

Global AIDC Diesel Engines Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global AIDC Diesel Engines market size was valued at US\$ 3601 million in 2025 and is forecast to a readjusted size of US\$ 9405 million by 2032 with a CAGR of 14.6% during review period.

AIDC Diesel Engine is a high-power, high-reliability diesel power unit specifically developed for backup power systems serving artificial intelligence data centers, intelligent computing centers, and hyperscale AI computing infrastructure. As a core power component within diesel generator sets, the diesel engine converts chemical energy from diesel fuel into mechanical energy and drives the alternator to generate stable electricity. With the rapid expansion of generative AI, large-scale model training, and inference workloads, AI data centers require continuous and reliable power supply to support GPU servers, AI computing clusters, and other mission-critical IT infrastructure during grid interruptions or power shortages.

AI data centers typically adopt a multi-layer power architecture consisting of grid power, UPS systems, and diesel generator sets. UPS systems provide millisecond-level power transfer to prevent instantaneous service interruption, while diesel generator sets provide long-duration backup power lasting hours or longer. Compared with conventional industrial diesel engines, AI data center diesel engines require superior startup response, transient performance, high-load stability, standby reliability, low maintenance requirements, and compatibility with complex electrical loads. Due to the MW-scale power requirements of AI data centers, current products mainly utilize high-speed, large-displacement diesel engines, typically covering power ranges from 1MW to above 5MW and supporting 2MW-class or larger generator set systems.

From the industrial value chain perspective, AI data center diesel engines occupy a core upstream position in the backup power ecosystem. Upstream suppliers include high-strength castings, crankshafts, pistons, fuel injection systems, turbochargers, electronic control systems, and other critical engine components. The midstream consists of diesel engine manufacturers including Cummins, Rolls-Royce Power Systems (MTU), Caterpillar, Mitsubishi Heavy Industries, Volvo Penta, Weichai Power, and Yuchai. These engines are integrated by diesel generator set manufacturers into complete backup power systems supplied to AI data center operators such as AWS, Microsoft Azure, Google Cloud, Meta, Equinix, Digital Realty, Alibaba Cloud, Tencent Cloud, and Huawei Cloud. Diesel engines typically account for approximately 65%-70% of diesel generator set costs, making them the highest-value component within the system. For a typical 2MW AI data center generator set, the total system price is approximately RMB 2.0-2.3 million per unit, with the diesel engine component accounting for approximately RMB 1.3-1.6 million. Driven by AI computing infrastructure expansion, high-power diesel engines are evolving from conventional backup equipment into strategic energy assets supporting the reliability of next-generation digital infrastructure.

In 2025, the global AIDC Diesel Engine market recorded shipments of approximately 14,000 units, with an average selling price of approximately US\$250,000 per unit and a manufacturing gross margin of approximately 28%.

The AI ??infrastructure revolution is redefining data center energy demands. Over the past decade, data center construction primarily revolved around cloud computing and internet services, resulting in relatively stable growth in backup power demand. However, with the explosion of generative AI, large-scale model training, and inference applications, data centers have entered an era of high power density. The rapidly increasing power demands from GPU servers, AI clusters, and high-speed network equipment have propelled the scale of individual data centers from tens of MW to hundreds of MW or even GW. Simultaneously, global data center construction faces challenges such as long grid expansion cycles, insufficient power supply, and fluctuations in renewable energy sources, significantly enhancing the importance of backup power. Against this backdrop, diesel engines, with their convenient fuel storage, rapid start-up, mature global supply chain, and long-term operating capabilities, remain the most mature and reliable backup power solution for large data centers.

The data center diesel engine market is undergoing a shift in supply and demand. Between 2024 and 2025, with the concentrated launch of AI data center construction, the global supply of high-power diesel generators experienced temporary shortages,

with delivery cycles for some international brands extending to dozens of weeks, prompting data center operators to accelerate supply chain diversification. In the past, the high-end data center backup power market was mainly dominated by European, American, and Japanese companies such as Cummins, MTU, Caterpillar, and Mitsubishi, whose advantages stemmed from long-term operating experience, global service networks, and highly reliable certification systems. However, tight supply has also provided an entry window for domestic companies. Companies like Weichai Power, Yuchai Machinery, and Shanghai Diesel Engine are accelerating their entry into the data center backup power supply supply chain, leveraging their large-bore engine technology, rapid delivery capabilities, and localized service systems. Weichai has focused on the large-bore engine market in recent years, with data center applications becoming one of its strategic growth directions. Domestic high-end diesel engines are breaking into the AI ??infrastructure field from traditional industrial sectors.

In the future, data center diesel engines will develop towards higher power, higher reliability, and greater intelligence. As AI data centers expand in scale, 2MW-class diesel engines will further develop towards 3MW, 5MW, and even higher power levels to reduce the number of units and improve energy system efficiency. Simultaneously, the unique operating environment of data centers is also driving engine technology upgrades, including low-load long-term operation optimization, wet stack effect control, high-altitude power correction, PQ characteristic matching, rapid parallel operation control, and remote intelligent operation and maintenance systems. In the future, diesel engines will gradually become compatible with low-carbon fuels such as HVO and biodiesel to reduce carbon emission pressure. On the other hand, the industry still faces long-term competition from gas-fired power generation, energy storage systems, flow batteries, and future hydrogen energy backup solutions. However, due to the extremely high reliability requirements of hyperscale AI data centers, diesel engines will maintain their status as a key backup energy source for a considerable period of time.

This report is a detailed and comprehensive analysis for global AIDC Diesel Engines market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global AIDC Diesel Engines market size and forecasts, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (K US\$/Unit), 2021-2032

Global AIDC Diesel Engines market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (K US\$/Unit), 2021-2032

Global AIDC Diesel Engines market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (K US\$/Unit), 2021-2032

Global AIDC Diesel Engines market shares of main players, shipments in revenue (\$ Million), sales quantity (K Units), and ASP (K US\$/Unit), 2021-2026

The Primary Objectives in This Report Are:

- To determine the size of the total market opportunity of global and key countries

- To assess the growth potential for AIDC Diesel Engines

- To forecast future growth in each product and end-use market

- To assess competitive factors affecting the marketplace

This report profiles key players in the global AIDC Diesel Engines market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Cummins, MTU, Caterpillar, Mitsubishi Heavy Industries, Volvo Penta, Perkins, Everllence, Shanghai New Power Automotive Technology Co., Ltd., Guangxi Yuchai Machinery Co., Ltd., Weichai Power Co., Ltd., etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

AIDC Diesel Engines market is split by Type and by Application. For the period

2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

V12 Engine

V16 Engine

Others

Market segment by Engine Power Output

1?2MW

2?4MW

?4MW

Market segment by Engine Displacement

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