

Hydrogen Fuel Cell Market: A Key Player in Renewable Energy

The hydrogen fuel cell market size projected to reach \$5.7 billion by 2031, with a CAGR of 8.1%

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The global <u>hydrogen fuel cell market</u> size was valued at \$2.7 billion in 2021, and projected to reach \$5.7 billion by 2031, with a CAGR of 8.1% from 2022 to 2031. A hydrogen fuel cell is an



electrochemical device that converts hydrogen gas and oxygen into electricity, heat, and water through a chemical reaction. It operates similarly to a battery but differs in that it continuously receives a supply of fuel (hydrogen) and oxygen from the air, allowing it to generate electricity as long as these inputs are provided.



The Hydrogen Fuel Cell Market to witness substantial gains due to rising adoption of electric and hybrid vehicles."

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Asia-Pacific hydrogen fuel cell market is expected to exhibit CAGR of 8.7% during 2021-2031.

Company profiled in this report based on Business

overview, Financial data, Product landscape, Strategic outlook & SWOT analysis:

AFC Energy plc

Ballard Power Systems

Bloom Energy

Doosan Fuel Cell Co. Ltd
FuelCell Energy, Inc.
Intelligent Energy

Nedstack Fuel Cell Technology

Plug Power Inc

Ceres

SFC Energy AG

By type, proton exchange membrane fuel cell is expected to exhibit CAGR of 8.4% during 2021-2031.

By application, transportation segment accounted for the largest hydrogen fuel cells market share in 2021.

By end user, fuel cell vehicles had the largest market share in 2021.

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Rising adoption of electric and hybrid vehicles, increasing demand in the telecommunications, automotive & residential micro-CHP sector, and diminishing dependence on non-renewable energy sources are some of the factors boosting the market growth.

A fuel cell is a type of device consisting of a cathode and an anode immersed in an electrolyte medium to effectively conduct and generate electricity. The system works on the basic electromechanical mechanism to convert chemical energy into electrical energy.

As the fuel is broken up into protons and electrons at the anode and oxygen is available at the cathode, hydrogen is formed. These electrons complete a circuit between the electrodes, meanwhile the protons travel through the electrolyte medium.

After completing this chemical reaction, all the negative and positive ions and oxygen combine at the cathode to generate electricity as the final product, coupled with water and heat as byproducts.

The automobile sector has experienced remarkable expansion as a result of rising vehicle demand. However, in recent years, there has been a growing awareness and issue about the negative environmental impact of fossil fuel engines, which produce considerable amounts of

greenhouse gases.

Other factors such as technical improvements, higher performance, rising petroleum prices, reduced noise, and stringent government regulations regarding environmental conservation are also predicted to contribute to the hydrogen fuel cells market's growth during the forecast period.

For instance, on June 23, 2022, Toshiba Energy Systems and Solutions Corp. (Toshiba EES) announced its partnership with Echandia to develop pure hydrogen fuel cell systems for ships. These newly developed pure hydrogen fuel cells could be used for continuous marine operation applications.

Rising hydrogen fuel cell market industry applications in heating and power generation solutions in residential and commercial sectors increase market sales.

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Various associations and governments have reformed their energy policies to fulfill the growing demand for power due to surge in population.

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Stationary Fuel Cell Market by Capacity (Less than 1kW, 1 KW to 5kW, 5kW to 250kW, 250kW to 1MW, More than 1MW), by Type (Proton Exchange Membrane Fuel Cell (PEMFC), Phosphoric Acid Fuel Cell (PAFC), Molten Carbonate Fuel Cell (MCFC), Solid Oxide Fuel Cell (SOFC), Direct Methanol Fuel Cell (DMFC), Others), by Application (Combined Heat and Power (CHP), Prime Power, Uninterrupted Power Supply (UPS), Others), by End-Use Industry (Transportation, Defense, Oil and Gas, Utilities, Others): Global Opportunity Analysis and Industry Forecast, 2021-2031

<u>Microbial Fuel Cell Market</u> by Type (Mediator, Non-Mediator), by Application (Power Generation, Wastewater Treatment, Biosensor): Global Opportunity Analysis and Industry Forecast, 2021-2031

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