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Hydrogen Generation Market by Type (Gray, Green, Blue), Process (Hydrogen Generation, Hydrogen Storage), Source (Fossil Fuels, Nuclear, Solar), Application (Ammonia Production, Petroleum Refinery, E-mobility, Power Generation)—Global Forecast to 2030

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Abstracts

The research report titled ‘Hydrogen Generation Market by Type (Gray, Green, Blue), Process (Hydrogen Generation, Hydrogen Storage), Source (Fossil Fuels, Nuclear, Solar), Application (Ammonia Production, Petroleum Refinery, E-mobility, Power Generation)—Global Forecast to 2030’, provides in-depth analysis of hydrogen generation market across five major geographies and emphasizes on the current market trends, market sizes, market shares, recent developments, and forecasts till 2030.

The global hydrogen generation market is expected to reach $188.2 billion by 2030, growing at a CAGR of 8.4% during the forecast period of 2023–2030.

The growth of the hydrogen generation market is mainly attributed to the rising demand for hydrogen in the chemicals industry and increasing government initiatives to transition to clean energy sources. However, the high capital cost of hydrogen storage restrains the growth of this market. The growing focus on developing green hydrogen production technologies and the increasing use of hydrogen in fuel cell electric vehicles (FCEVs) are expected to generate growth opportunities for the players operating in this market. However, the lack of secure hydrogen transport and storage infrastructure is a major challenge for market growth.

Additionally, the rising use of renewable energy sources for hydrogen production is a major market trend in the hydrogen generation market. Increasing use of carbon capture, utilization, and storage (CCUS) in hydrogen production are technology trends in the market.

Based on type, the global hydrogen generation market is segmented into gray hydrogen, blue hydrogen, green hydrogen, and other types. In 2023, the gray hydrogen segment is expected to account for the largest share of the global hydrogen generation market. The growth of this segment is attributed to the increasing demand for gray hydrogen to produce fertilizer and the growing use of gray hydrogen as fuel. However, the green hydrogen segment is expected to register the highest CAGR during the forecast period due to the increasing need to lower the cost of producing renewable energy, the emphasis by market players on the development of electrolysis technologies, and the high demand for green hydrogen by fuel cell electric vehicles (FCEVs) and the power industry.

Based on process, the global hydrogen generation market is segmented into the hydrogen generation process and hydrogen storage process. In 2023, the hydrogen generation process segment is expected to account for a larger share of the global hydrogen generation market. The growth of this segment is driven by the increasing demand for hydrogen in industrial applications, the rising need to decrease greenhouse gas emissions from hydrogen generation processes, the increasing use of renewable energy sources for hydrogen production, and the growing adoption of hydrogen generation technologies to achieve decarbonization. The segment is expected to register the highest CAGR during the forecast period.

Based on source, the global hydrogen generation market is segmented into fossil fuels, nuclear, water, solar, biomass, and other sources. In 2023, the fossil fuels segment is expected to account for the largest share of the global hydrogen generation market. The growth of this segment is attributed to the increasing need to reduce greenhouse gas emissions, government initiatives promoting the use of fossil-based hydrogen, and the adoption of renewable energy sources for hydrogen production. However, the solar segment is expected to register the highest CAGR during the forecast period due to the increasing demand for green hydrogen in industrial applications, the growing adoption of low-cost hydrogen production methods, and the rising use of solar energy for hydrogen production to reduce greenhouse gas emissions.

Based on application, the global hydrogen generation market is segmented into ammonia production, petroleum refinery, E-mobility, methanol production, district heating, power generation, manufacturing, and synfuel production. In 2023, the ammonia production segment is expected to account for the largest share of the global hydrogen generation market. The growth of this segment is driven by the increasing demand for ammonia as a low-carbon fuel and the growing use of ammonia to decarbonize industries.

However, the E-mobility segment is expected to register the highest CAGR during the forecast period due to the increasing adoption of fuel-cell electric vehicles (FCEVs), the growing demand for hydrogen to curb carbon emissions and promote sustainable mobility solutions, and the expanding range of fueling infrastructure for various transportation and motive power applications.

Based on geography, the hydrogen generation market is segmented into North America, Asia-Pacific, Europe, Latin America, and the Middle East & Africa. In 2022, the Asia-Pacific region is expected to account for the largest share of the hydrogen generation market. The region is also expected to witness rapid growth during the forecast period. The large market share of Asia-Pacific is mainly attributed to the growing potential to produce carbon-free hydrogen in the region, the growing focus of Australia to generate hydrogen using carbon capture, usage, and storage (CCUS) technology, increasing production and consumption of lower-emission hydrogen. Also, the growing focus of China to generate hydrogen using renewable energy, natural gas, and coal resources, increasing use of hydrogen in power generation, and stringent environmental regulations towards cleaner forms of energy are contributing to the market growth.

The key players operating in the global hydrogen generation market are Plug Power Inc. (U.S.), Linde GmbH (Germany), Air Products and Chemicals, Inc. (U.S.), L'AIR LIQUIDE S.A. (France), Matheson Tri-Gas, Inc. (U.S.), SOL Spa (Italy), Cummins Inc. (U.S.), Siemens Energy AG (Germany), Shell plc (U.K.), Messer SE & Co. KGaA (Germany), Ballard Power Systems Inc. (Canada), FuelCell Energy, Inc. (U.S.), Iwatani Corporation (Japan), Enapter AG (Germany), CALORIC Anlagenbau GmbH (Germany), SPG Hydrogen Co., Ltd. (South Korea), Uniper SE (Germany), and Nel ASA (Norway).

Key questions answered in the report:

- Which are the high growth market segments in terms of type, process, source, application, and countries?
- What is the historical market for hydrogen generation across the globe?

What are the market forecasts and estimates from 2023–2030?

What are the major drivers, restraints, and opportunities in the global hydrogen generation market?

Who are the major players in the global hydrogen generation market, and what shares of the market do they hold?

Who are the major players in various countries, and what shares of the market do they hold?

How is the competitive landscape?

What are the recent developments in the global hydrogen generation market?

What are the different strategies adopted by the major players in the global hydrogen generation market?

What are the geographical trends and high-growth countries?

Who are the local emerging players in the global hydrogen generation market, and how do they compete with the other players?

Scope of the report:

Hydrogen Generation Market Assessment—by Type

Robotic Systems

Gray Hydrogen

Blue Hydrogen

Green Hydrogen

Other Types

Hydrogen Generation Market Assessment—By Process

Hydrogen Generation Process

Thermochemical Process

Electrolysis

Biological Processes

Direct Solar Water Splitting Process

Pressure Swing Adsorption

Hydrogen Storage Process

Cylindering

Portable Storage

Other Storage Processes

Hydrogen Generation Market Assessment—By Source

Fossil Fuels

Nuclear

Water

Solar

Biomass

Other Sources

Hydrogen Generation Market Assessment—By Application

Ammonia Production

Petroleum Refinery

Methanol Production

E-mobility

Synfuel Production

District Heating

Manufacturing

Power Generation

Hydrogen Generation Market Assessment—By Geography

North America

U.S.

Canada

Europe

Germany

U.K.

France

Italy

Spain

Netherlands

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Poland

Rest of Europe

Asia-Pacific

China

India

Japan

South Korea

Indonesia

Singapore

Australia & New Zealand

Rest of Asia-Pacific

Latin America

Brazil

Mexico

Rest of Latin America

Middle East & Africa

UAE

Saudi Arabia

Israel

Rest of the Middle East & Africa

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