

Hydrogen Electrolyzers Market to Cross USD 7.5 Bn by 2035, Expanding at a CAGR of 25.6% | Transparency Market Research

Rapid adoption of green hydrogen, increasing government support for decarbonization, and advances in electrolysis technologies are driving strong market growth.

WILMINGTON, DE, UNITED STATES, September 22, 2025 /EINPresswire.com/ -- The global

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The hydrogen electrolyzers market is witnessing robust growth driven by rising investments in green hydrogen production and global efforts toward clean energy transition.”

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Research*

[hydrogen electrolyzers market](#) is poised for remarkable expansion over the next decade. Valued at US\$ 628.5 million in 2024, the industry is projected to advance at a CAGR of 25.6% from 2025 to 2035, surpassing US\$ 7.59 billion by 2035. Growing demand for green hydrogen as a clean energy carrier, global net-zero commitments, and large-scale investments in hydrogen infrastructure are reshaping the competitive landscape.

With renewable energy becoming increasingly affordable and governments rolling out national hydrogen strategies, electrolyzers are emerging as a cornerstone of the green

energy economy. From decarbonizing heavy industry and transportation to providing large-scale energy storage, electrolyzers are enabling the transition to clean hydrogen-powered systems worldwide.

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Market Overview

The hydrogen electrolyzers market covers electrochemical devices that split water into hydrogen and oxygen using electricity. When powered by renewable sources, this process yields green hydrogen, a critical enabler of carbon neutrality strategies across industries.

Electrolyzers are broadly categorized into alkaline electrolyzers, proton exchange membrane (PEM) electrolyzers, and solid oxide electrolyzers (SOE). Each technology offers distinct

advantages: alkaline systems are cost-effective and mature, PEM electrolyzers are compact and compatible with intermittent renewables, and SOEs deliver high efficiency at elevated temperatures.

Hydrogen produced through electrolysis is widely used in refineries, chemicals, steelmaking, fertilizers, semiconductors, and fuel-cell-powered mobility solutions. Increasingly, electrolyzers are also being deployed in energy storage, allowing surplus renewable electricity to be stored as hydrogen for later use.

Analyst Viewpoint

Analysts at Transparency Market Research highlight that green hydrogen is fast becoming the centerpiece of the global energy transition, with electrolyzers at its core. Alkaline electrolyzers currently dominate due to cost competitiveness, while PEM systems are projected to record the fastest growth given their adaptability to renewables.

Strong government policies — including the EU Hydrogen Strategy, the U.S. Infrastructure Investment and Jobs Act, and India's National Green Hydrogen Mission — are catalyzing investment in large-scale electrolyzer capacity. Industry leaders such as Nel ASA, Siemens Energy, Plug Power, and Cummins are scaling up production and forming strategic alliances to meet surging demand.

However, high capital costs, dependence on scarce raw materials (such as platinum and iridium in PEMs), and infrastructure bottlenecks remain barriers to wider adoption.

Key Drivers of Market Growth

1. Rising Demand for Green Hydrogen

The increasing push for clean, sustainable energy solutions has made green hydrogen central to global decarbonization. Electrolyzers enable its production from renewables, supporting clean mobility, power generation, and industrial feedstocks. The versatility of hydrogen across transport, heating, steel, ammonia, and energy storage ensures robust long-term demand.

2. Global Net-Zero Commitments

As of 2024, more than 100 countries covering over 80% of global emissions have pledged net-zero targets. Electrolyzers provide scalable solutions for producing zero-carbon hydrogen, which is vital to achieving these goals. Large corporations, financial institutions, and governments are channeling billions of dollars into hydrogen projects, opening significant opportunities for electrolyzer adoption.

3. Falling Renewable and Electrolyzer Costs

Declining costs of wind, solar, and electrolyzer technologies are making green hydrogen

economically competitive with fossil fuel-based alternatives. Economies of scale, coupled with improvements in durability and efficiency, are further accelerating adoption.

Segment Analysis

By Type

Alkaline Electrolyzers: Market leader due to maturity, low cost, and durability.

Proton Exchange Membrane (PEM) Electrolyzers: Fastest-growing segment, favored for compatibility with variable renewable sources.

Solid Oxide Electrolyzers (SOE): High efficiency at elevated temperatures, still in early commercialization phase.

By Application

Food & Beverages

Pharmaceuticals

Oil & Gas

Electronics & Semiconductor

Chemicals

Metal Processing

Others

By Hydrogen Production Capacity

Below 500 Nm³/h

500–2000 Nm³/h

2000–4000 Nm³/h

Above 4000 Nm³/h

By Distribution Channel

Direct

Indirect

Regional Insights

Asia Pacific: Largest and fastest-growing market, driven by China, India, Japan, South Korea, and Australia. Ambitious hydrogen roadmaps, including India's National Green Hydrogen Mission, are establishing the region as a global hydrogen hub.

Europe: Strong growth supported by the EU's decarbonization agenda and significant investments in green hydrogen production and infrastructure.

North America: Rapid adoption in the U.S. and Canada, bolstered by federal subsidies and partnerships in industrial hydrogen projects.

Latin America & Middle East & Africa: Emerging opportunities as nations invest in hydrogen exports and renewable-based hydrogen production.

Key Players and Industry Leaders

The market is consolidated, with major players investing heavily in technology advancement, partnerships, and scaling production capacity. Key companies include:

Nel ASA

ITM Power plc

Siemens Energy AG

Thyssenkrupp AG

Cummins Inc.

Plug Power Inc.

Linde plc

Sunfire GmbH

McPhy Energy S.A.

Toshiba Energy Systems & Solutions Corporation

These companies are focusing on cost reduction, material innovation, and global expansion to strengthen their positions in the hydrogen electrolyzers market.

Recent Developments

May 2025: Samsung E&A launched the CompassH2 hydrogen plant solution, an integrated concept to optimize hydrogen production costs and efficiency across the value chain.

June 2025: Plug Power Inc. expanded its partnership with Allied Green Ammonia (AGA), securing a 2 GW electrolyzer project as part of a US\$ 5.5 billion sustainable fuels initiative in Uzbekistan, producing green diesel, aviation fuel, and urea.

Opportunities and Challenges

Opportunities:

Expanding national hydrogen strategies and policy support.

Rising corporate demand for clean energy solutions.

Large-scale industrial projects integrating hydrogen into steelmaking, fertilizers, and chemicals.

Challenges:

High capital costs of electrolyzers.

Supply constraints of critical raw materials.

Infrastructure and storage limitations in developing regions.

Market Trends

Integration with Renewables: Growing deployment with solar and wind farms for large-scale green hydrogen production.

Decentralized Energy Systems: Electrolyzers being adopted for on-site hydrogen production and microgrids.

Material Innovation: Focus on reducing reliance on platinum and iridium in PEM systems.

Strategic Partnerships: Collaborations among energy firms, governments, and OEMs to scale capacity.

Future Outlook

The hydrogen electrolyzers market is set for exponential growth through 2035, underpinned by the accelerating transition toward green hydrogen. By enabling large-scale production of clean hydrogen, electrolyzers will play a central role in:

Achieving global climate neutrality goals.

Decarbonizing hard-to-abate industries such as steel, cement, and chemicals.

Supporting the growth of fuel cell mobility and power storage applications.

Establishing Asia Pacific and Europe as leading hubs in the global hydrogen economy.

Manufacturers that can deliver cost-effective, durable, and scalable electrolyzers while innovating with digital integration and material efficiency are expected to secure significant competitive advantage.

Why Buy This Report?

Comprehensive market size forecasts through 2035.

Detailed segmentation by type, application, distribution channel, and region.

Insights into key drivers, restraints, and opportunities.

Analysis of leading players' strategies, portfolios, and financials.

Coverage of emerging market trends, technologies, and policy frameworks.

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