

Diesel Engine Market Report by Power Rating (0.5 MW–1 MW, Up to 0.5 MW, 2 MW–5 MW, 1 MW–2 MW, Above 5 MW), End-User (Automotive, Non-Automotive), and Region 2024-2032

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Abstracts

The global diesel engine market size reached US\$ 229.0 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 308.0 Billion by 2032, exhibiting a growth rate (CAGR) of 3.2% during 2024-2032. The increasing product application in the industrial and commercial sectors, the rising demand for power generation, the growing product adoption in the maritime industry, and the development of cleaner diesel engines are some of the factors propelling the market.

The diesel engine represents an internal combustion powerplant that achieves ignition by compressing air within a cylindrical chamber, converting chemical energy into mechanical work. This reliable power source finds extensive application across various vehicles, including freight trucks, locomotives, and large marine vessels. Diesel engines are gaining increasing favor among end-users due to their exceptional operational efficiency and fuel economy. In today's market, two primary types of diesel engines are prevalent: two-stroke engines, which complete a power cycle with two-piston strokes per crankshaft revolution, and four-stroke engines, which accomplish the cycle in four distinct strokes of the crankshaft. These engines offer many benefits, with fuel efficiency as a prominent advantage. They outperform their gasoline counterparts by producing more power with less fuel, resulting in long-term cost-effectiveness. This heightened fuel efficiency contributes to a reduced carbon footprint, as diesel engines emit fewer carbon dioxide emissions. Furthermore, these engines excel in torque production, making them well-suited for heavy-duty applications such as trucks, buses, industrial equipment, generators, and construction machinery. Their reliability and durability stem from a simplified design with fewer moving components, minimizing the likelihood of

breakdowns and reducing maintenance requirements. Diesel engines exhibit remarkable adaptability and versatility, with the capacity to be tailored to diverse power and performance needs, spanning from compact generators to expansive marine vessels. This flexibility makes diesel engines a preferred choice across various applications.

The global market is majorly driven by the increasing trend toward industrialization and infrastructure development. Diesel engines play a vital role in providing power for construction equipment, generators, and machinery, supporting the construction of roads, buildings, and critical infrastructure projects. Furthermore, these engines continue to dominate the transportation sector, particularly in the case of commercial vehicles like trucks, buses, and locomotives. The need for efficient, long-range transportation fuels the demand for diesel-powered vehicles, making them indispensable for moving goods and passengers. Moreover, diesel generators are a dependable backup power source for industries, data centers, hospitals, and remote locations with limited access to the grid. The reliability and quick response time of diesel generators ensure uninterrupted power supply, driving their adoption in critical sectors. Besides, these engines are the preferred choice for marine vessels, including cargo ships, ferries, and offshore platforms. Their robustness, efficiency, and ability to handle extreme conditions make them indispensable in maritime and offshore industries. Additionally, these engines are vital in mining and construction operations, where heavy machinery relies on their power to move earth, excavate materials, and operate drilling equipment. The growth of these industries directly impacts the demand for these engines. They power agricultural machinery such as tractors, combines, and irrigation pumps. The global need to enhance agricultural productivity and meet food demand fuels the market for these engines. Ongoing research and development in diesel engine technology have led to cleaner and more fuel-efficient engines. Advancements in emissions control systems ensure compliance with increasingly stringent environmental regulations, driving the market toward more sustainable solutions. Emerging economies with growing industrial and transportation needs contribute significantly to the global demand for diesel engines. They are adaptable to various applications, from small generators to large industrial equipment, ensuring their relevance across diverse industries. As global demands for power and mobility continue to rise, these engines remain a steadfast and indispensable choice for various applications, ensuring the market's continued expansion.

Diesel Engine Market Trends/Drivers:

Significant growth of the automotive industry

The significant growth of the automotive industry is offering numerous opportunities for the market. As the global demand for vehicles continues to rise, particularly in emerging markets, diesel engines have played a crucial role in meeting diverse transportation needs. These engines offer advantages such as high torque, fuel efficiency, and durability, making them especially appealing for commercial and heavy-duty vehicles. With the automotive sector's focus on sustainability and emissions reduction, modern diesel engines have evolved to comply with stringent environmental regulations, thus maintaining their relevance in an eco-conscious world. Moreover, the expansion of electric and hybrid vehicle segments has not diminished the importance of diesel engines; diesel powertrains have found their niche in specific vehicle types, such as trucks and SUVs, where their towing capacity and range remain unmatched.

Rapid industrialization in developing economies

Rapid industrialization in developing economies is favorably impacting the market. As these nations experience substantial economic expansion, there is a heightened demand for energy and machinery to fuel their industrial sectors. Diesel engines, renowned for their reliability and robust performance, have become indispensable in meeting these escalating energy needs. In these industrializing regions, diesel generators provide a dependable power source for factories, construction sites, and infrastructure development projects. Diesel-powered machinery, including trucks, excavators, and generators, are integral to the construction and manufacturing processes. Their efficiency and durability make them an ideal choice for heavy-duty applications. Furthermore, the growth of agriculture and mining industries in these economies further amplifies the demand for these engines in specialized equipment. Despite increasing environmental concerns, the adaptability of diesel engines to various industrial sectors continues to drive their market growth, making them a linchpin of industrialization in developing economies.

Escalating product demand in mining and off-road vehicles

The escalating demand for these engines in mining and off-road vehicles is bolstering the market. Mining operations and off-road activities, including construction and agriculture, heavily rely on rugged and high-performance engines to power heavy machinery and equipment in challenging environments. These engines excel in these applications due to their robustness, durability, and high torque output, essential for hauling heavy loads, excavating, and powering stationary machinery like pumps and compressors. Moreover, the remote and demanding nature of these sectors necessitates engines with exceptional reliability, and diesel powertrains consistently

meet these criteria. As global infrastructure development and resource extraction expand, the demand for mining and off-road vehicles remains strong. This sustained need for diesel engines in these specialized sectors drives ongoing innovation, making them even more efficient and environmentally compliant, further securing their role in powering essential equipment for mining and off-road applications.

Diesel Engine Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global diesel engine market report, along with forecasts at the global and regional levels for 2024-2032. Our report has categorized the market based on power rating and end-user.

Breakup by Power Rating:

0.5 MW–1 MW

Up to 0.5 MW

2 MW–5 MW

1 MW–2 MW

Above 5 MW

0.5 MW- 1MW dominates the market

The report has provided a detailed breakup and analysis of the market based on the power rating. This includes 0.5 MW–1 MW, up to 0.5 MW, 2 MW–5 MW, 1 MW–2 MW, and above 5 MW. According to the report, 0.5 MW-1 MW represented the largest segment.

Engines within the 0.5 MW–1 MW power range find extensive applications across various industries, contributing significantly to market expansion. In the commercial sector, these diesel engines are commonly used to power generators, ensuring a reliable backup electricity source in various settings such as hospitals, data centers, and manufacturing facilities. Their ability to quickly respond to power outages and provide a consistent energy supply underscores their importance.

Furthermore, this power rating range is a preferred choice for heavy machinery and equipment within the industrial landscape, particularly in construction, mining, and agriculture. Diesel engines in this category offer the necessary torque and reliability to efficiently operate large, heavy-duty vehicles and machinery. The 0.5 MW to 1 MW power rating segment also aligns with the global focus on sustainability as diesel engine manufacturers continue to develop engines with improved fuel efficiency and reduced

emissions. As such, these engines are poised to meet current and future demands across multiple sectors, playing a vital role in driving market growth.

Breakup by End-User:

- Automotive
 - On-Road
 - Light Vehicles
 - Medium/Heavy Trucks
 - Light Trucks
 - Off Road
- Industrial/Construction Equipment
- Agriculture Equipment
- Marine Applications
- Non-Automotive

Automotive dominates the market

The report has provided a detailed breakup and analysis of the market based on the end-user. This includes automotive (on-road [light vehicles, medium/heavy trucks, and light trucks] and off road [industrial/construction equipment, agriculture equipment, and marine applications]) and non-automotive. According to the report, automotive represented the largest segment.

While these engines have faced challenges in the passenger car market due to emissions concerns, they continue to thrive in specific automotive niches, positively impacting the overall market. These engines are favored in larger vehicles such as trucks, SUVs, and commercial vans. Their superior torque and fuel efficiency make them well-suited for applications where towing capacity, long-range driving, and cargo transportation are essential. As logistics and e-commerce industries expand, the demand for diesel-powered delivery vehicles remains strong.

Moreover, these engines play a crucial role in the heavy-duty trucking sector, where they are the primary choice for long-haul transportation. Their reliability and fuel efficiency help reduce operational costs for fleet operators. In emerging markets, especially in regions with limited access to advanced infrastructure, diesel-powered vehicles remain prevalent due to their ability to handle rough terrains and harsh conditions. As diesel engine manufacturers continue to develop cleaner and more efficient engines that comply with stringent emissions standards, the automotive

segment is poised to sustain its contribution to the market's growth, particularly in specialized vehicle categories.

Breakup by Region:

Asia Pacific

Europe

North America

Middle East and Africa

Latin America

Asia Pacific exhibits a clear dominance, accounting for the largest market share

The market research report has also provided a comprehensive analysis of all the major regional markets, which include Asia Pacific, Europe, North America, Middle East and Africa, and Latin America. According to the report, Asia Pacific accounted for the largest market share.

Asia Pacific is undergoing rapid industrialization and infrastructure development, requiring reliable power sources and heavy machinery. Diesel engines, powering generators, construction equipment, and industrial machinery are indispensable for these endeavors. Furthermore, agriculture is a primary economic sector in many Asia Pacific countries, and these engines are essential for tractors and farming equipment. The region also boasts significant mining operations, relying on diesel-powered machinery for resource extraction. The growing e-commerce and logistics industries have increased the demand for diesel-powered trucks and delivery vehicles. These engines offer the necessary power and efficiency for long-haul transportation across vast geographical areas.

In remote and rural areas with limited access to the grid, diesel generators provide a crucial source of electricity, supporting various applications from small businesses to essential services. As environmental concerns rise, diesel engine manufacturers across the region are investing in cleaner and more efficient engines to meet stringent emissions standards, ensuring continued market growth.

Competitive Landscape:

Top companies are fostering the market through innovation, strategic partnerships, and environmental compliance. These industry leaders continually invest in research and development to create more efficient, cleaner, technologically advanced diesel engines.

Innovative technologies such as turbocharging, direct injection, and emission control systems are being integrated into diesel engines to enhance fuel efficiency and reduce harmful emissions. This commitment to environmental responsibility aligns with evolving global regulations and consumer demands for cleaner engines. Additionally, top companies forge partnerships with manufacturers across various sectors, such as automotive, agriculture, and construction, to ensure a steady demand for diesel engines. Collaborations enable the customization of engines to meet specific industry requirements, broadening their application range and market reach. Furthermore, these companies focus on expanding their global footprint by establishing production facilities in emerging markets, capitalizing on the growing industrialization and infrastructure development in those regions. This global presence ensures a diverse customer base and boosts market growth.

The report has provided a comprehensive analysis of the competitive landscape in the diesel engine market. Detailed profiles of all major companies have also been provided.

AGCO Corporation

China First Automobile Works (FAW) Group Corporation

Robert Bosch GmbH

Deere & Company

Continental AG

Delphi Automotive System Private Limited

Mitsubishi Heavy Industries, Ltd.

Ford Motor Company

General Motors Company

MAN SE

W?rtsil? Oyj Abp

Cummins, Inc.

Caterpillar

Rolls-Royce Motor Cars Limited

Recent Developments:

AGCO Corporation announced in 2023 that it has developed a new family of diesel engines called CORE. These engines are designed with future alternative fuels in mind, such as hydrogen and gas. AGCO's CORE engines are capable of reducing greenhouse gas emissions by up to 90% when using renewable HVO fuels.

Cummins Inc. announced in Aug 2023 that it has received the approval of its entire line of diesel high horsepower engines for use with renewable diesel fuels. This approval applies to all high-horsepower engines used in various industries, such as mining, marine, rail, defense, and oil and gas.

General Motors and Ford Motor Company announced in July 2023 that they are continuing to invest in internal combustion engine vehicles powered by gas and diesel despite their commitments to electric vehicle development, highlighting the ongoing importance and profitability of ICE vehicles.

Key Questions Answered in This Report

1. What was the size of the global diesel engine market in 2023?
2. What is the expected growth rate of the global diesel engine market during 2024-2032?
3. What are the key factors driving the global diesel engine market?
4. What has been the impact of COVID-19 on the global diesel engine market?
5. What is the breakup of the global diesel engine market based on the power rating?
6. What is the breakup of the global diesel engine market based on the end user?
7. What are the key regions in the global diesel engine market?
8. Who are the key players/companies in the global diesel engine market?

Contents

1 PREFACE

2 SCOPE AND METHODOLOGY

- 2.1 Objectives of the Study
- 2.2 Stakeholders
- 2.3 Data Sources
 - 2.3.1 Primary Sources
 - 2.3.2 Secondary Sources
- 2.4 Market Estimation
 - 2.4.1 Bottom-Up Approach
 - 2.4.2 Top-Down Approach
- 2.5 Forecasting Methodology

3 EXECUTIVE SUMMARY

4 INTRODUCTION

- 4.1 Overview
- 4.2 Key Industry Trends

5 GLOBAL DIESEL ENGINE MARKET

- 5.1 Market Overview
- 5.2 Market Performance
- 5.3 Impact of COVID-19
- 5.4 Market Breakup by Power Rating
- 5.5 Market Breakup by End-User
- 5.6 Market Breakup by Region
- 5.7 Market Forecast

6 MARKET BREAKUP BY POWER RATING

- 6.1 0.5 MW–1 MW
 - 6.1.1 Market Trends

- 6.1.2 Market Forecast
- 6.2 Up to 0.5 MW
 - 6.2.1 Market Trends
 - 6.2.2 Market Forecast
- 6.3 2 MW–5 MW
 - 6.3.1 Market Trends
 - 6.3.2 Market Forecast
- 6.4 1 MW–2 MW
 - 6.4.1 Market Trends
 - 6.4.2 Market Forecast
- 6.5 Above 5 MW
 - 6.5.1 Market Trends
 - 6.5.2 Market Forecast

7 MARKET BREAKUP BY END-USER

- 7.1 Automotive
 - 7.1.1 Market Trends
 - 7.1.2 Market Breakup by Type
 - 7.1.2.1 On-Road
 - 7.1.2.1.1 Market Trends
 - 7.1.2.1.2 Major Types
 - 7.1.2.1.2.1 Light Vehicles
 - 7.1.2.1.2.2 Medium/Heavy Trucks
 - 7.1.2.1.2.3 Light Trucks
 - 7.1.2.1.3 Market Forecast
 - 7.1.2.2 Off-Road
 - 7.1.2.2.1 Market Trends
 - 7.1.2.2.2 Major Types
 - 7.1.2.2.2.1 Industrial/Construction Equipment
 - 7.1.2.2.2.2 Agriculture Equipment
 - 7.1.2.2.2.3 Marine Applications
 - 7.1.2.2.3 Market Forecast
 - 7.1.3 Market Forecast
- 7.2 Non-Automotive
 - 7.2.1 Market Trends
 - 7.2.2 Market Forecast

8 MARKET BREAKUP BY REGION

8.1 Asia Pacific

8.1.1 Market Trends

8.1.2 Market Forecast

8.2 Europe

8.2.1 Market Trends

8.2.2 Market Forecast

8.3 North America

8.3.1 Market Trends

8.3.2 Market Forecast

8.4 Middle East and Africa

8.4.1 Market Trends

8.4.2 Market Forecast

8.5 Latin America

8.5.1 Market Trends

8.5.2 Market Forecast

9 SWOT ANALYSIS

9.1 Overview

9.2 Strengths

9.3 Weaknesses

9.4 Opportunities

9.5 Threats

10 VALUE CHAIN ANALYSIS

10.1 Overview

10.2 Research and Development

10.3 Raw Material Procurement

10.4 Manufacturing

10.5 Marketing

10.6 Distribution

10.7 End-Use

11 PORTERS FIVE FORCES ANALYSIS

11.1 Overview

11.2 Bargaining Power of Buyers

- 11.3 Bargaining Power of Suppliers
- 11.4 Degree of Competition
- 11.5 Threat of New Entrants
- 11.6 Threat of Substitutes

12 PRICE ANALYSIS

13 MANUFACTURING PROCESS

- 13.1 Product Overview
- 13.2 Raw Material Requirements
- 13.3 Manufacturing Process
- 13.4 Key Success and Risk Factors

14 COMPETITIVE LANDSCAPE

- 14.1 Market Structure
- 14.2 Key Players
- 14.3 Profiles of Key Players
 - 14.3.1 AGCO Corporation
 - 14.3.2 China First Automobile Works (FAW) Group Corporation
 - 14.3.3 Robert Bosch GmbH
 - 14.3.4 Deere & Company
 - 14.3.5 Continental AG
 - 14.3.6 Delphi Automotive System Private Limited
 - 14.3.7 Mitsubishi Heavy Industries, Ltd.
 - 14.3.8 Ford Motor Company
 - 14.3.9 General Motors Company
 - 14.3.10 MAN SE
 - 14.3.11 W?rtsil? Oyj Abp
 - 14.3.12 Cummins, Inc.
 - 14.3.13 Caterpillar
 - 14.3.14 Rolls-Royce Motor Cars Limited

List Of Tables

LIST OF TABLES

Table 1: Global: Diesel Engine Market: Key Industry Highlights, 2023 & 2032

Table 2: Global: Diesel Engine Market Forecast: Breakup by Power Rating (in Million US\$), 2024-2032

Table 3: Global: Diesel Engine Market Forecast: Breakup by End-User (in Million US\$), 2024-2032

Table 4: Global: Diesel Engine Market Forecast: Breakup by Region (in Million US\$), 2024-2032

Table 5: Global: Diesel Engine Market Structure

Table 6: Global: Diesel Engine Market: Key Players

List Of Figures

LIST OF FIGURES

Figure 1: Global: Diesel Engine Market: Major Drivers and Challenges

Figure 2: Global: Diesel Engine Market: Sales Value (in Billion US\$), 2018-2023

Figure 3: Global: Diesel Engine Market: Breakup by Power Rating (in %), 2023

Figure 4: Global: Diesel Engine Market: Breakup by End-User (in %), 2023

Figure 5: Global: Diesel Engine Market: Breakup by Region (in %), 2023

Figure 6: Global: Diesel Engine Market Forecast: Sales Value (in Billion US\$), 2024-2032

Figure 7: Global: Diesel Engine Industry: SWOT Analysis

Figure 8: Global: Diesel Engine Industry: Value Chain Analysis

Figure 9: Global: Diesel Engine Industry: Porter's Five Forces Analysis

Figure 10: Global: Diesel Engine (0.5 MW–1 MW) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 11: Global: Diesel Engine (0.5 MW–1 MW) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 12: Global: Diesel Engine (Up to 0.5 MW) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 13: Global: Diesel Engine (Up to 0.5 MW) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 14: Global: Diesel Engine (2 MW–5 MW) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 15: Global: Diesel Engine (2 MW–5 MW) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 16: Global: Diesel Engine (1 MW–2 MW) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 17: Global: Diesel Engine (1 MW–2 MW) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 18: Global: Diesel Engine (Above 5 MW) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 19: Global: Diesel Engine (Above 5 MW) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 20: Global: Diesel Engine (Automotive) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 21: Global: Diesel Engine (Automotive) Market: Breakup by Type (in %), 2023

Figure 22: Global: Diesel Engine (On-Road) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 23: Global: Diesel Engine (On-Road) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 24: Global: Diesel Engine (Off-Road) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 25: Global: Diesel Engine (Off-Road) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 26: Global: Diesel Engine (Automotive) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 27: Global: Diesel Engine (Non-Automotive) Market: Sales Value (in Million US\$), 2018 & 2023

Figure 28: Global: Diesel Engine (Non-Automotive) Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 29: Asia Pacific: Diesel Engine Market: Sales Value (in Million US\$), 2018 & 2023

Figure 30: Asia Pacific: Diesel Engine Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 31: Europe: Diesel Engine Market: Sales Value (in Million US\$), 2018 & 2023

Figure 32: Europe: Diesel Engine Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 33: North America: Diesel Engine Market: Sales Value (in Million US\$), 2018 & 2023

Figure 34: North America: Diesel Engine Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 35: Middle East and Africa: Diesel Engine Market: Sales Value (in Million US\$), 2018 & 2023

Figure 36: Middle East and Africa: Diesel Engine Market Forecast: Sales Value (in Million US\$), 2024-2032

Figure 37: Latin America: Diesel Engine Market: Sales Value (in Million US\$), 2018 & 2023

Figure 38: Latin America: Diesel Engine Market Forecast: Sales Value (in Million US\$), 2024-2032

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