

# **Water Electrolysis Market Forecasts to 2034 – Global Analysis By Technology (Alkaline Electrolysis, Proton Exchange Membrane Electrolysis, Solid Oxide Electrolysis, Anion Exchange Membrane Electrolysis and Other Technologies), Capacity (Below 1 MW, 1 MW–5 MW, 5 MW–20 MW, Above 20 MW and Other Capacity Ranges), Power Source, Application, End User, and Geography**

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## **Abstracts**

According to Statistics MRC, the Global Water Electrolysis Market is accounted for \$18.5 billion in 2026 and is expected to reach \$89.5 billion by 2034 growing at a CAGR of 21.8% during the forecast period. Water electrolysis is an electrochemical process that uses electrical energy to split water into hydrogen and oxygen gases. The process is carried out using electrolyzers such as alkaline, proton exchange membrane (PEM), or solid oxide systems, enabling the production of high-purity hydrogen for industrial, transportation, and energy applications. When powered by renewable electricity, water electrolysis produces green hydrogen with minimal greenhouse gas emissions. The technology plays a critical role in energy storage, industrial decarbonization, synthetic fuel production, and clean energy transition. Increasing global investments in renewable energy and hydrogen infrastructure are accelerating the adoption of water electrolysis technologies.

Market Dynamics:

Driver:

## Increasing clean hydrogen demand

Water electrolysis provides a sustainable pathway for hydrogen production without carbon emissions. Governments are supporting hydrogen adoption through subsidies and decarbonization policies. Enterprises are investing heavily in electrolyzer technologies to secure long-term energy resilience. Consumer demand for green fuels reinforces the importance of clean hydrogen. Collectively, rising hydrogen demand ensures strong momentum for water electrolysis adoption.

### Restraint:

#### Limited renewable power availability

Hydrogen production requires significant electricity, and renewable sources are not yet sufficient in many regions. Enterprises face challenges in scaling projects without reliable renewable energy access. High costs of renewable integration slow down deployment. Smaller firms struggle to compete with larger players in securing renewable power contracts. As a result, limited renewable availability remains a barrier to market growth.

### Opportunity:

#### Integrated renewable hydrogen facilities

Integrated renewable hydrogen facilities present a major opportunity for innovation and scalability. These projects combine solar, wind, and hydro power with electrolyzers to produce green hydrogen. Enterprises benefit from reduced carbon footprints and improved energy independence. Governments are encouraging integrated facilities as part of national hydrogen strategies. Consumer demand for sustainable energy accelerates investment in these projects. This integration is expected to reshape the competitive landscape of water electrolysis.

### Threat:

#### Power price volatility

Fluctuations in electricity costs directly impact hydrogen production economics. Enterprises struggle to maintain profitability during periods of high energy prices. Smaller firms are particularly vulnerable to unstable market conditions. Geopolitical

tensions and supply-demand imbalances further complicate energy pricing. Unless stability improves, power price volatility will remain a challenge.

#### Covid-19 Impact:

The Covid-19 pandemic disrupted supply chains and slowed down electrolyzer deployment projects. Lockdowns delayed industrial installations and reduced investment in hydrogen infrastructure. However, recovery plans emphasized clean energy and sustainability, boosting long-term demand. Governments introduced funding programs to accelerate hydrogen adoption post-pandemic. Enterprises renewed focus on resilient and efficient electrolyzer technologies. Overall, Covid-19 created short-term setbacks but reinforced the strategic importance of water electrolysis.

The alkaline electrolysis segment is expected to be the largest during the forecast period

The alkaline electrolysis segment is expected to account for the largest market share during the forecast period as it is the most established and cost-effective technology. Alkaline systems provide reliable hydrogen production with proven scalability. Enterprises rely heavily on alkaline electrolyzers for industrial applications. Regulatory support for green hydrogen further boosts adoption. Consumer demand for affordable hydrogen reinforces the importance of this segment. Consequently, alkaline electrolysis remains the cornerstone of the water electrolysis market.

The grid energy storage segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the grid energy storage segment is predicted to witness the highest growth rate due to rising demand for renewable integration. Hydrogen produced via electrolysis can be stored and used to balance grid fluctuations. Governments are supporting hydrogen storage projects to enhance energy resilience. Enterprises benefit from new revenue streams in energy storage markets. Advances in storage technologies accelerate adoption in this segment. As a result, grid energy storage achieves the fastest CAGR in the market.

#### Region with largest share:

During the forecast period, the Europe region is expected to hold the largest market share owing to strong policy support for hydrogen adoption. The EU leads in funding

electrolyzer projects and sustainability initiatives. Enterprises in Europe are investing heavily in water electrolysis technologies. Consumer demand for clean energy is higher compared to other regions. Regulatory frameworks support innovation while ensuring compliance, further boosting adoption. These factors collectively secure Europe's leadership in the market.

#### Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rapid industrialization and clean energy initiatives. Countries such as China, Japan, and South Korea are investing in hydrogen infrastructure. Rising middle-class populations are fueling demand for sustainable energy solutions. Governments are introducing supportive policies to encourage electrolyzer adoption in industrial sectors. Local companies are scaling up innovations to meet both domestic and export demand. This dynamic environment positions Asia Pacific as the fastest-growing regional market.

#### Key players in the market

Some of the key players in Water Electrolysis Market include Nel ASA, thyssenkrupp nucera AG & Co. KGaA, Siemens Energy AG, Cummins Inc., Plug Power Inc., Topsoe A/S, John Cockerill Group, ITM Power plc, Ohmium International, Inc., Enapter AG, LONGi Hydrogen Technology Co., Ltd., Sungrow Hydrogen Sci. & Tech. Co., Ltd., Verdagys Inc., McPhy Energy S.A. and ABB Ltd.

#### Key Developments:

In May 2026, Nel ASA executed an advanced technological product launch by commercially releasing its next-generation pressurized alkaline electrolyzer system. Designed following more than eight years of development, this modular, factory-assembled technology platform fundamentally changes the green hydrogen cost structure by enabling turnkey, full-scope system installations at an estimated cost below USD 1,450 per kW.

In February 2025, Siemens Energy AG finalized a major gigawatt-scale production expansion by scaling its joint venture electrolyzer manufacturing plant in Berlin alongside partner Air Liquide. This industrial capacity expansion secures high-volume, automated production lines for Proton Exchange Membrane (PEM) stacks, directly supporting large-scale European decarbonization initiatives and accelerating green

hydrogen cost parity with fossil fuels.

Technologies Covered:

Alkaline Electrolysis

Proton Exchange Membrane Electrolysis

Solid Oxide Electrolysis

Anion Exchange Membrane Electrolysis

Other Technologies

Capacity Ranges Covered:

Below 1 MW

1 MW–5 MW

5 MW–20 MW

Above 20 MW

Other Capacity Ranges

Power Sources Covered:

Solar Energy

Wind Energy

Hydropower

Grid Electricity

Other Power Sources

### Applications Covered:

Green Hydrogen Production

Power-to-Gas

Industrial Feedstock

Grid Energy Storage

Other Applications

### End Users Covered:

Chemical Industry

Energy & Utilities

Oil & Gas

Transportation

Other End Users

### Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

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