

Green Hydrogen Market By Technology (Alkaline, PEM), Renewable Source (Wind, Solar), End-use Industry (Mobility, Power, Chemical, Industrial, Grid Injection), and Region (North America, Europe, APAC, MEA, and Latin America) - Global Forecast to 2032

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Report description:

The green hydrogen market is projected to grow from USD 2.79 billion in 2025 to USD 74.81 billion by 2032, at a CAGR of 60.0% during the forecast period. Several key factors are propelling the market for green hydrogen. These include the decreasing cost of renewable energy production from all sources, advancements in electrolysis technologies, and a rising demand from the power industry and fuel cell electric vehicles. Green hydrogen has applications across various industries, including chemicals, mobility, grid injection, the power industry, and others. It is increasingly being seen as a replacement for conventional gray, brown, and blue hydrogen due to its zero-emission production process. Technological advancements have also made green hydrogen more cost-competitive. This sustainable fuel source is emerging as a viable alternative to fossil fuels across various end-use industries.

<https://mnmimg.marketsandmarkets.com/Images/green-hydrogen-market-img-overview1.webp>

"By technology, the alkaline electrolysis-based green hydrogen segment is estimated to hold the largest share, in terms of value, during the forecast period."

The alkaline electrolysis-based green hydrogen segment is expected to hold the largest market share due to its reliability, scalability, and low cost. In this technology, an alkaline electrolyte, such as potassium hydroxide, is used to split water, producing high-purity hydrogen with minimal gas crossover as hydrogen ions diffuse slowly into the electrolyte. Its cell design and use of common, non-precious materials keep both capital and maintenance costs lower compared to newer electrolysis methods. At the same time, well-established manufacturing processes allow for rapid deployment at scale. Alkalizers operate efficiently in

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varying power conditions, making them compatible with renewable sources such as wind and solar. Advantages such as long stack lifetimes, operational stability, and compatibility with continuous industrial production make alkaline electrolysis one of the most practical and commercially attractive technologies in the growing green hydrogen market.

"By end-use industry, the mobility segment is estimated to be the fastest-growing segment of the data green hydrogen market during the forecast period."

The mobility segment is expected to be the fastest-growing segment for green hydrogen during the forecast period. The performance requirements for battery technologies are becoming increasingly challenging to meet across various modes of transportation, including rail, road, aviation, and shipping. Green hydrogen has a higher energy content, which enables much longer ranges coupled with shorter refueling durations, making fuel cell electric vehicles the natural choice for heavy-duty trucks, buses, trains, aircraft, and ships. Operators can thus operate vehicles with minimal downtime, making them a preferred choice for logistics, public transport, and mobility in industrial environments. Rapid improvements in green hydrogen production, the expansion of refueling infrastructure, and cooperation among vehicle manufacturers, energy providers, and fleet operators are accelerating the adoption of green hydrogen across various modes of transportation. Additionally, favorable government policies and national decarbonization strategies are encouraging early deployment.

"The green hydrogen market in Europe is projected to be the largest regional market, in terms of value and volume, during the forecast period."

Europe leads the global green hydrogen market as the largest region. A strong industrial base, advanced technological capabilities, and a very transparent commitment to deep decarbonization are the driving factors. Ambitious climate targets set in the region have accelerated large-scale investments in renewable energy capacity and green hydrogen production. Europe also possesses a mature manufacturing ecosystem, with an established presence of several established electrolyzer producers, engineering firms, and technology developers that contribute to driving innovation, increasing efficiency, and achieving cost reductions within their respective value chains. Significant public and private investments are being directed towards the expansion of hydrogen infrastructure, the development of large demonstration projects, and the integration of green hydrogen into industrial operations, power systems, and mobility. Together, these factors position Europe at the center of all global hubs for the development and deployment of green hydrogen.

Profile break-up of primary participants for the report:

-□By Company Type: Tier 1 - 45%, Tier 2 - 22%, and Tier 3 - 33%

-□By Designation: C-Level Executives- 50%, Directors- 10%, and Others - 40%

-□By Region: North America - 17%, Asia Pacific - 17%, Europe - 33%, Middle East & Africa - 25%, and South America - 8%

Air Liquide Engineering & Construction (Germany), Air Products and Chemicals, Inc. (US), Engie (France), Uniper SE (Germany), Siemens Energy (Germany), Lhyfe (France), Toshiba Energy Systems & Solutions Corporation (Japan), Nel (Norway), Orsted (Denmark), Bloom Energy (US), Linde plc (UK), Cummins Inc. (US), H&R Group (Germany), W2E Technology, LLC (US), SinoSynergy (China), and others are the key players in the green hydrogen market. These players have adopted various strategies, including agreements, joint ventures, and expansions, to increase their market share and business revenue.

Research Coverage:

The report defines segments and projects the size of the green hydrogen market based on renewable source, technology, end-use industry, distribution channel, production scale, purity level, storage, and region. It strategically profiles the key players and comprehensively analyzes their market share and core competencies. It also tracks and analyzes competitive developments, such as expansions, agreements, and acquisitions undertaken by them in the market.

Reasons to Buy the Report:

The report is expected to help the market leaders/new entrants by providing them with the closest approximations of revenue numbers of the green hydrogen market and its segments. This report is also expected to help stakeholders gain a deeper understanding of the market's competitive landscape, acquire valuable insights to enhance their business positions, and develop effective go-to-market strategies. It also enables stakeholders to understand the market's pulse and provides information on key market drivers, restraints, challenges, and opportunities.

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The report provides insights into the following pointers:

- Analysis of critical drivers (decarbonization targets and net-zero commitments, rapid growth of renewable energy capacity, rising demand for clean mobility), restraints (high production costs, limited infrastructure and regulatory and standardization issues), opportunities (emergence of hydrogen hubs and industrial clusters, hydrogen in heavy mobility, grid balancing and energy storage) and challenges (hydrogen storage and transport complexity, electrolyzer manufacturing constraints) influencing the growth of the green hydrogen market

- Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities in the green hydrogen market

- Market Development: Comprehensive information about lucrative markets - the report analyzes the green hydrogen market across varied regions

- Market Diversification: Exhaustive information about new products, various types, untapped geographies, recent developments, and investments in the green hydrogen market.

- Competitive Assessment: In-depth assessment of market shares, growth strategies, and product offerings of leading players such as Air Liquide Engineering & Construction (Germany), Air Products and Chemicals, Inc. (US), Engie (France), Uniper SE (Germany), Siemens Energy (Germany), Lhyfe (France), Toshiba Energy Systems & Solutions Corporation (Japan), Nel (Norway), Orsted (Denmark), Bloom Energy (US), Linde plc (UK), Cummins Inc. (US), H&R Group (Germany), W2E Technology, LLC (US), and SinoSynergy (China) are the key players in the green hydrogen market.

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