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United States Green Hydrogen Market- Industry Size, Share, Trends, Opportunity, and Forecast, 2018-2028 Segmented By Electrolyser Technology (PEM, and Alkaline), By Application (Power Generation, Transportation, Industry Feedstock, and Others), By Source (Solar, and Wind), By Region and Competition

https://marketpublishers.com/r/UD4FB8E120ABEN.html
Date: July 2023
Pages: 79
Price: US$ 4,000.00 (Single User License)
ID: UD4FB8E120ABEN

Abstracts

United States Green Hydrogen market is anticipated to grow at a significantly rate in the forecast period of 2028. According to a report by the Department of Energy's National Renewable Energy Laboratory (NREL), the United States has the potential to produce more than 17 million metric tons of green hydrogen annually by 2050, which would require approximately 2,500 GW of renewable energy capacity.

The green hydrogen market in the United States is currently in its early stages of development but is expected to grow rapidly in the coming years due to increasing interest in decarbonizing various industries and reducing greenhouse gas emissions. Green hydrogens are produced through the electrolysis of water using renewable energy sources such as wind or solar power. Green Hydrogen has the huge potential to replace fossil fuels in a wide range of applications, from transportation to industrial processes. Currently, there are several green hydrogen projects underway in the United States, including the development of hydrogen fuel cell electric vehicles, the installation of hydrogen refueling stations, and the use of hydrogen in industrial processes such as steel production. Additionally, several states, including California and New York, have established targets for the deployment of hydrogen fuel cell electric vehicles and the production of green hydrogen. The growth of the green hydrogen market in the United States is also being supported by federal and state policies and incentives, such as tax credits, grants, and loan programs, aimed at promoting the development and

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deployment of renewable energy technologies. Hence, the United States' green hydrogen market is expected to show significant growth in the upcoming years as more industries and policymakers recognize the potential benefits of this clean energy source.

Decarbonization goals are Increasing the Demand for Green Hydrogen in Region.

Decarbonization goals represent the targets set by governments, organizations, and companies to reduce their carbon emissions and achieve net-zero emissions, or carbon neutrality, by a specific targeted year. The primary aim of these goals is to mitigate the impacts of climate change by limiting the concentration of greenhouse Green Hydrogen in the atmosphere, which is responsible for trapping heat and contributing to global warming. The Paris Agreement, signed by 197 countries in 2015, set a goal of limiting global warming to well below 2 degrees Celsius above pre-industrial levels, with a target of limiting warming to 1.5 degrees Celsius. To achieve this, countries need to reduce their greenhouse gas emissions to net zero by the middle of the century. Decarbonization goals are being pursued across various sectors, including energy, transportation, and manufacturing, and involve a range of strategies such as increasing the use of renewable energy sources, improving energy efficiency, and developing and deploying low-carbon technologies such as green hydrogen and carbon capture, utilization, and storage. The pursuit of decarbonization goals is driven by the recognition of the urgent need to address climate change and its impacts, as well as the potential economic and social benefits of transitioning to a low-carbon economy. Companies and organizations that set ambitious decarbonization goals can reduce their exposure to climate risks and increase their competitiveness, while governments that pursue decarbonization policies can create jobs, stimulate economic growth, and improve public health and well-being. Hence, it is expected that the market share of green hydrogen in the United States of America is going to rise in the forecasted period.

The rising Deployment of Renewable Energy Sources is Market Driving Factors.

The increasing deployment of renewable energy sources is closely linked to the growth of the green hydrogen market, as renewable energy is a key input in the production of green hydrogen through the process of electrolysis. Electrolysis involves using electricity from renewable energy sources such as wind and solar power to split water molecules into hydrogen and oxygen. As the deployment of renewable energy sources continues to increase, it will impact the potential for the production of green hydrogen in the USA. Such efforts can reduce greenhouse gas emissions across various sectors, including transportation, industry, and power generation. The integration of renewable energy sources and green hydrogen can also have a significant impact on

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decarbonization efforts. For example, renewable energy can be used to power the production of green hydrogen, which can then be used to fuel hydrogen fuel cell electric vehicles or provide energy storage solutions. This can help to reduce greenhouse gas emissions across various sectors, along with providing a clean and efficient energy source. Therefore, owing to the above factors, the United States ' green hydrogen market is going to rise in the forecasted period.

Growing Use of Green Hydrogen as an Energy Storage Solution is Market Growing Factor

The increasing demand for energy storage is driving the growth of the green hydrogen market, as green hydrogen has the potential to provide clean and efficient energy storage solutions. Energy storage is becoming increasingly important as more renewable energy sources, such as solar and wind power, are being integrated into the grid. These sources of energy are intermittent and often do not match the demand for electricity, which creates a need for energy storage solutions. Green hydrogen can provide energy storage solutions by using excess renewable energy to produce hydrogen through electrolysis. This hydrogen can then be stored and used to generate electricity when needed, providing a clean and efficient energy storage solution. Hydrogen energy storage systems have the advantage of being able to store energy for long periods of time, making them particularly well-suited for seasonal energy storage. Hydrogen energy storage systems can also be used in conjunction with renewable energy sources to provide reliable and stable power. For example, excess renewable energy can be used to produce hydrogen, which can then be used to generate electricity during times when renewable energy sources are not available. This can help to reduce the need for fossil fuel-based electricity generation and provide a more sustainable and reliable source of power. In addition to energy storage, green hydrogen can also be used as a fuel for a wide range of applications, including transportation, industry, and power generation. The versatility of green hydrogen as a fuel and energy storage solution makes it a promising technology for the transition to a low-carbon economy. Hence, it is expected that the market share of green hydrogen in the United States of America is going to rise in the forecasted period.

Favorable Government Policies Impacting the Market Growth

The US government has implemented several policies and incentives to support the development and adoption of green hydrogen in the country, including tax incentives, funding for research and development, public-private partnerships, renewable energy targets and incentives, carbon pricing, and regulations and standards. These policies

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and incentives are critical in driving the growth of the green hydrogen market and supporting the broader transition to a low-carbon economy. The federal government provides tax credits for the production, purchase, and use of green hydrogen. The Alternative Fuel Excise Tax Credit provides a tax credit of $0.50 per gallon of green hydrogen, while the Business Energy Investment Tax Credit provides a tax credit of up to 30% for the installation of hydrogen fuel cell systems. Such relaxation by the government is propelling the production and market share of the United States of America's green hydrogen market. Apart from these, the Department of Energy (DOE) provides funding for research and development to support the development of new technologies and processes for the production, storage, and use of green hydrogen. Such as DOE's Hydrogen and Fuel Cell Technologies Office has several programs focused on advancing the development and commercialization of hydrogen and fuel cell technologies. Several states and cities have implemented carbon pricing mechanisms, such as carbon taxes and emissions trading systems, which incentivize the use of low-carbon fuels like green hydrogen. The government has established regulations and standards for the production, distribution, and use of hydrogen, including the US Code of Federal Regulations and the National Fire Protection Association's Hydrogen Technologies Code. Therefore, these initiatives are propelling the demand and production of green hydrogen in the USA.

Recent Developments

Air Products is developing a green hydrogen production facility in Louisiana, which will have a capacity of 1.2 gigawatts and produce over 30 tons of green hydrogen per day. The facility is expected to be operational by 2025 and will primarily serve customers in the Gulf Coast region.

Plug Power's 'Green Hydrogen Production Plant': Plug Power is building a green hydrogen production plant in Rochester, New York, which will have a capacity of 45 tons per day. The plant will primarily serve Plug Power's customers in the material handling and transportation industries and is expected to be operational by 2022.

Nel Hydrogen's 'Herning Hydrogen Hub': Nel Hydrogen is developing a green hydrogen production facility in Herning, Denmark, which will be powered by wind energy. The facility will have a capacity of 10 megawatts and produce 1,000 kilograms of green hydrogen per day. Nel Hydrogen is also planning to build a similar facility in the USA.

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Market Segmentation

The United States Green Hydrogen Market is segmented based on electrolyzer technology, application, source, and country. Based on the electrolyzer technology, the market is divided into PEM and alkaline. Based on the application, the market is divided into power generation, transportation, industry feedstock, and others. Based on the source, the market is divided into solar and wind.

Company Profiles

Iberdrola, S.A., Bloom Energy Corp., Plug Power Inc., Air Liquide, Siemens Energy, Air Products Inc., GKN Hydrogen, Linde plc, Cummins Inc., Getech Group plc are some of the key players in United States Green Hydrogen Market.

Report Scope:

In this report, United States Green Hydrogen market has been segmented into the following categories, in addition to the industry trends, which have also been detailed below:

United States Green Hydrogen Market, By Electrolyser Technology:

PEM

Alkaline

United States Green Hydrogen Market, By Application:

Power Generation

Transportation

Industry Feedstock

Others

United States Green Hydrogen Market, By Region:

Northern & Eastern

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Middle & Western

Southern

Western

Competitive landscape

Company Profiles: Detailed analysis of the major companies in United States Green Hydrogen market.

Available Customizations:

With the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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