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Distributed Generation (DG) - A Global Market Overview

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Abstracts

Distributed Generation (DG), also known as on-site or decentralized generation, involves small-scale, grid-connected or standalone power systems located close to consumption points. By harnessing renewable sources such as solar PV, wind, fuel cells, biomass, and small hydro, DG minimizes transmission losses, enhances resilience, and promotes sustainability. Rising adoption is supported by stricter emission targets, tax rebates like the US Investment Tax Credit, declining costs of solar, wind, and battery storage, and the growing role of microgrids and electric vehicles in grid modernization. DG provides tailored solutions for residential, commercial, and industrial users, improving efficiency and reducing dependence on centralized plants.

The global DG market is forecast to reach US$751.6 billion by 2032 from US$327.2 billion in 2025, growing at a CAGR of 12.6% between 2025 and 2032. Key growth drivers include industrialization, urbanization, and electrification trends that amplify energy demand, while ecological awareness, subsidies, and renewable mandates accelerate adoption. At the same time, barriers such as high upfront investment, long payback periods, storage and maintenance costs, and limited financing in developing regions constrain growth. Nevertheless, continued innovation in DERs, advanced storage, and distributed energy management platforms is expected to strengthen DG's role in achieving clean, reliable, and cost-effective power generation worldwide.

Distributed Generation (DG) Regional Market Analysis

Asia-Pacific, with a 42.9% share in 2025, stands as the largest and fastest-growing regional market, projected to expand at nearly 15% CAGR through 2035. Population growth, industrial activity, and rapid urbanization are fueling demand for localized clean energy, particularly solar PV, wind, rooftop solar, and microgrids. Supportive

regulations, subsidies, and renewable mandates-such as China's 2060 carbon neutrality goal-are reinforcing DG expansion, while rising EV penetration, smart grids, and hybrid systems further bolster adoption across the region.

Distributed Generation (DG) Market Analysis by Technology

Solar Photovoltaic (PV) cells dominate DG technologies with 42.9% share in 2025, driven by steep cost declines, modularity, and favorable policies such as net metering and feed-in tariffs. Global solar PV capacity surpassed 2.2 TW in 2024 with strong adoption across residential, commercial, and utility-scale applications. In contrast, Fuel Cells are expected to record the fastest CAGR of 15.6% during 2025-2032, supported by hydrogen investments, durability improvements, and their ability to provide continuous zero-emission power for critical infrastructure such as hospitals, data centers, and industrial microgrids.

Distributed Generation (DG) Market Analysis by Power Rating

Systems in the 5 kW-250 kW range lead the DG market due to suitability for residential, commercial, and small industrial settings, benefiting from incentives like tax credits and net metering while offering cost-effectiveness and grid integration advantages. However, DG systems below 5 kW are projected to grow the fastest at a CAGR of 15.3% through 2032, driven by affordability, household-scale rooftop solar demand, and deployment in developing regions through microfinancing, subsidies, and compact storage-paired solar solutions.

Distributed Generation (DG) Market Analysis by Application

On-Grid applications dominate with 73.3% share in 2025 and are also forecast to post the fastest CAGR of 14.5% during 2025-2032. Policies such as ITC and PTC in the US, along with similar subsidies globally, are accelerating on-grid adoption by making distributed solar PV and fuel cells financially attractive. These systems support grid stability, reduce GHG emissions, and improve efficiency by enabling energy exchange with utilities and large-scale rooftop solar or wind integration.

Distributed Generation (DG) Market Analysis by End-Use Sector

The Industrial sector leads DG demand with 35% share in 2025, as manufacturing plants, data centers, and industrial parks seek reliable, cost-effective, on-site energy solutions supported by tax incentives and electrification programs. Meanwhile, the

Residential sector is projected to register the fastest CAGR of 13.2% between 2025 and 2032, fueled by rooftop solar affordability, rising electricity prices, environmental awareness, and supportive policies enabling households to achieve energy independence and reduce carbon footprints.

Distributed Generation (DG) Market Report Scope

This global report on Distributed Generation (DG) analyzes the market based on Technology, Power Rating, Application and End-Use Sector for the period 2022-2032 with projections from 2025 to 2032 in terms of value in US$. In addition to providing profiles of major companies operating in this space, the latest corporate and industrial developments have been covered to offer a clear panorama of how and where the market is progressing.

Key Metrics

Analysis Period: 2022-2032
Base Year: 2025
Forecast Period: 2025-2032
Units: Value market in US$
Companies Mentioned: 20+

Distributed Generation (DG) Market by Geographic Region

- North America (The United States, Canada and Mexico)
- Europe (France, Germany, Italy, Russia, Spain, the United Kingdom and Rest of Europe)
- Asia-Pacific (China, India, Japan, South Korea and Rest of Asia-Pacific)
- South America (Argentina, Brazil and Rest of South America)
- Middle East & Africa

Distributed Generation (DG) Market by Technology

- Fuel Cells

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Micro Turbines

Reciprocating Engines

Solar Photovoltaic (PV) Cells

Wind Turbines

Other Technologies [Incl. Combustion Turbines, Combined Heat & Power (CHP), Gas & Steam Turbines and Micro-Hydropower]

Distributed Generation (DG) Market by Power Rating

Below 5 kW

5 kW-250 kW

250 kW-1 MW

Above 1 MW

Distributed Generation (DG) Market by Application

Off-Grid

On-Grid

Distributed Generation (DG) Market by End-Use Sector

Commercial

Industrial

Residential

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Schneider Electric
Sharp Corp
Siemens Energy AG
Suzlon Energy Ltd
Toyota Turbine and Systems, Inc.
Vestas Wind Systems A/S

4. KEY BUSINESS & PRODUCT TRENDS

5. GLOBAL MARKET OVERVIEW

Global Distributed Generation (DG) Market Overview by Technology
  Distributed Generation (DG) Technology Market Overview by Global Region
    Fuel Cells
    Micro Turbines
    Reciprocating Engines
    Solar Photovoltaic (PV) Cells
    Wind Turbines
    Other Technologies [Incl. Combustion Turbines, Combined Heat & Power (CHP), Gas & Steam Turbines and Micro-Hydropower]
Global Distributed Generation (DG) Market Overview by Power Rating
  Distributed Generation (DG) Power Rating Market Overview by Global Region
    Below 5 kW
    5 kW-250 kW
    250 kW-1 MW
    Above 1 MW

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