

# **Embedded Power Generation Market Forecasts to 2032 – Global Analysis By Fuel Type (Natural Gas, Diesel, Biogas, Renewable Energy, Hydrogen, Coal and Other Fuel Types), Capacity, Deployment Mode, Technology, End User and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Embedded Power Generation Market is accounted for \$22.24 billion in 2025 and is expected to reach \$39.37 billion by 2032 growing at a CAGR of 8.5% during the forecast period. The decentralised production of electricity at or close to the point of use, as opposed to depending on centralised power facilities, is known as embedded power generation. Small-scale technologies like microturbines, solar panels, wind turbines, and combined heat and power (CHP) systems are all part of it. In order to increase energy efficiency, lower gearbox losses, and boost dependability, these systems are usually installed into residential, commercial, or industrial buildings. An essential part of contemporary, sustainable energy infrastructures, embedded power generation promotes grid resilience, reduces emissions, and permits increased energy independence.

According to the International Energy Agency (IEA), there are approximately 770 million people globally without access to electricity, and embedded power generation systems could be a key solution to bridge this energy gap.

Market Dynamics:

Driver:

Rising demand for decentralized energy systems

Localised energy production is made possible by these systems, which lessen transmission losses and dependency on central grids. On-site generating is becoming more and more popular among consumers and businesses due to its increased energy security and dependability. Decentralised solutions are now more economical and ecologically beneficial thanks to developments in renewable technologies. By enacting laws and offering incentives, governments are also promoting these kinds of systems. Consequently, embedded power generation is emerging as a key element of contemporary energy systems.

Restraint:

High initial investment and maintenance cost

Advanced technology, specialised tools, and trained labour are needed to set up embedded systems, which raises the cost of capital. It can be difficult for many small and medium-sized businesses to set aside enough money for installation. Furthermore, the systems become less appealing due to the constant costs associated with maintenance and servicing. Adoption is further deterred by uncertainty over return on investment. Market penetration is slowed by these financial obstacles, particularly in developing nations.

Opportunity:

Integration of renewable energy technologies

Wind turbines, biomass systems, and solar panels all improve energy efficiency and lessen reliance on centralised networks. These methods reduce greenhouse gas emissions, which promotes sustainable growth. To reach carbon neutrality targets, governments and businesses are investing more in renewable energy. Embedded renewable systems are becoming more dependable and economical because to technological developments. This change meets the growing energy needs of both urban and rural areas, which propels market expansion.

Threat:

Regulatory and grid integration challenges

The implementation of embedded systems is complicated by regionally disparate policies and standards. Complicated interconnection rules and drawn-out permitting

procedures raise expenses and erode investor confidence. Because of antiquated infrastructure, grid operators frequently find it difficult to integrate decentralised power sources. Small-scale producers are deterred by unclear rules about net metering and payment. All of these problems limit the use of integrated power solutions and slow industry growth.

### Covid-19 Impact

The COVID-19 pandemic significantly impacted the embedded power generation market by disrupting supply chains, delaying project timelines, and reducing investments in new installations. Industrial slowdowns and decreased energy demand during lockdowns hindered market growth. However, the crisis also highlighted the importance of reliable, decentralized energy systems, prompting renewed interest in embedded power solutions for resilience. Post-pandemic recovery, along with government stimulus for clean energy, is expected to drive market resurgence and accelerate adoption of distributed power technologies.

The diesel segment is expected to be the largest during the forecast period

The diesel segment is expected to account for the largest market share during the forecast period, due to its reliability and efficiency in remote and off-grid applications. Diesel generators offer quick start-up times and consistent power supply, making them ideal for backup and emergency power systems. Their robust design supports continuous operation in harsh environments across industrial, commercial, and residential sectors. Technological advancements have improved fuel efficiency and reduced emissions, enhancing their market appeal. Additionally, the widespread availability of diesel fuel ensures easy deployment and maintenance globally.

The commercial buildings segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the commercial buildings segment is predicted to witness the highest growth rate by driving demand for reliable and decentralized energy solutions. These buildings often require uninterrupted power for operations, pushing the adoption of on-site generation technologies like solar panels, fuel cells, and microturbines. Increasing emphasis on sustainability and green certifications motivates businesses to integrate cleaner embedded systems. Rising energy costs further encourage commercial facilities to invest in cost-effective, self-sufficient power sources. Additionally, advancements in smart energy management systems enhance efficiency

and control, making embedded generation more attractive for commercial users.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to increasing energy demand, expanding industrialization. Countries like China, India, and Japan are heavily investing in decentralized power systems to enhance energy security and reduce transmission losses. Supportive government policies and a strong focus on renewable energy integration further fuel market expansion. Additionally, the rise in smart grid infrastructure and distributed energy resources is encouraging the adoption of embedded power generation technologies across both urban and rural sectors in the region.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR by mature infrastructure and a strong emphasis on sustainability and emission reduction. The U.S. and Canada are focusing on replacing aging centralized grids with more resilient, localized power sources. Growth is primarily driven by the rising adoption of clean energy technologies, microgrids, and combined heat and power (CHP) systems. While the market is not growing as rapidly as in Asia Pacific, it benefits from robust R&D, technological innovation, and regulatory support for energy independence and grid stability.

Key players in the market

Some of the key players profiled in the Embedded Power Generation Market include General Electric (GE), Siemens AG, Caterpillar Inc., Cummins Inc., Schneider Electric, Mitsubishi Heavy Industries Ltd., Rolls-Royce Holdings plc, Wartsila Corporation, ABB Ltd., Kohler Co., MTU Onsite Energy, Capstone Turbine Corporation, Generac Holdings Inc., Doosan Corporation, Yanmar Co., Ltd., Atlas Copco AB, Aggreko plc and Himoina S.L.

Key Developments:

In May 2025, Siemens entered into an agreement with TURN2X to become its preferred supplier and technology partner. The collaboration aims to scale up TURN2X's green energy production, leveraging Siemens' advanced technology portfolio to significantly enhance TURN2X's production capabilities in the embedded power generation sector.

In September 2024, Cummins announced a partnership with Bosch Global Software, ETAS, and KPIT to launch Eclipse CANought, an open-source project for commercial vehicle telematics. The project, part of the Eclipse Software Defined Vehicle initiative, will be integrated into telematics offerings starting in 2025, simplifying software integration and enabling secure, standardized access to vehicle ECUs.

In July 2024, Siemens AG and Boson Energy signed a Memorandum of Understanding to collaborate on waste-to-hydrogen technology. This partnership focuses on converting non-recyclable waste into hydrogen, supporting the transition to green energy and embedded power generation solutions.

#### Fuel Types Covered:

Natural Gas

Diesel

Biogas

Renewable Energy

Hydrogen

Coal

Other Fuel Types

#### Capacities Covered:

Up to 100 kW

100–500 kW

500 kW–1 MW

1–5 MW

Above 5 MW

Deployment Modes Covered:

On-grid

Off-grid

Hybrid Systems

Technologies Covered:

Combined Heat and Power (CHP)

Micro Turbines

Fuel Cells

Solar Photovoltaic (PV)

Wind Turbines

Reciprocating Engines

Gas Turbines

Stirling Engines

Other Technologies

End Users Covered:

Utilities

Commercial Buildings

Manufacturing Industries

Data Centers

Educational Institutes

Healthcare Facilities

Remote Areas

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments

*Embedded Power Generation Market Forecasts to 2032 – Global Analysis By Fuel Type (Natural Gas, Diesel, Biogas...*

- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- 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

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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