Electric Off Highway Equipment Machinery - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Report description:

The Electric Off Highway Equipment Machinery Market size in terms of Equal-16.72 is expected to grow from USD 13.5 billion in 2024 to USD 29.25 billion by 2029, at a CAGR of 16.72% during the forecast period (2024-2029).

Over the long term, growing preference for the reduction in carbon emissions, improvements in charging infrastructure, and the government's aggressive push towards promoting the usage of electric-powered construction and agricultural equipment will serve as major catalysts for the growth of the off-highway electric equipment market.

The European Union announced its commitment to reduce its net greenhouse gas emissions by at least 55 percent by 2030, compared to 1990. Further, under the European Climate Law, the union established its aim to reach net zero greenhouse gas emissions by 2050.

The adoption of electric propulsion for heavy equipment requires efficient charging infrastructure, which can provide fast charging services. Therefore, various companies are actively developing solutions to address the equipment charging needs of off-highway equipment. For instance,

In September 2023, Amazon published a new, open-source tool, CHALET, to help private industry, governments, electricity network operators, and local authorities determine where electric charging points for heavy goods vehicles should be built across the European region.

Even with the increasing effort by the public and private players to promote the usage of electric equipment for agricultural and off-road works, the adoption of electric propulsion medium has faced challenges. Firstly, the cost of electric equipment is

comparatively higher than its counterparts. Secondly, electric propulsion is not suitable for machinery that requires higher energy since they generally operate for a longer time, thus shooting up the charging time of this machinery. However, with the advancement of technology, various manufacturers are establishing products that can cater to the increasing needs of agricultural and off-road operators. For instance,

In June 2023, Volvo CE launched its first mid-size electric excavator, the EC230 Electric, exclusively in the European market to deliver low-noise and zero-emission solutions to end-users. Further, the company stated that the 23-ton EC230 Electric excavator will deliver the same performance as its conventional diesel counterpart but with the added benefit of lower total cost of ownership.

Asia-Pacific is expected to remain the epicenter of ongoing demand for electric off-highway equipment. This is attributed to large-scale construction, mining, and infrastructure development projects which are under the pipeline in the region. In addition, major players in the region have increased their R&D expenditure exponentially to integrate innovation with performance excellence. The demand for high-performance, highly efficient, and safe handling equipment from the end market is expected to make the market more competitive over the forecast period.

Electric Off-Highway Equipment Market Trends

Hybrid Segment of the Market to Gain Traction during the Forecast Period

Increasing government spending on mining and infrastructure activities, rising foreign direct investments in the construction sector, and developments in road transportation infrastructure owing to the surge in population and urbanization serve as major determinants for the surging demand for new-energy off-highway equipment around the world. These equipment require higher energy to operate, and therefore, operating all-electric off-highway equipment becomes an arduous task for commercial fleet operators, which, in turn, positively impacts the demand for the hybrid segment of the market.

In July 2023, the Brazilian government announced a series of road auctions worth USD 13 billion for the year 2023 for better maintenance and development of the transportation network to facilitate cross-border trading activity and increase consumers' convenience for mobility.

The Grand Paris Project initiative, the largest transportation project in Paris, which is being carried out in phases till 2030, has attracted billions of investments in the construction sector. The project envisages the expansion of Line 14 and the construction of four new automatic Lines. Further, the project outlines a new metro development with an estimated investment of Euro 36.1 billion (USD 47.7 billion), 30% of which is being financed by the French Government through Societe du Grand Paris (SGP) and the remaining 70% by the local authorities through earmarked taxes, subsidies, and loans.

With the rising investment in the construction and commercial sector around the world, there will exist a massive demand for deploying hybrid off-highway equipment in project sites. These diesel-electric hybrid drive systems allow the machinery to run with a slightly smaller engine at a lower rpm. This translates into fuel savings, fewer part movements, and longer engine life, coupled with a lower total cost of ownership in the long run. The other advantage of using a hybrid engine, apart from sustainability, is the reduction in vehicle noise. Various private companies operating across the world are investing hefty sums to launch advanced hybrid off-highway equipment to cater to the rising demand.

In November 2023, Caterpillar announced the launch of a three-year program to demonstrate an advanced hydrogen-hybrid power solution built on its new Cat C13D engine platform to develop a transient-capable system for off-highway applications. The project will demonstrate how state-of-the-art control systems and electric-hybrid components can help hydrogen-fueled engines meet or exceed the power density and transient performance of traditional diesel engines.

In September 2022, Volvo Construction Equipment introduced a 38-tonne class EC380E hybrid excavator model, which is one of the largest among the company's offerings. The new launch assists the company in expanding its hybrid range of products and simultaneously helps increase fuel efficiency by 17%.

With advancements in powertrain technology and increasing investment in construction activities across the globe, the hybrid segment of the market is expected to witness surging growth during the forecast period.

Asia-Pacific is the Fastest Growing Market during the Forecast Period

The extensive focus of the governments across the Asia-Pacific region to achieve a carbon-neutral economy is aiding the rapid transformation in various sectors in adopting a new energy ecosystem. With the aggressive strategy adopted by the governments of India and China, among other countries, to achieve a reduction in carbon emissions, there will exist a greater demand for advanced products used in various sectors, which helps in the reduction of carbon content in the environment. For instance,

The government of India announced its goal to achieve the target of net zero emissions by 2070 while aiming for a one billion metric ton reduction in projected carbon emissions until 2030. Similarly, the government of China announced its aim to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060.

With the shifting focus towards adopting a new energy ecosystem, various companies operating in different industries are actively promoting the use of products and equipment to help in air pollution reduction. Off-highway equipment companies operating in space are investing hefty sums in developing new products that are operated via an electric drive type, which is expected to positively impact the demand for electric off-highway equipment across the Asia-Pacific region.

In June 2023, XCMG, a heavy machinery manufacturing company based out of China, announced the launch of XES35. This next-generation super 35m□ electric shovel excavator is capable of loading about 65 tons of ore each time, and it's designed to deploy with mining dump trucks in the 220 to 330 tonnage range.

Moreover, the rising urban population in countries such as India and China is aiding the surging investment in the transportation and construction sector to provide its citizens accessibility to top-notch infrastructure, which, in turn, contributes to the growing demand for off-highway equipment across the Asia-Pacific region. For instance,

In September 2023, the National Highways Authority of India (NHAI) announced its plan to build 27 new roads in the state of Kerala, with a total project cost of INR 70,114 Crore (USD 8.4 million). These road projects will encompass a distance of 960.27 km, including the development of greenfield highways, in addition to the ongoing construction of National Highway 66.

With rising investment to develop advanced electric off-highway equipment products, especially by Chinese manufacturers such as XCMG Group, coupled with the increasing investment to improve infrastructural network across the Asia-Pacific region, there will exist a massive demand for electric off-highway products during the forecast period.

Electric Off-Highway Equipment Industry Overview

The electric off-highway equipment market is fragmented and highly competitive due to the presence of various international and regional players operating in the ecosystem. Some of the major players include Hitachi Construction Machinery Co., Ltd., Volvo CE, Caterpillar Inc., OJSC BelAZ, BEML Limited, Komatsu Ltd., Liebherr International AG, SANY Heavy Industry Co., Ltd., and XCMG Group Co., Ltd., among others. These players are constantly ramping its R&D investment to launch advanced electric off-highway equipment products in the market. For instance,

In December 2023, Volvo CE announced its commercial launch of a 50-ton EC500 electric excavator in the Indian market to pioneer a transition to zero-emission mining and construction machinery. Further, the company stated that an electric wheel loader, the L120 model, is in the development stage and will be launched in the coming years.

In December 2023, Tata Hitachi displayed a series of technologically advanced futuristic electric machines that included the ZAXIS 55U-6EB (Electric Battery) and India's first indigenously developed E Electric concept mini excavator at the EXCON 2023 exhibition. The introduction of an electric mini excavator aims to demonstrate the company's commitment to environmental sustainability.

The market is anticipated to witness a rapid enhancement in battery technology and electric drivetrain to power machinery that requires higher energy as these players try to gain a competitive edge in the industry.

Additional Benefits:

  The market estimate (ME) sheet in Excel format
 3 months of analyst support

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