

Off-Highway Vehicle Hvac Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The off-highway vehicle HVAC market is valued at USD 938.78 million and is expected to reach USD 3,075.34 million, registering a combined CAGR of 6.49% during the forecast period.

Amid the COVID-19 pandemic, off-highway vehicle manufacturing activities were halted in the first half of the year 2020, primarily attributed to lockdown norms imposed by governing bodies across the world. This, in turn, hampered the demand for associated parts and components, including the HVAC system. However, post the lockdown phase, the demand for off-highway vehicles witnessed significant growth, which in turn fueled the demand for the associated HVAC systems, and the growth is anticipated to continue during the forecast period.

Growing environmental challenges, increasing per capita income, harsh working environments in off-road vehicles, and a rise in automation in various industries, such as agriculture, construction, and mining, are expected to fuel the demand for off-highway vehicle HVACs during the forecast period. As the off-highway vehicle has to work in unpredictable working conditions, with large windows for the driver for better visibility, HVAC plays a crucial role in keeping the cabin cool/hot as the situation demands.

Technology in the off-highway vehicle is constantly improving to increase productivity and operator comfort. The incorporation of HVAC systems is continually increasing in these vehicles, as most new off-highway vehicles are integrated with factory-fitted air conditioning systems. Reduction in the overall system size and weight of the system and governments' stringent regulations to curb CO2 emissions are projected to drive the growth of the market studied over the forecast period.

Agricultural vehicles are subjected to environmental conditions that change according to the application, such as dusty conditions, harmful pesticides, and herbicide vapors. Owing to such extreme conditions, these vehicles demand refrigeration, heating,

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pressurization, and filtration. In the current scenario, agriculture is witnessing various technological advancements, such as the introduction of electrification, artificial intelligence, and autonomous vehicle. Such advancements are posing a huge growth opportunity in the agricultural HVAC market.

Off-highway Vehicle HVAC Market Trends

Rising Off-Highway Vehicle Demand

Infrastructure spending by government and private players across the world has been witnessing a notable rise over the past few years, thereby offering several growth opportunities for construction equipment and associated component manufacturers, as the demand for construction equipment directly varies with investments in infrastructure development.

The government of various regions is focusing on infrastructure development which has boosted the off-highway vehicle demand. For instance, in July 2021, Canada announced over USD 33 billion in investment into Canadian infrastructure projects and over USD 180 billion in the next 12 years for the development of the country's infrastructure.

Amid this stance, players are introducing off-highway vehicles equipped with air conditioning systems. For instance:

In June 2021, Liebherr announced the launch of the advanced 305 tons mining truck used at mining sites across the globe. The vehicle offers a powerful 3,650 hp engine and has an integrated HVAC system that provides comfort in all extreme temperatures.

Off-highway vehicles mostly work in extreme climatic conditions, such as in snow-covered terrain or the desert. HVAC manufacturers are developing lighter, more efficient, and smaller components owing to limited space availability in the cabin. Apart from comfortability, HVAC provides reduced operating hours, ultimately resulting in fuel-saving and fewer emissions.

Moreover, the rising trend of electrification is also being witnessed in off-road vehicles. Many start-ups and established players have launched their electric models with advanced HVAC systems. For instance, Nikola NZT, an electric off-road vehicle that gives a 150-mile range on a full charge, has a climate control HVAC system for heating or cooling so that the driver does not feel any discomfort.

Asia-Pacific Is Expected to Witness High Growth in the Off-highway Vehicle HVAC Market

Asia-Pacific is the manufacturing hub of construction and heavy machinery. In addition, developing economies, such as China, India, and Japan, have a huge potential for infrastructural development, mining, and agriculture, as these countries are the most populated in the world. The market for excavators and other types of construction machinery, including off-highway vehicles, is anticipated to strengthen in China over the forecast period.

China is also one of the major countries in the Asia-Pacific, with ample construction activities being supported by its growing economy. The country's growth rate is high but is gradually moving toward moderate (as the population ages and the economy rebalances from investment to consumption, from manufacturing to services, and from external to internal demand).

Despite near-term challenges in certain construction sectors, the medium to long-term growth story in India remains intact. The construction industry in India is expected to grow steadily over the forecast period, as the infrastructure sector is a key pillar for the growth of the Indian economy. The government is taking various initiatives to ensure the time-bound creation of excellent infrastructure in the country. Apart from this, the Central Vista project and the new parliament building project of the Central

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Government are also expected to offer support to the growth of the construction industry, i.e., In the ongoing FY 2021-22, the Government has allocated a total of INR 1,289 Crore for the development and re-development of the Central Vista project.

Considering the infrastructure and development scenarios in the Asia-Pacific, demand for better and advanced off-highway vehicles is anticipated to roll down during the forecast period, which will provide momentum to the HVAC system demand in these vehicles.

Off-highway Vehicle HVAC Market Competitor Analysis

The off-highway vehicle HVAC market is moderately fragmented, although some of the major players in the market are Denso Corporation, MAHLE GmbH, and Marelli Corporation, amongst others. The companies are expanding their presence by acquiring other market participants, forming strategic alliances, and tapping into new and unexplored markets.

In February 2022, Mitsubishi Heavy Industries Group celebrated the launch of the Brighter Solar Project started its operation in January 2022. The project will generate 19,000 megawatt hours of renewable carbon-free electricity annually and will benefit the consumers in North Western region of North Carolina

Additional Benefits:

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

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