

Diesel Genset Market Assessment, By Power Rating [Less than 75 kVA, 75-350 kVA, 350-750 kVA, More Than 750 kVA], By Portability [Stationary, Portable], By Application [Continuous Load, Peak Load, Stand by Load], By End-user [Residential, Commercial, Industrial], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global diesel genset market size was valued at USD 12.34 billion in 2022, which is expected to reach USD 18.01 billion in 2030, with a CAGR of 4.84% for the forecast period between 2023 and 2030. A consistent and dependable power supply is crucial in an era when electrification and digitalization are transforming human lives. The demand for power supply spans various sectors, including residential, commercial, industrial, and transportation. Thus, the global energy demand continues to increase due to population growth, industrialization, and technological advancements. Diesel generator sets (DG sets) are versatile and essential backup power sources for uninterrupted electricity. They ensure business continuity and are valuable for various applications due to characteristics such as portability, rapid start-up, and load-carrying capabilities, which are crucial for critical operations.

DG sets are essential backup power sources for sectors like hospitals, data centers, and industrial facilities, providing rapid response and portability. They are cost-effective, environmentally friendly, and meet stringent emission norms while maintaining efficiency and reliability. The global DG set market is driven by expanding industries and rapid urbanization, which increases power demand. DG sets provide backup power during natural disasters and emergencies, safeguarding critical functions. They are particularly useful in off-grid regions where conventional power sources may be

unavailable.

Industrial Sector's Growing Demand for Electricity Fuels DG Set Market Expansion

The DG set market is significantly driven by the industrial sector's insatiable need for electricity. According to the International Energy Agency (IEA), the industrial sector is the leading electrical power consumer. DG sets are crucial lifelines for maintaining continuous production in industries sensitive to power disruptions, minimizing downtime costs. These versatile systems find diverse applications in sectors such as oil and gas, where they ensure reliable power for offshore drilling, even in remote areas. In heavy manufacturing sectors such as iron, steel, and chemicals, DG sets help manage peak load requirements. DG sets find extensive application in the power industry as well, especially in steam turbines wherein they are used to initiate and sustain turbines for uninterrupted electricity generation. DG sets' adaptability to varying load requirements across different industries, with diverse sizes and capacities, makes it better suited for industrial applications and drives its market's growth.

In May 2023, Mitsubishi Heavy Industries Group introduced the MGS-R Series of diesel generators. The DG Set is designed to meet the increasing demands of the digital economy, focusing on data centers in Asia and Middle East, this new series serves as a dependable backup power option for commercial establishments like shopping centers and office complexes.

Rising Concerns Over Aging Grids Spark Emphasis on Power Quality and DG Sets

The growing focus on power quality stems from concerns about the reliability of aging electrical grids. Critical institutions like hospitals, data centers, and infrastructure such as power facilities, airports, railways, and water treatment plants rely on uninterrupted power supply for seamless operations. Brief power interruptions can lead to substantial financial setbacks. DG sets function as vital safeguards, ensuring uninterrupted business operations during grid failures. In industrial settings, downtime can result in multimillion-dollar losses, which DG sets mitigate by providing immediate backup power. With advancement in technology, Inverter generators deliver superior electrical output compared to conventional generators, offering clean and stable power for sensitive electronics. An automatic voltage regulator (AVR) further enhances power quality by regulating voltage fluctuations and reducing surges.

In March 2023, Perkins unveiled the 5000 Series at Middle East Energy 2023 exhibition. Tailored for power generation, these engines offer reliable prime or standby power for

critical applications, including data centers and hospitals. Rigorous testing ensures durability and performance in harsh conditions while adhering to the United States EPA Tier 2 emissions standards.

Governments Regulations

Governments have two roles in securing citizens' welfare and promoting private enterprise. Governments globally are focusing on transitioning from fossil fuel-based sources to clean and green energy sources. Government regulations are instrumental in curbing emissions to mitigate environmental effects and enforce industry-wide standards. It prioritizes safety by governing DG set operation to avert accidents. Regulations further drive energy-efficient technologies, reducing fuel consumption through energy-saving standards and labeling. They oversee DG set integration with the electrical grid, fostering a sustainable energy future. The multifaceted regulatory framework ensures both environmental protection and industry growth. In the United States, the Clean Air Act (CAA) mandates emissions standards and registration with the Environmental Protection Agency (EPA) for stationary combustion sources, including DG sets. Similarly, in the European Union (EU), the Industrial Emissions Directive (IED) sets emissions standards and requires permits from competent authorities.

In July 2023, India adopted CPCB IV+ emission standards for generators up to 800 kW, targeting a remarkable 90% reduction in particulate matter (PM) and nitrogen oxide (NOx) concentrations in exhaust. These unified standards simplify regulations for the generator industry while maintaining rigorous emission reduction goals.

Growing Environmental Concerns Drive Demand for Sustainable DG Sets and Hybrid Solutions

In response to growing environmental concerns and increasingly strict regulations, a rising demand for cleaner and more sustainable power solutions is rising. The shift has led to developing environmentally friendly DG sets, which operate more efficiently and emit fewer pollutants. Adopting hybrid DG sets, combining diesel with renewable energy sources, is on the upswing due to their environmental advantages and improved fuel efficiency. The integration of hybrid fuels has expanded the versatility of DG sets, offering improved fuel efficiency and reduced emissions. These advancements align with global efforts to reduce carbon footprints and promote a cleaner, more sustainable energy landscape, driving the growth of DG sets market forward. In September 2023, Kirloskar Oil Engines (KOEL) introduced a series of generators compliant with CPCB IV+ regulations, prioritizing top-notch performance, fuel efficiency, and environmental

responsibility. These new generators adhere to the latest emission standards, designed to provide optimal fuel efficiency and environmental friendliness, and are adaptable to various fuel choices, including diesel, natural gas, and biogas, offering consumers' unparalleled versatility.

DG Set Market Growth Driven by the Demand for Last-Mile Energy Connectivity

The DG Set market is surging due to the escalating demand for last-mile energy access. DG sets play a pivotal role in providing reliable and immediate power in remote or underserved areas where the electrical grid might not be reached. These settings encompass rural regions, off-grid locations, and areas prone to frequent power outages. DG sets offer a dependable solution, ensuring that essential services, businesses, and critical infrastructure, including hospitals and data centers, have uninterrupted access to power. As last-mile energy access becomes a top priority, DG sets are at the forefront, catering to the energy needs of these underserved areas and boosting their market growth.

In February 2023, Caterpillar introduced the XQ330 Mobile Diesel Generator. Powered by the Cat C9.3B diesel engine, offering up to 288 kW in standby (264 kW in prime) at 60 Hz, and up to 341 kVA in standby (310 kVA in prime) at 50 Hz. The XQ330 operates quietly and features the EMCP 4.4 digital control panel, offering all generator set controls in one interface and a programmable logic controller for adaptability. It provides comprehensive power metering and protective relaying.

Impact of COVID-19

COVID-19 had a severe impact on the manufacturing and power sectors. In the initial stages of the pandemic, global lockdowns and economic uncertainties caused a contraction in the DG set market. Many industries and infrastructure projects slowed down or halted, reducing demand for DG sets. Additionally, disruptions in the supply chain for power equipment and components affected the DG set industry.

Conversely, essential services like data centers and emergency response units relied heavily on DG sets for consistent power supply during the pandemic. The shift to remote work increased the importance of power backup solutions, resulting in heightened demand from both businesses and individuals. As the pandemic unfolded, the DG set market displayed resilience. Industries gradually resumed operations with a newfound focus on ensuring uninterrupted power supply, adapting to the new normal. This adaptability underlines the DG set market's capacity to respond to changing

circumstances and emerging needs.

Impact of Russia-Ukraine War

The Russia-Ukraine war and the ongoing global energy crisis have profoundly impacted the DG set market. As energy supplies faced disruptions, coupled with the residual effects of COVID-19, essential services and residential units began employing DG sets as a reliable source of uninterrupted power. DG sets, which run on various fuels, were pivotal in mitigating the energy crisis. While fuel price increases the operation costs of DG sets, it remains a cost-effective solution compared to emerging technologies like battery energy storage systems. DG sets provide greater reliability than Uninterruptible Power Supply (UPS) systems.

This synergy of factors has significantly boosted the demand for DG sets in various sectors. They have emerged as a dependable solution to address the critical need for uninterrupted power, ensuring the continuous operation of essential services, industries, and residential areas. As a result, the DG set market is experiencing a notable surge in demand, further solidifying its importance in maintaining stable power supply during times of crisis.

Key Players Landscape and Outlook

DG set manufacturers are adapting to stringent emission standards and eco-friendly practices by ensuring their products are compatible with modern grids and renewable energy sources. They are embracing the shift towards biofuels, enhancing reliability and efficiency. Innovations include sound attenuation adjustments, easier starting, programmable PLCs for remote operation, and inverters for power factor optimization. These innovations align with the industry's commitment to meeting rigorous environmental and performance standards.

In October 2023, Doosan Portable Power introduced the G70 and G100 generators, known for exceptional motor starting capacities in the 70kVA to 100kVA range. They offer a wide load range, eliminating the need for a separate load management system. These generators are highly versatile and ideal for various applications, including construction sites, events, de-watering, and municipal use. With a digital control panel and meter, operators can efficiently start larger motors without upsizing their generator.

In June 2023, Sterling Generators established a strategic partnership with Moteurs Baudouin, a renowned French manufacturer specializing in producing gas and diesel

engines for power generation. The alliance aims to leverage Baudouin's longstanding expertise in engineering and manufacturing top-tier diesel and petrol engines, in combination with Sterling Generators' fuel-efficient auxiliary power solutions that are thoughtfully engineered to comply with the latest emission standards.

In May 2023, Cummins Inc. unveiled the Cummins Turbo Marine Diesel Genset (MDCT). This robust genset offers the flexibility of outfitting it with either a low or high kW Cummins B4.5 auxiliary engine, providing power ratings ranging from 40 kWe to 80 kWe and 80 kWe to 110 kWe. The MDCT generator set is available for orders, and its deliveries are anticipated to commence in late 2023.

In March 2023, DTGen acquired Power Electrics Generators' sales and projects business. The strategic move expands DTGen's capacity and expertise while enhancing their national presence in the United Kingdom, including Scotland, the Midlands, and the south. Power Electrics Generators is a well-regarded specialist in generator sales, commissioning, and installation, serving prominent clients in data centers, industries, and utility sectors.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

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