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Power-to-gas Market by Technology (Electrolysis, Methanation), Capacity (Less Than 100 kW, 100–999 kW, 1000 kW and Above), Use Case (Wind, Solar, Biomass), Application (Residential, Commercial, Utility), and Region 2024-2032

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Abstracts

The global power-to-gas market size reached US$ 39.2 Million in 2023. Looking forward, IMARC Group expects the market to reach US$ 92.9 Million by 2032, exhibiting a growth rate (CAGR) of 9.78% during 2024-2032. The growing demand for renewable hydrogen, rising utilization of fuel cell electric vehicles (FCEVs), and the escalating demand for electrolyzer technology represent some of the key factors driving the market.

Power-to-gas (P2G) is a process wherein electrical energy is converted into chemical energy through gas production. It relies on the electrolysis process to produce hydrogen gas that can be used directly as a final energy carrier or converted to methane, synthesis gas, electricity, liquid fuels, or chemicals during the second stage process. It assists in converting renewable energy into natural gas and storing it in existing natural gas infrastructure. It also aids in transforming surplus power from wind farms, which can be fed into the local grid, delivered to surrounding industrial companies, or provided to regional filling stations. It stores energy for an extended period by converting it to other easily storable energy carriers while reducing the load on the electricity grid by controlling operations. It also facilitates the anaerobic digestion processes, where microorganisms are broken-down to organic matter to produce fuels. As it is an effective means of transitioning to a greener natural gas mix, the demand for P2G is rising across the globe.

Power-to-gas Market Trends:

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At present, there is a rise in the demand for renewable hydrogen, which has the potential to decarbonize multiple sectors across the globe. This, along with the escalating demand for electrolyzer technology due to its cost-effectiveness, represents one of the key factors supporting the growth of the market. Besides this, there is an increase in the demand for hydrogen as a clean fuel in light vehicles, railways, and marine applications to reduce greenhouse gas emissions around the world. This, coupled with the growing utilization of fuel cell electric vehicles (FCEVs), which require high-purity hydrogen fuel, is positively influencing the market. In addition, various technological developments in hydrogen production technology and hydrogen engine technology are offering lucrative growth opportunities to industry investors. Moreover, the rising demand for P2G technology to use existing gas transmission infrastructure for transporting energy in the form of green hydrogen over long distances is propelling the growth of the market. Apart from this, various benefits offered by P2G technology over conventional energy storage technologies, such as higher power storage capacity and longer discharge times, are strengthening the growth of the market. Additionally, the increasing demand for P2G technology due to the falling costs of renewable energy technologies, such as solar and wind, is bolstering the growth of the market.

Key Market Segmentation:
IMARC Group provides an analysis of the key trends in each segment of the global power-to-gas market, along with forecasts at the global, regional, and country levels from 2024-2032. Our report has categorized the market based on technology, capacity, use case, and application.

Technology Insights:

Electrolysis
Methanation

The report has provided a detailed breakup and analysis of the power-to-gas market based on the technology. This includes electrolysis and methanation. According to the report, electrolysis represented the largest segment.

Capacity Insights:

Less Than 100 kW
100–999 kW
1000 kW and Above

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A detailed breakup and analysis of the power-to-gas market based on capacity has also been provided in the report. This includes less than 100 kW, 100–999 kW, and 1000 kW and above. According to the report, 1000 kW and above accounted for the largest market share.

Use Case Insights:

Wind
Solar
Biomass

A detailed breakup and analysis of the power-to-gas market based on use case has also been provided in the report. This includes wind, solar, and biomass. According to the report, solar accounted for the largest market share.

Application Insights:

Residential
Commercial
Utility

A detailed breakup and analysis of the power-to-gas market based on application has also been provided in the report. This includes residential, commercial, and utility. According to the report, utility accounted for the largest market share.

Regional Insights:

North America
United States
Canada
Asia Pacific
China
Japan
India
South Korea
Australia
Indonesia
Others
Europe

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Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Europe was the largest market for power-to-gas. Some of the factors driving the Europe power-to-gas market included the growing energy demand, stringent regulations to reduce carbon footprints, rising commercial application of hydrogen in various sectors, etc.

Competitive Landscape:
The report has also provided a comprehensive analysis of the competitive landscape in the global power-to-gas market. Competitive analysis such as market structure, market share by key players, player positioning, top winning strategies, competitive dashboard, and company evaluation quadrant has been covered in the report. Also, detailed profiles of all major companies have been provided. Some of the companies covered include Electrochaea GmbH, Exytron GmbH, Hitachi Zosen Inova AG (Hitachi Zosen Corporation), Ineratec GmbH, ITM Power plc, McPhy Energy SAS, MicroPyros BioEnerTec GmbH, Nel ASA, Power-to-Gas Hungary Kft, Uniper SE, etc.

Key Questions Answered in This Report:
How has the global power-to-gas market performed so far, and how will it perform in the coming years?
What are the drivers, restraints, and opportunities in the global power-to-gas market?
What is the impact of each driver, restraint, and opportunity on the global power-to-gas market?
What are the key regional markets?

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Which countries represent the most attractive power-to-gas market?
What is the breakup of the market based on the technology?
Which is the most attractive technology in the power-to-gas market?
What is the breakup of the market based on the capacity?
Which is the most attractive capacity in the power-to-gas market?
What is the breakup of the market based on the use case?
Which is the most attractive use case in the power-to-gas market?
What is the breakup of the market based on the application?
Which is the most attractive application in the power-to-gas market?
What is the competitive structure of the global power-to-gas market?
Who are the key players/companies in the global power-to-gas market?

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