

# Hydrogen Generation Market by Technology (SMR, ATR, POX, Coal Gasification, Electrolysis), Application (Refinery, Ammonia, Methanol, Transportation, Power Generation), Source (Blue, Green, Gray), Generation Mode Region - Global Forecast to 2028

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## Abstracts

The global hydrogen generation market is estimated to grow from USD 158.8 billion in 2023 to USD 257.9 billion by 2028; it is expected to record a CAGR of 10.2% during the forecast period. The escalating implementation of environmental regulations and the prevailing global impetus toward sustainable practices drives the market. Technological innovation, hydrogen mobility, and decentralization further boost the growth of the hydrogen generation market.

“Gray Hydrogen: The largest segment of the hydrogen generation market, by source “

Based on source, the hydrogen generation market has been segmented into gray hydrogen, blue hydrogen and green hydrogen. The gray hydrogen segment is expected to be the largest segment during the forecast period. Gray Hydrogen is derived from the most widely used method, steam methane reforming. SMR is a mature and cost effective process that convert natural gas into hydrogen. Additionally, The abundance and accessibility of natural gas as a feedstock contribute to the high production of gray hydrogen, as it remains a readily available and economically viable option.

“Partial Oxidation segment is expected to be the second largest segment during the forecast period based on technology.”

By technology, the hydrogen generation market has been split into five types: steam methane reforming, partial oxidation, coal gasification, auto thermal reforming and

electrolysis. The partial oxidation segment is expected to hold the second largest market share during the forecast period. Partial Oxidation is a versatile technology for the production of hydrogen over other technologies. It uses diverse feedstocks, such as natural gas, methane, and other organic compounds. Moreover, partial oxidation is known for its ability to yield a high-purity hydrogen stream.

“By Application , transportation segment is expected to be the fastest growing segment during the forecast period.”

Based on the Application, the hydrogen generation market is segmented into methanol production, transportation, petroleum refinery, ammonia production, power generation, and others. The transportation segment is expected to be the fastest growing segment of the hydrogen generation market during the forecast period. As the world shifts towards more sustainable and environmentally friendly energy solutions, hydrogen fuel cell vehicles offer a promising alternative to internal combustion engine vehicles. They emit water vapours which makes them suitable for regions with stringent emissions regulations.

“Asia-Pacific is expected to be the largest and fastest growing region in the hydrogen generation market.”

Asia Pacific is expected to be the largest and fastest region in the hydrogen generation market during the forecast period. Asia Pacific is one of the rapid growing economic region in the world with highest population in the world. Asia Pacific has the highest greenhouse gas emission in the world. To overcome such issues, Asia Pacific adopted green technology to efficiently meet the growing energy needs and reduce GHG emissions. For example, The India Energy Storage Alliance's (IESA) MIGHT (Mobility and Infrastructure with Green Hydrogen Technologies) initiative aims to investigate options for India to utilize the potential of green hydrogen technologies for green energy acceleration and clean transportation uptake. According to a development plan for the hydrogen energy industry released by Chinese authorities in March 2022, by 2035, China will have built a complete hydrogen energy industry development system, with hydrogen produced from renewable energy accounting for a significant increase in its proportion in final energy consumption and playing a key role in the country's green energy transition.

Breakdown of Primaries:

In-depth interviews have been conducted with various key industry participants, subject-

matter experts, C-level executives of key market players, and industry consultants, among other experts, to obtain and verify critical qualitative and quantitative information and assess future market prospects. The distribution of primary interviews is as follows:

By Company Type: Tier 1- 65%, Tier 2- 24%, and Tier 3- 11%

By Designation: C-Level- 30%, Director Level- 25%, and Others- 45%

By Region: North America- 27%, Europe- 20%, Asia Pacific- 33%, South America- 12%, Middle East- 4% and Africa- 4%

Note: Others include sales managers, engineers, and regional managers.

Note: The tiers of the companies are defined on the basis of their total revenues as of 2022. Tier 1: > USD 1 billion, Tier 2: From USD 500 million to USD 1 billion, and Tier 3: The hydrogen generation market is dominated by a few major players that have a wide regional presence. The leading players in the hydrogen generation market are Linde plc (Ireland), Air Products and Chemicals, Inc. (US), Saudi Arabian Oil Co. (Saudi Arabia), Shell plc (UK). The major strategy adopted by the players includes new product launches, partnerships, acquisitions, and investments & expansions.

Research Coverage:

The report defines, describes, and forecasts the global hydrogen generation market by , source, technology, generation and delivery mode, application, and region. It also offers a detailed qualitative and quantitative analysis of the market. The report comprehensively reviews the major market drivers, restraints, opportunities, and challenges. It also covers various important aspects of the market. These include an analysis of the competitive landscape, market dynamics, market estimates in terms of value, and future trends in the hydrogen generation market.

Key Benefits of Buying the Report

Increasing demand for alternate fuel vehicles and growing environmental consciousness are few of the key factors driving the hydrogen generation market. Factors such as high initial cost and lack of infrastructure restrain the growth of the market. The growing energy transition towards renewable energy sources and rapid urbanization are expected to present lucrative opportunities for the players operating in the hydrogen generation market.

**Product Development/ Innovation:** The hydrogen generation market is witnessing significant product development and innovation, driven by the growing demand for environmentally friendly, safe and sustainable products. Companies are investing in developing advanced hydrogen energy technologies for various applications.

**Market Development:** Linde plc signed a long-term agreement to provide Evonik, a prominent specialty chemicals company, with green hydrogen.

**Market Diversification:** Air Liquide invested USD 140.15 million to construct and operate a unit producing hydrogen at the Grandpuits site with an annual capacity of more than 20,000 tons.

**Competitive Assessment:** In-depth assessment of market shares, growth strategies, and service offerings of leading players, like include Linde plc (Ireland), Air Liquide (France), Air Products and Chemical, Inc. (US), Saudi Arabian Oil Co. (Saudi Arabia), and Shell plc (UK), among others in the hydrogen generation market.

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\*Details on Business Overview, Products/Solutions/Services offered, Recent Developments, MnM View might not be captured in case of unlisted companies.

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