

India Industrial Engines Market Segmented By Fuel Type (Diesel, Petrol and Gas), By Power (5 - 75 HP, 76 - 350 HP, 351 - 750 HP, and Above 751 HP), By End Use (Agriculture, Construction, Power Generation and Others), By Region, and By Competition, 2019-2029

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# Report description:

India Industrial Engines Market has valued at USD 162.94 million in 2023 and is anticipated to project robust growth in the forecast period with a CAGR of 5.05% through 2029. The Indian government has implemented several initiatives such as "Make in India," "Smart Cities Mission," and "Atmanirbhar Bharat" to enhance industrialization, manufacturing, and infrastructure development. These initiatives foster a favorable environment for industrial expansion, thereby stimulating the demand for industrial engines.

**Key Market Drivers** 

Infrastructure Development and Urbanization

India's industrial engines market is propelled by the rapid pace of infrastructure development and urbanization across the nation. As India continues its transformation into a global economic powerhouse, there is an ever-growing demand for industrial engines to drive various applications crucial for these advancements.

One of the key drivers of this growth is the ambitious government initiatives such as "Make in India" and "Smart Cities Mission." These programs have resulted in the establishment of new manufacturing facilities, industrial zones, and urban centers. The development of infrastructure, including roads, bridges, airports, and ports, necessitates heavy machinery and equipment, much of which relies on industrial engines for power generation. Industrial engines serve as the workhorses enabling the progress of these projects, whether it's construction equipment, generators, or other machinery.

Additionally, the urbanization trend in India is fueling the demand for backup power solutions in residential and commercial spaces. With the increasing migration of people to cities, ensuring a reliable electricity supply becomes crucial. This has led to a surge in the sale of standby generators and other power solutions, further bolstering the industrial engine market.

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Furthermore, the expansion of the logistics and transportation sector is another facet of infrastructure development. India's road network is expanding rapidly, and the movement of goods across the country heavily relies on diesel-powered vehicles. Industrial engines power these trucks and buses, playing a vital role in the growth of the logistics industry.

In conclusion, the relentless pace of infrastructure development and urbanization in India acts as a significant catalyst for the industrial engines market. Government initiatives, heightened construction activities, the need for dependable power supply in urban areas, and the expansion of the transportation sector all contribute to the escalating demand for industrial engines.

Agriculture and Rural Development

Agriculture has long served as the foundation of India's economy, playing a critical role in the country's growth trajectory. The agricultural and rural development sector stands as a key driver of the India Industrial Engines Market, relying heavily on a range of industrial engines for mechanization and power generation.

The modernization of agriculture takes center stage in India's priorities, with the aim of boosting productivity, reducing manual labor, and ensuring food security. This transformation entails the utilization of tractors, combine harvesters, irrigation pumps, and other agricultural machinery, all powered by industrial engines. These engines not only enhance operational efficiency but also alleviate the physical strain on farmers.

Furthermore, India's rural electrification initiatives have spurred the demand for industrial engines. In many remote or off-grid areas, reliable access to the grid remains limited. Consequently, diesel and solar-powered generators are extensively employed to provide electricity for agricultural operations, households, and small businesses in rural regions. The consistent need for power in these areas ensures a steady market for industrial engines.

Moreover, the burgeoning dairy industry in India has led to an increased requirement for milk processing plants and cold storage facilities. These facilities necessitate refrigeration and backup power systems, relying on industrial engines for uninterrupted operation.

In conclusion, the agricultural and rural development sector emerges as a significant catalyst for the India Industrial Engines Market. The mechanization of agriculture, rural electrification, and the expansion of dairy and cold storage industries collectively contribute to the escalating demand for industrial engines in rural areas.

#### **Energy and Power Generation**

India's rapidly expanding economy and increasing urbanization have led to a significant rise in energy demand. The energy and power generation sector serves as a vital catalyst for the India Industrial Engines Market. Industrial engines play a pivotal role in delivering reliable power through standby generators, co-generation systems, and distributed energy solutions.

One of the primary drivers of this growth is the necessity for backup power in both urban and rural areas. Frequent power outages, particularly during severe weather conditions, can disrupt industrial operations, data centers, hospitals, and essential services. To address these challenges, businesses and institutions invest in standby generators powered by industrial engines to ensure uninterrupted operations.

Co-generation, also known as combined heat and power (CHP), is gaining popularity in India due to its improved energy efficiency. Industrial engines are used in co-generation systems to simultaneously generate electricity and useful heat, making them highly efficient in industries such as manufacturing, textiles, and food processing.

Moreover, distributed energy solutions, including mini-grids and off-grid power systems, are gaining traction, particularly in rural and remote areas. Industrial engines, often combined with renewable energy sources like solar and wind, provide electricity to communities and businesses that are not connected to the main grid.

India's commitment to increasing the share of renewable energy in its energy mix is also driving the growth of the industrial engines market. Diesel and gas engines are utilized to provide backup power for renewable energy installations and maintain grid stability in the face of fluctuations in renewable sources.

In conclusion, the energy and power generation sector plays a pivotal role in driving the India Industrial Engines Market. The demand for backup power, the adoption of co-generation systems, the growth of distributed energy solutions, and the integration of industrial engines into renewable energy infrastructure all contribute to the expansion of this market.

# Key Market Challenges

**Environmental Regulations and Emissions Control** 

One of the most significant challenges facing the India Industrial Engines Market is the increasing stringency of environmental

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regulations and emissions control standards. As the world grapples with climate change and air quality concerns, governments and regulatory bodies in India are implementing stricter rules to reduce the environmental impact of industrial activities, including those powered by industrial engines.

A major challenge revolves around the control of emissions from diesel-powered engines. Diesel engines, while efficient and powerful, emit pollutants such as nitrogen oxides (NOx), particulate matter (PM), and sulfur dioxide (SO2). These pollutants contribute to air pollution and have adverse health effects on the population. To address this issue, India has adopted Bharat Stage (BS) emission standards, equivalent to Euro emission standards, to limit the emissions from various types of vehicles and equipment, including industrial engines.

Compliance with these stringent emission standards poses a significant challenge for manufacturers in the industrial engine market. Developing engines that meet these standards while maintaining performance and cost-effectiveness requires substantial investments in research and development. Manufacturers must also adapt their production processes to ensure that engines consistently meet these standards, which can be technologically challenging and costly.

Furthermore, retrofitting existing industrial engines to meet these emissions standards can be expensive and may not always be economically viable for users. This challenge is particularly pronounced in industries that rely heavily on older equipment and may face financial constraints.

Balancing the need for economic growth and industrial development with the imperative to reduce emissions is a complex challenge for the India Industrial Engines Market. Meeting stringent emissions standards while ensuring the continued affordability and availability of industrial engines remains a significant hurdle.

Competition from Alternative Power Sources

One of the key challenges confronting the India Industrial Engines Market is the increasing competition from alternative power sources, particularly renewable energy solutions and electric power. As the world transitions towards cleaner and more sustainable energy options, industrial users in India are increasingly exploring alternatives to conventional diesel and gas-powered engines.

Renewable energy sources like solar and wind power are gaining economic viability, making them attractive choices for businesses aiming to reduce their carbon footprint and energy expenses. This trend presents a direct challenge to the industrial engine market, especially in non-critical power supply applications where intermittent renewable sources can be relied upon. Furthermore, the electrification of various industries and the advancement of electric vehicles have the potential to disrupt the market. Electric motors are becoming more efficient and cost-effective, making them a preferred option in applications where concerns about emissions and noise pollution arise.

Moreover, government incentives and policies designed to promote the adoption of renewable energy and electric technologies may encourage businesses to invest in these alternatives rather than traditional industrial engines.

To maintain competitiveness in the face of this challenge, the India Industrial Engines Market must foster innovation and adaptability. This may involve developing hybrid solutions that combine traditional engines with renewable energy sources or exploring cleaner fuel options like natural gas to reduce emissions.

**Economic and Financial Constraints** 

The India Industrial Engines Market faces the challenge of economic and financial constraints, both on the supply and demand sides. On the supply side, manufacturers and suppliers of industrial engines must contend with escalating material costs, labor expenses, and regulatory compliance costs. These factors can pose obstacles in offering competitively priced engines in a market that is highly price-sensitive.

Furthermore, the volatility in currency exchange rates can impact the cost of imported engine components and technologies, potentially resulting in price fluctuations within the market. This holds particular relevance in a globalized market where numerous industrial engine components are sourced from overseas.

On the demand side, businesses and industries reliant on industrial engines often operate within stringent budgets and financial constraints. Economic downturns, such as recessions or unforeseen events like the COVID-19 pandemic, can lead to reduced capital expenditure and a deceleration of industrial activities. During such periods, businesses may defer or downsize investments in new engines or equipment, thereby affecting the market's growth.

Additionally, financing options for industrial engines may be limited or accompanied by high-interest rates, posing challenges for

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small and medium-sized enterprises (SMEs) to afford new engine purchases or upgrades.

To address these economic and financial challenges, manufacturers may need to explore innovative financing models, provide flexible payment options, and focus on cost optimization to ensure the affordability of industrial engines. Collaborative efforts between the government, financial institutions, and industry stakeholders can help mitigate these challenges and support the growth of the India Industrial Engines Market.

**Key Market Trends** 

Transition to Cleaner and Greener Technologies

One notable trend in the India Industrial Engines Market is the shift towards cleaner and more sustainable technologies. Growing environmental concerns, government regulations, and an increasing focus on sustainability are compelling industries to explore alternatives to conventional fossil fuel-powered engines.

A key driver of this trend is the increasing adoption of natural gas-powered industrial engines. Natural gas is considered a cleaner-burning fuel compared to diesel or gasoline, resulting in reduced greenhouse gas emissions and pollutants. This transition is especially evident in sectors like power generation, where natural gas-based power plants are gaining popularity due to their lower emissions and cost advantages.

Moreover, the integration of advanced emission control technologies, such as selective catalytic reduction (SCR) and diesel particulate filters (DPF), is assisting industrial engines in meeting stringent emissions standards. These technologies effectively reduce harmful emissions, making engines more environmentally friendly.

The momentum towards hybrid and electric industrial engines is also gaining traction. Electric motors are being employed alongside traditional engines or as primary power sources in applications where power demand is intermittent or emissions need to be minimized. This aligns with India's broader push towards electric mobility and renewable energy sources.

Overall, the transition to cleaner and more sustainable technologies in the India Industrial Engines Market is driven by environmental awareness, regulatory pressures, and the growing demand for sustainable industrial practices. Manufacturers are responding by developing engines that not only deliver efficiency and power but are also mindful of ecological impact. Digitalization and IoT Integration

Another significant trend observed in the India Industrial Engines Market is the increasing adoption of digitalization and the integration of Internet of Things (IoT) technologies into industrial engines and power systems. This trend is revolutionizing the monitoring, control, and maintenance of industrial engines.

Through the utilization of IoT sensors and connectivity, industrial engines are now capable of providing real-time data on performance, fuel efficiency, and maintenance requirements. This data proves invaluable for predictive maintenance, as it enables operators to proactively identify and address potential issues before they lead to downtime. As a result, predictive maintenance can significantly minimize operational disruptions and associated costs.

Additionally, digitalization facilitates remote monitoring and control of industrial engines, simplifying the management of multiple engines and power systems from a centralized location. This capability proves particularly advantageous for industries with distributed operations, such as agriculture and mining.

The information collected from industrial engines is further leveraged through data analytics and machine learning, yielding insights into operational efficiency and optimization opportunities. These insights contribute to improved fuel efficiency, reduced emissions, and enhanced overall performance.

Moreover, the integration of digital technologies into industrial engines not only enhances operational efficiency but also enables the development of smart grids and microgrids. These advanced systems leverage sophisticated control algorithms and data analytics to optimize power generation and distribution, thereby improving energy reliability and sustainability.

Segmental Insights

Fuel Type Insights

The Diesel emerged as the dominant segment in 2023. Diesel engines continue to play a crucial role in diverse industries and applications across India. They are extensively utilized in power generation, construction equipment, agricultural machinery, marine vessels, and transportation. In the power generation sector, diesel generators (DG sets) serve as reliable backup power sources for industries, commercial establishments, hospitals, and residential complexes, particularly in areas with unreliable electricity grids.

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Diesel generators contribute significantly to the diesel segment, offering quick startup times and high reliability, making them an ideal choice for providing backup power during grid outages. The demand for standby diesel generators is driven by the necessity for uninterrupted power supply in critical sectors such as healthcare, data centers, and manufacturing.

Diesel-powered construction equipment, including excavators, bulldozers, cranes, and backhoes, are essential for infrastructure development and construction projects. The growth of the construction sector in India, encompassing the development of roads, bridges, airports, and smart cities, fuels the demand for industrial diesel engines.

Diesel engines power tractors, combine harvesters, irrigation pumps, and other agricultural machinery, making a significant contribution to agricultural mechanization. With a focus on enhancing farm productivity, there is a consistent demand for more efficient and powerful diesel engines in the agricultural sector.

In conclusion, the diesel segment of the India Industrial Engines Market assumes a pivotal role in various industries and applications.

# **End Use Insights**

The Power Generation segment is projected to experience rapid growth during the forecast period. Power generation, encompassing both prime power and backup power solutions, is a critical application for industrial engines in India. The Power Generation segment covers a wide range of applications, including standby power generation, continuous power supply, and co-generation (combined heat and power, or CHP) systems. This segment caters to diverse industries such as healthcare, data centers, manufacturing, commercial establishments, residential complexes, and agriculture.

Standby power generation plays a significant role within the Power Generation segment. Diesel generators (DG sets) are extensively used to provide backup power during grid outages. The demand for standby power solutions is driven by the need for uninterrupted power supply in critical sectors, including healthcare, IT, and telecom.

Co-generation or combined heat and power (CHP) systems are gaining popularity in India's industrial landscape. These systems utilize industrial engines to simultaneously produce electricity and useful heat for industrial processes. CHP systems are highly efficient and find applications in industries such as textiles, food processing, and chemicals.

Regulatory compliance with emissions standards presents a key challenge in the Power Generation segment. Diesel engines must meet stringent Bharat Stage (BS) emission standards, equivalent to Euro standards. Engine manufacturers are prioritizing emissions reduction technologies, such as selective catalytic reduction (SCR) and exhaust gas recirculation (EGR), to comply with these standards while maintaining efficiency.

In conclusion, the Power Generation segment of the India Industrial Engines Market is a dynamic and crucial component that serves diverse industries with varying power needs.

# Regional Insights

South India emerged as the dominant region in the India Industrial Engines market in 2023, holding the largest market share. South India, comprising states such as Karnataka, Tamil Nadu, Andhra Pradesh, Kerala, and Telangana, possesses a distinctive industrial landscape characterized by diverse sectors and economic activities. South India boasts a varied industrial base, encompassing manufacturing, automotive, information technology (IT), textiles, agriculture, and healthcare. Each of these sectors has specific requirements for industrial engines, spanning from backup power solutions to machinery in manufacturing plants. The automotive industry, with manufacturing hubs in Chennai and Bengaluru, is a significant consumer of industrial engines for production and testing facilities.

Agriculture holds paramount importance in South India, and industrial engines play a vital role in mechanization, irrigation, and crop processing. Engines drive tractors, harvesters, and water pumps. With a focus on agricultural modernization and enhancing farm productivity, there is a growing demand for more efficient and powerful engines in this sector.

South India has witnessed rapid urbanization and infrastructure development in major cities such as Bengaluru, Chennai, and Hyderabad. Infrastructure projects necessitate industrial engines for construction equipment and power generation. The establishment of IT parks, special economic zones (SEZs), and smart cities has created a requirement for reliable backup power solutions, thereby driving the demand for industrial engines.

South India possesses abundant solar and wind energy potential. States like Tamil Nadu and Andhra Pradesh have been at the forefront of renewable energy adoption. The integration of renewable energy sources with industrial engines, particularly in areas with unreliable power grids, presents opportunities for hybrid power solutions. The IT sector significantly contributes to South

India's economy, and data centers necessitate robust backup power solutions to ensure uninterrupted operations. The growth of data centers in cities like Bengaluru and Hyderabad fuels the demand for reliable industrial engines.

In conclusion, the India Industrial Engines Market in South India is influenced by the region's diverse industrial sectors, infrastructure development, agriculture, and renewable energy initiatives. Comprehending the unique requirements and opportunities in South India is vital for businesses operating in this market to prosper and expand.

Key Market Players

**Cummins India Limited** 

JCB India Ltd

Kirloskar Oil Engines Ltd

Mahindra & Mahindra Ltd

Caterpillar India Private Ltd

TATA Motors Ltd

Ashok Leyland Ltd

Perkins Engines Company Limited

VE Commercial Vehicles Limited

**Greaves Cotton Limited** 

Report Scope:

In this report, the India Industrial Engines Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

□ India Industrial Engines Market, By Fuel Type:

o∏Diesel

o[Petrol

o∏Gas

□ India Industrial Engines Market, By Power:

o∏5 - 75 HP

o∏76 - 350 HP

o∏351 - 750 HP

o∏Above 751 HP

□ India Industrial Engines Market, By End Use:

o∏Agriculture

oConstruction

o∏Power Generation

o⊓Others

□ India Industrial Engines Market, By Region:

o

☐North India

o∏South India

o∏West India

o∏East India

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India Industrial Engines Market.

Available Customizations:

India Industrial Engines Market report with the given market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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