Automotive Fuel Cell Market by Vehicle Type (Buses, Trucks, LCVs, Passenger Cars), Component, Fuel Cell Type, Fuel Type, Hydrogen Fuel Points, Operating Miles, Power Capacity, Specialized Vehicle Type and Region - Global forecast to 2030

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Report description:

The global automotive fuel cell market is projected to grow from 25 thousand units in 2022 to 724 thousand units by 2030, registering a CAGR of 52.4%. Fuel cell operated vehicles such as buses, LCVs, passenger cars, and trucks, were mapped as part of this research. The growing demand of zero-emission commercial freight trucks and buses have accelerated the growth of long range fuel cell vehicles. The rapid setup of hydrogen infrastructure worldwide the demand for FCEVs is also expected to increase gradually. Technological breakthroughs in fuel cell components and other technologies have made it possible to have longer range and high-power engines in fuel cell electric vehicles (FCEVs). This will create a shift in demand for FCEVs in the coming years. The automotive fuel cell market is dominated by established players such as Ballard Power Systems (Canada), Toyota Motor Corporation (Japan), Hyundai Group (South Korea), Hyster Yale (US), Plug Power (US), among others These players have worked on providing offerings for the fuel cell ecosystem. They have initiated partnerships to develop their technology and provide best-in-class products to their customers.

"251-500 miles range segment to be the largest segment in market during the forecast period"
The 251-500 miles segment is currently the largest because its high range in a single filling is the primary reason for buying FCEVs over other EVs. Most fuel-cell vehicles currently available in the market are under this range. Above 500 miles is an upcoming segment due to OEMs working on improving range beyond earlier limits. As technology keeps developing and the size of fuel cells decreases, FC vehicles will be able to cover a larger range on a single filling. This is the reason for above 500 miles to be the fastest-growing segment in the future. The 251-500 miles segment is projected to be the largest during the forecast period. This segment includes FCEV passenger cars and some smaller buses and trucks. The 2021 Honda Clarity comes with a range of 360 miles on a single filling. Similarly, 2021 Toyota Mirai Limited and 2021 Toyota Mirai XLE come with 357- and 402-miles range,

respectively. Toyota provides number of offers including USD 15,000 worth of free fuel for Toyota Mirai. Hyundai Nexo and Hyundai Nexo Blue come with a range of 354 and 380 miles, respectively. Riversimple Movement is available with a range of 300 miles in a single filling. The 2021 Chevrolet Colorado LCV comes with a range of ~250 miles. In July 2020, Hyundai expanded its Xcient fuel-cell trucks in Singapore. In March 2022, Toyota launched India's first FCEV Mirai. The sedan has been launched in the country as part of pilot project which is being conducted by the International Center for Automotive Technology along with Toyota Kirloskar Motor Pvt. Ltd. for studying as well as evaluating the Toyota Mirai on Indian roads. Union transport Road Transport ministry has launched the pilot project for Mirai hydrogen-based advanced FCEV. Toyota and BMW have entered into a partnership for producing hydrogen fuel-cell vehicles, which will allow BMW to achieve its target of 50% electrification across its line-up 2 years ahead of its expected the year 2030. BMW aims to sell hydrogen fuel-cell vehicles as soon as 2025. The car has an estimated range of 300 miles in full hydrogen tanks. Thus, the development of FCEV by various automakers will drive the market. Over the past few years, many OEMs have been making technological advancements to increase the range of their FCEVs. For instance, the 2018 version of Toyota Mirai used to offer a range of 312 miles, whereas the 2023 version is expected to come with a range of 402 miles.

"<150 kW segment to lead demand for automotive fuel cell electric vehicles during the forecast period"
The <150 kW segment is estimated to be the largest during the forecast period. Currently, most fuel-cell vehicle models use a fuel-cell stack with <150 kW power output. Passenger cars contribute to the largest share of the automotive fuel cell market. Most fuel-cell car models use fuel-cell stacks with an output power of less than 150 kW. Hence, the segment is estimated to be the largest. Meanwhile, the greater than 150-250 kW segment is projected to be the fastest as the demand for heavy-duty fuel cells will grow in the future due to the reduced fuel costs of these vehicles. For automotive applications, fuel cells of <150 kW power output are used in passenger cars, some buses, LCVs, trucks, and industrial vehicles. Some vehicles use fuel cells of less than 100 kW power output coupled with an extra battery. For instance, the 2023 Hyundai Nexo's fuel-cell output is 95 kW, and it is coupled with a battery of 40 kW-total power output of 135 kW. In these vehicles, fuel cells are used together with batteries. A new concept of plug-in fuel-cell electric vehicles has come into the market, increasing the demand for this segment in the coming years. This uses electric plug-in charging and hydrogen engine together to power the vehicle. The application of less than 150-kW fuel cells is higher as the sales of fuel-cell passenger cars currently contribute to the largest market. Other vehicles delivering power less than 150 kW are passenger cars like the Toyota Mirai, Audi HTron, Riversimple RASA, among others. Bus and truck models delivering power less than 150 kW are the Quantron QHM, Solaris Urbino 12, Tata Starbus, among others. Besides Mercedes-Benz GLC F-Cell, all fuel-cell car models available in the market have a power output range of less than 150 kW. Many of the LCVs and buses from European manufacturers such as Van Hool, Wrightbus, and Solaris have fuel-cell stacks with an output power of <150 kW. Therefore, the <150 kW segment is projected to have the largest market share during the forecast period. In May 2022, AirDgas and Hyzon Motors signed an agreement to pilot a heavy-duty hydrogen fuel-cell truck that includes 100-kW fuel cell. The Hyzon 100-kW fuel cell, which Airgas has piloted will be displayed at Advanced Clean Transportation Expo. Similarly, in September 2022, Cummins launched hydrogen fuel-cell engine at IAA. Designed to the performance, duty cycle, as well as packaging requirements of medium and heavy-duty trucks as well as buses, the fuel-cell technology having availability in 135kW. Furthermore, in September 2022, Iveco Group and Hyundai Motor Company launched the eDaily FCEV prototype equipped with Hyundai's 90-kW hydrogen fuel-cell system as well as 140-kW e-motor. The 2023 Toyota Mirai model operates on a hydrogen fuel cell and delivers a power of 128 kW with a range of up to 402 miles.

In-depth interviews were conducted with CEOs, marketing directors, other innovation and technology directors, and executives from various key organizations operating in this market.
-□By Company Type: Tier I - 67%, Tier II and Tier III - 9%, and OEMs - 24%
-□By Designation: CXOs - 33%, Managers - 52%, Executives - 15%
-□By Region: North America - 28%, Europe - 34%, Asia Oceania - 38%
The automotive fuel cell vehicle market is dominated by established players such as Ballard Power Systems (Canada), Toyota Motor Corporation (Japan), Hyundai Group (South Korea), Hyster Yale (US), Plug Power (US), among others. They have worked on providing offerings for the automotive fuel cell vehicle ecosystem. They have initiated partnerships to develop their automotive

fuel cell vehicle technology and offer best-in-class products to their customers.
Research Coverage:
The report covers the automotive fuel cell vehicle market based on vehicle type, component, specialized vehicle type, operating miles, power output, hydrogen fuel points, fuel cell type and region (North America, Europe, and Asia- Oceania). It covers the competitive landscape and company profiles of the major players in the automotive fuel cell vehicle ecosystem.

The study also includes an in-depth competitive analysis of the key market players, their company profiles, key observations related to product and business offerings, recent developments, and key market strategies.

Key Benefits of Buying the Report:
-□This report will help market leaders/new entrants in this market with information on the closest approximations of revenue numbers for the overall automotive fuel cell vehicle ecosystem and its subsegments.
-□This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies.
-□This report will also help stakeholders understand the market's pulse and provide information on key market drivers, restraints, challenges, and opportunities.

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