

Hydrogen Generation Market to Hit \$262.0 Billion by 2031 | Rising Demand for Clean Energy Driving Global Growth

Hydrogen Generation Industry Surges as Green Hydrogen and Clean Energy Policies Transform the Power Sector

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According to a new report published by Allied Market Research, the global [hydrogen generation market](#) size was valued at \$136.3 billion in 2021 and is projected to reach \$262.0 billion by 2031, registering a CAGR of 6.8% from 2022 to 2031.



Hydrogen generation refers to a range of industrial methods used to produce hydrogen gas — a versatile energy carrier essential for industries such as refining, chemical manufacturing, and power generation. Currently, around 95% of hydrogen is produced from fossil fuels using processes like steam methane reforming (SMR), partial oxidation, and coal gasification.

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Global hydrogen generation market to reach \$262.0 billion by 2031, driven by clean energy demand and green hydrogen initiatives.”

Allied Market Research

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While fossil-based production remains dominant due to low cost, the focus is rapidly shifting toward [green hydrogen](#)—produced via electrolysis of water using renewable electricity—which eliminates carbon emissions and supports global decarbonization goals.

□ Transition Toward Green Hydrogen

Hydrogen plays a critical role in achieving net-zero emissions targets by 2050. As hydrogen

production from fossil fuels contributes nearly 2% of global CO₂ emissions, governments and industries are increasingly investing in low-carbon hydrogen technologies.

For instance, the European Union's 2020 hydrogen strategy supports the rapid scale-up of green hydrogen capacity across member nations. Similarly, Florida Power & Light (FPL) is building a 20 MW green hydrogen facility, designed to supply hydrogen for blending with natural gas at its 1.75 GW Okeechobee power plant. Such initiatives reflect the global transition toward clean hydrogen infrastructure.

□□ Market Drivers and Opportunities

The hydrogen generation market is witnessing strong growth driven by several key factors:

Rising demand for cleaner fuels: Governments are enforcing stricter regulations to reduce carbon emissions and desulfurize petroleum products.

Decarbonization goals: Hydrogen is a vital element in replacing fossil fuels with sustainable alternatives.

Industrial expansion: Growing demand from chemical processing, fertilizers, and refineries continues to support hydrogen consumption.

Electricity demand: The global electricity requirement is projected to increase by two-thirds over the next decade, boosting hydrogen's role in grid stabilization and distributed power systems.

Furthermore, renewable energy projects and technological advancements in electrolysis are creating new hydrogen generation market opportunities, especially across Asia-Pacific, Europe, and North America.

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□□ Segmentation Insights

The hydrogen generation market is segmented by source, process, delivery mode, application, and region, offering deep insights into its growth patterns.

By Source:

Gray Hydrogen (from fossil fuels) dominated the market in 2021.

Green Hydrogen is expected to register the fastest growth as [renewable energy integration](#) rises.

By Process:

Steam Methane Reforming (SMR) remains the leading method due to its cost efficiency.

Electrolysis is gaining momentum as investments in renewable-powered hydrogen production increase.

By Delivery Mode:

Captive hydrogen production—where hydrogen is produced and consumed on-site—held the largest share in 2021.

Merchant hydrogen (sold to other industries) is expected to grow with expanding fuel cell and transport sectors.

By Application:

Chemical processing dominated the market, driven by ammonia and methanol production.

Transportation and power generation are emerging as promising end-use sectors due to hydrogen fuel cell advancements.

By Region:

Asia-Pacific led the global hydrogen generation market, accounting for the highest share in 2021. The region is expected to grow at a CAGR of 7.3% through 2031, supported by large-scale renewable energy projects and supportive government policies.

□ Key Players in the Hydrogen Generation Industry

Prominent players in the global hydrogen generation market include Linde Plc, Air Liquide, Cummins Inc., Siemens, Nel ASA, Iberdrola, Thyssenkrupp, Orsted A/S, Iwatani Corporation, and Xebec Adsorption Inc.

These companies are expanding their production capacities and investing heavily in R&D, partnerships, and technological innovation to accelerate the adoption of clean hydrogen solutions worldwide.

□ Impact of COVID-19 on the Market

The COVID-19 pandemic temporarily slowed the hydrogen generation market due to industrial shutdowns, reduced electricity demand, and supply chain disruptions. Hydrogen production

from natural gas was particularly affected by limited refinery operations.

However, as global economies recovered, demand for hydrogen in industrial and energy sectors rebounded, aided by stimulus programs supporting green recovery and sustainable infrastructure. The post-pandemic period has seen renewed momentum toward low-carbon hydrogen projects worldwide.

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□ Conclusion

The hydrogen generation market is at the forefront of the global clean energy revolution. With its potential to decarbonize heavy industries, transportation, and power generation, hydrogen has emerged as a cornerstone of sustainable development. As nations invest in green hydrogen infrastructure, the market is expected to expand significantly, reaching \$262.0 billion by 2031.

Ongoing advancements in electrolysis technology, government-led net-zero initiatives, and growing partnerships between energy giants and technology firms will continue to shape the future of hydrogen generation. Despite early challenges, hydrogen remains a vital pathway toward achieving a carbon-neutral global economy. □□

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