SCOTTS INTERNATIONAL

Fuel Cell Commercial Vehicle Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 100 pages | Mordor Intelligence

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Report description:

The fuel cell commercial vehicle market was valued at USD 2 billion in 2021 and is expected to grow to USD 14 billion by 2027, registering a CAGR of over 40% during the forecast period (2023 - 2028).

The COVID-19 pandemic adversely affected the global automotive industry. However, the impact was relatively low due to the beginning stages of the technology and its usage. However, most alternative fuel commercial vehicles (buses) were used in public transport worldwide, which took a huge blow in monetary terms due to the lockdown and social distancing norms.

Some of the major factors driving the market's growth are the enactment of stringent emission norms, growing mass urban transportation, rising demand for alternate fuel vehicles, and continuous government support. However, environmental concerns related to hydrogen production may hinder the market's growth.

Some key players dominating the market studied are Toyota Motor Corp., New Flyer America, and Wrightbus. Fuel cell buses are commercially being used in the United States. In February 2019, Ballard Power Systems announced the launch of 40-foot and 60-foot Xcelsior fuel cell-electric buses (FCEBs), powered by Ballard FCveloCity-HD 85 kilowatt (kW) modules. They completed rigorous testing at the Altoona Bus Research and Testing Center under the Federal Transit Administration (FTA) program.

Fuel Cell Commercial Vehicle Market Trends

Enactment of Stringent Emission Norms for Commercial Vehicles

With the growing environmental concerns, governments and environmental agencies are enacting stringent emission norms and laws, which are expected to increase the manufacturing cost of fuel-efficient diesel engines in the coming years.

As a result, the new commercial vehicle diesel engines segment is expected to register a sluggish growth rate in the short term, thereby increasing the demand for fuel cell commercial vehicles. Most diesel engines can convert about 40%-46% of the fuel energy, while the remaining energy is lost in the environment as heat through exhaust emissions and cooling systems. The burden on commercial vehicle manufacturers has increased with the enactment of the Euro VI emission for heavy-duty engines.

Additionally, in December 2000, the US EPA signed emission standards for the model year 2007 and later heavy-duty highway engines. The California Air Resource Board (CARB) adopted virtually identical 2007 heavy-duty engine standards in October 2001. The rule included two components: emission standards and diesel fuel regulations.

- The emission standards included new and stringent limits for PM (0.01 g/bhp·hr) and NOx (0.20 g/bhp·hr).

In North America, the US GHG emissions and fuel efficiency standards for heavy- and medium-duty vehicles were jointly developed by the Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA).

- The NHTSA developed fuel consumption standards under the authority of the 2007 Energy Independence and Security Act (EISA), while the EPA developed a GHG emissions program under the Clean Air Act.

- The GHG program includes CO_2 emission standards, emission standards for N_2O and CH_4, and provisions to control hydrofluorocarbon leaks from air conditioning systems.

In the United States, heavy-duty vehicles, such as combination tractors/trailers, vocational vehicles, heavy-duty pickup trucks, and vans, must achieve up to 27% CO_2 emission reductions over the 2017 baselines by 2027.

Asia Pacific is Expected to Lead the Market

Asia-Pacific is expected to lead the market owing to the immense automotive industry size in major countries like China, India, Indonesia, and Thailand. The region is also home to major manufacturers of fuel cell vehicle technology. Toyota is conducting extensive R&D to develop hydrogen fuel cell-powered vehicles during the forecast period.

Additionally, several new developments in the way of investments into fuel cell-powered vehicles are further expected to increase the demand for fuel cell commercial vehicles in the region. Several major cities and countries have released their goals to reduce commercial vehicle emissions, with plans for hydrogen technology and investments in this sector.

The Japanese government is banking on hydrogen vehicles to achieve carbon neutrality by 2050. It has set an ambitious target of having 200,000 FCVs on the road by 2025, compared to about 3,600 in 2019, along with 320 hydrogen filling stations under its third Strategic Roadmap for Hydrogen and Fuel Cells.

Japan-based Toyota and Honda Motor Co. Ltd have been the pioneers in commercial passenger hydrogen models. However, South Korean rival Hyundai Motor Co. also entered the fray, encouraged by its government's plans to produce 6.2 million FCVs and build at least 1,200 refilling stations by 2040.

Fuel Cell Commercial Vehicle Market Competitor Analysis

The fuel cell commercial vehicle market is fairly new compared to the electric and IC engine counterpart markets in the industry on a global scale. The market is occupied by manufacturers of different capabilities and sizes, including major automakers like

Scania, Toyota, etc., and relatively new to this market segment, including companies like Nikola Motors. Due to the early stages of development and production of this technology in vehicles, the market is concentrated and occupied by legacy manufacturers and new entrants, offering excellent products in the category.

Additional Benefits:

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

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