

Automotive Fuel Cell System - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Automotive Fuel Cell System Market size is estimated at USD 7.21 billion in 2025, and is expected to reach USD 39.68 billion by 2030, at a CAGR of 40.63% during the forecast period (2025-2030).

Key Highlights

- The COVID-19 pandemic did not impact the market as severely as it had affected other automotive segments. While the demand experienced a decline during the lockdown, it was expected that the market would gain momentum in 2021, with high growth continuing throughout the forecast period.
- 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 during the short term.
- Additionally, conventional fossil fuel-powered commercial vehicles, especially trucks, and buses, are responsible for increasing transportation emissions. The advent of fuel-cell commercial vehicles, which are considered low or zero-emission vehicles, is anticipated to reduce vehicular emissions emitted by heavy commercial vehicles.
- Moreover, initiatives by government bodies around the world to opt for green energy mobility in order to curtail and curb transportation pollution is a key factor that is projected to drive the fuel cell system market in the near future.

Automotive Fuel Cell System Market Trends

Government Initiatives for Clean Energy is Driving the Hydrogen Fuel Demand

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- Government initiatives throughout the world to choose green energy mobility in order to restrict and reduce transportation pollution is a crucial driver that is expected to boost the fuel cell commercial vehicle market in the near future. Several governments are already laying out plans throughout the world to encourage fuel-cell electric vehicles (FCEVs) on the road will also help the automotive fuel-cell industry grow.
- In February 2022, Japan's Ministry of the Environment announced that it would support local governments and companies in the establishment of a hydrogen business consortium. The ministry has been jointly implementing a hydrogen supply chain platform that generates low-carbon hydrogen and utilizes it in the region with certain companies and local governments. It aims to realize the hydrogen supply chain platform after conducting demonstrations across Japan by around 2030.
- In February 2022, the Indian Ministry of New and Renewable Energy announced that it implemented the 'Renewable Energy Research and Technology Development' program to support research in various aspects of renewable energy, including inter-alia hydrogen-based transportation and fuel cell development. The ministry listed some of its major development. The Indian Institute of Science (IISc) established a production plant for high-purity hydrogen generation through biomass gasification. International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI) Center for Fuel Cell Technologies is setting up an integrated automated manufacturing line for producing 20 kW PEM fuel cell stacks.
- In January 2022, the German government announced support for the CryoTRUCK project for hydrogen trucks. The testing specialist IABG and the Technical University of Munich are jointly developing a CRYOGAS hydrogen gas tank with a refueling system for hydrogen trucks in long-distance transport. The three-and-a-half-year CryoTRUCK project, with a total budget of more than EUR 25 million, will develop and validate a first-generation technology for cryogenic compressed hydrogen gas (CRYOGAS) storage and refueling systems in heavy-duty fuel cell trucks.
- Such initiatives are driving the market forward by increasing the adoption of fuel-cell transportation. However, the major obstacle to the introduction of a wide range of fuel cell vehicles in the global market is the lack of hydrogen infrastructure. Factors for fewer hydrogen refueling stations around the world are the involvement of high investment and conventional production methods of hydrogen, which is leading to high emission levels and making it difficult to be in line with the stringent Energy Policy Act.
- Establishing a new hydrogen refueling infrastructure is extremely costly (but not any costlier than establishing a methanol or ethanol infrastructure). Hydrogen that is produced from natural gas can be cheaper than gasoline. Hydrogen produced from water and electricity via hydrolysis is more expensive than gasoline using conventional methods unless low-cost off-peak electricity is used or solar panels are employed.

Europe Expected to Witness High Growth Rate

- The European Union plans to reduce greenhouse gas (GHG) emissions from the transportation sector significantly. As a result, several countries in Europe have identified the implementation of innovative technologies, such as fuel cells (primarily PEMFC), as a way to meet these objectives. This, in turn, is expected to provide a significant opportunity for the fuel cell manufacturers involved in the market in the near future.
- Europe is home to over 30% of proposed hydrogen investments globally (about USD 76 billion), with nearly 314 project proposals in total and 268 aiming for full or partial commissioning through 2030.
- The European Union (EU) has proposed some of the most stringent emission standards in the world in order to reduce the usage of conventional fuel vehicles and encourage the use of alternative fuel vehicles in the region. These emission standards are projected to push the market and vehicle manufacturers toward zero-emission vehicles.
- Several projects have been initiated to explore and develop acceptable solutions to the problem of automobile emissions. For instance, ongoing EC-supported initiatives include the H2BusEurope scheme that involves the deployment of 1,000 hydrogen buses and infrastructure and the JIVE and JIVE 2 projects that involve putting into operation nearly 300 fuel cell electric buses (FCEBs) in 22 cities across Europe and will be supported in part by a 32 million euro grant from the FCH JU (Fuel Cells and

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Hydrogen Joint Undertaking) within the European Union's Horizon 2020 framework program for research and innovation. The project consortium consists of 22 members from seven different countries.

- Furthermore, companies operating in the market are adopting strategies such as new product developments, collaborations, contracts, and agreements to sustain their market position. For instance,
- In September 2022, Hyundai Motor Company and Iveco Group at IAA Transportation 2022 in Hannover unveiled the first IVECO eDAILY Fuel Cell Electric Vehicle. The two companies announced hydrogen-powered IVECO BUS vehicles with Hyundai's fuel cell system earlier in July. The eDAILY Fuel Cell Electric Vehicle (FCEV) exemplifies IVECO's best-selling and longest-running large van's future potential.
- In addition, the development of hydrogen technology in the region will help in the expansion of the market.
- For instance, in March 2022, Cummins Inc. announced the successful operation of its new Hydrogen fuel cell systems production center in Herten, Germany. This significant development is expected to bolster the company's efforts in scaling up alternative power solutions and promote the widespread adoption of hydrogen technologies throughout Europe. The facility boasts an initial production capacity of 10MW per year for fuel cell system engineering and assembly.
- The companies active in the region are constantly working on new materials and new fuel cell technologies. They are also spending on the expansion of their facilities. These trends are expected to continue in the coming years, as some companies have indicated their focus on fuel cell technology by announcing their upcoming investments.

Automotive Fuel Cell System Industry Overview

- The automotive fuel cell system market is dominated by players such as Ballard Power Systems Inc., Doosan Fuel Cell Co. Ltd, Hydrogenics, and Nedstack Fuel Cell Technology BV. These companies have been expanding their businesses using new and innovative technologies to have an advantage over their competitors.
- In February 2023, Doosan Fuel Cell signed a statement of cooperation with the South Australian government and HyAxiom, a subsidiary of Doosan Corporation. In accordance with the agreement, South Australia and Doosan Fuel Cell committed to "exchange equipment and experience for the production of eco-friendly hydrogen and derivatives, to "create strategies and alliances to achieve worldwide competitiveness in hydrogen exports," and to "share best practices for hydrogen production.
- In July 2022, Iveco Group, through its brand IVECO BUS, announced that it would partner with HTWO to equip its future European hydrogen-powered buses with world-leading fuel cell systems. HTWO, as a fuel cell system-based hydrogen business brand of Hyundai Motor Group, was first released in December 2020 with Hyundai's strong commitment to a hydrogen economy. With its proven fuel cell technology utilized in Hyundai FCEVs, HTWO is expanding the provision of fuel cell technology to other automobile OEMs and non-automobile sectors to make hydrogen available for everything.

Additional Benefits:

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

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