $1.4bn to acquire Fibrebond, which will generate an estimated adjusted EBITDA of $110m in 2025.

Components Covered:

- Microgrids

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Distributed Generation

Connectivities Covered:

On-Grid

Off-Grid

Hybrid

Capacities Covered:

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