

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 2025-2033

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Abstracts

The global power-to-gas market size reached USD 43.0 Million in 2024. Looking forward, IMARC Group expects the market to reach USD 99.5 Million by 2033, exhibiting a growth rate (CAGR) of 9.29% during 2025-2033. 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:

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 2025-2033. 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

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

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?

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?

Contents

1 PREFACE

2 SCOPE AND METHODOLOGY

- 2.1 Objectives of the Study
- 2.2 Stakeholders
- 2.3 Data Sources
 - 2.3.1 Primary Sources
 - 2.3.2 Secondary Sources
- 2.4 Market Estimation
 - 2.4.1 Bottom-Up Approach
 - 2.4.2 Top-Down Approach
- 2.5 Forecasting Methodology

3 EXECUTIVE SUMMARY

4 INTRODUCTION

- 4.1 Overview
- 4.2 Key Industry Trends

5 GLOBAL POWER-TO-GAS MARKET

- 5.1 Market Overview
- 5.2 Market Performance
- 5.3 Impact of COVID-19
- 5.4 Market Forecast

6 MARKET BREAKUP BY TECHNOLOGY

- 6.1 Electrolysis
 - 6.1.1 Market Trends
 - 6.1.2 Market Forecast
- 6.2 Methanation
 - 6.2.1 Market Trends
 - 6.2.2 Market Forecast

7 MARKET BREAKUP BY CAPACITY

7.1 Less Than 100 kW

7.1.1 Market Trends

7.1.2 Market Forecast

7.2 100–999 kW

7.2.1 Market Trends

7.2.2 Market Forecast

7.3 1000 kW and Above

7.3.1 Market Trends

7.3.2 Market Forecast

8 MARKET BREAKUP BY USE CASE

8.1 Wind

8.1.1 Market Trends

8.1.2 Market Forecast

8.2 Solar

8.2.1 Market Trends

8.2.2 Market Forecast

8.3 Biomass

8.3.1 Market Trends

8.3.2 Market Forecast

9 MARKET BREAKUP BY APPLICATION

9.1 Residential

9.1.1 Market Trends

9.1.2 Market Forecast

9.2 Commercial

9.2.1 Market Trends

9.2.2 Market Forecast

9.3 Utility

9.3.1 Market Trends

9.3.2 Market Forecast

10 MARKET BREAKUP BY REGION

10.1 North America

- 10.1.1 United States
 - 10.1.1.1 Market Trends
 - 10.1.1.2 Market Forecast
- 10.1.2 Canada
 - 10.1.2.1 Market Trends
 - 10.1.2.2 Market Forecast
- 10.2 Asia-Pacific
 - 10.2.1 China
 - 10.2.1.1 Market Trends
 - 10.2.1.2 Market Forecast
 - 10.2.2 Japan
 - 10.2.2.1 Market Trends
 - 10.2.2.2 Market Forecast
 - 10.2.3 India
 - 10.2.3.1 Market Trends
 - 10.2.3.2 Market Forecast
 - 10.2.4 South Korea
 - 10.2.4.1 Market Trends
 - 10.2.4.2 Market Forecast
 - 10.2.5 Australia
 - 10.2.5.1 Market Trends
 - 10.2.5.2 Market Forecast
 - 10.2.6 Indonesia
 - 10.2.6.1 Market Trends
 - 10.2.6.2 Market Forecast
 - 10.2.7 Others
 - 10.2.7.1 Market Trends
 - 10.2.7.2 Market Forecast
- 10.3 Europe
 - 10.3.1 Germany
 - 10.3.1.1 Market Trends
 - 10.3.1.2 Market Forecast
 - 10.3.2 France
 - 10.3.2.1 Market Trends
 - 10.3.2.2 Market Forecast
 - 10.3.3 United Kingdom
 - 10.3.3.1 Market Trends
 - 10.3.3.2 Market Forecast
 - 10.3.4 Italy

- 10.3.4.1 Market Trends
- 10.3.4.2 Market Forecast
- 10.3.5 Spain
 - 10.3.5.1 Market Trends
 - 10.3.5.2 Market Forecast
- 10.3.6 Russia
 - 10.3.6.1 Market Trends
 - 10.3.6.2 Market Forecast
- 10.3.7 Others
 - 10.3.7.1 Market Trends
 - 10.3.7.2 Market Forecast
- 10.4 Latin America
 - 10.4.1 Brazil
 - 10.4.1.1 Market Trends
 - 10.4.1.2 Market Forecast
 - 10.4.2 Mexico
 - 10.4.2.1 Market Trends
 - 10.4.2.2 Market Forecast
 - 10.4.3 Others
 - 10.4.3.1 Market Trends
 - 10.4.3.2 Market Forecast
- 10.5 Middle East and Africa
 - 10.5.1 Market Trends
 - 10.5.2 Market Breakup by Country
 - 10.5.3 Market Forecast

11 DRIVERS, RESTRAINTS, AND OPPORTUNITIES

- 11.1 Overview
- 11.2 Drivers
- 11.3 Restraints
- 11.4 Opportunities

12 VALUE CHAIN ANALYSIS

13 PORTERS FIVE FORCES ANALYSIS

- 13.1 Overview
- 13.2 Bargaining Power of Buyers

13.3 Bargaining Power of Suppliers

13.4 Degree of Competition

13.5 Threat of New Entrants

13.6 Threat of Substitutes

14 PRICE ANALYSIS

15 COMPETITIVE LANDSCAPE

15.1 Market Structure

15.2 Key Players

15.3 Profiles of Key Players

15.3.1 Electrochaea GmbH

15.3.1.1 Company Overview

15.3.1.2 Product Portfolio

15.3.2 Exytron GmbH

15.3.2.1 Company Overview

15.3.2.2 Product Portfolio

15.3.3 Hitachi Zosen Inova AG (Hitachi Zosen Corporation)

15.3.3.1 Company Overview

15.3.3.2 Product Portfolio

15.3.4 Ineratec GmbH

15.3.4.1 Company Overview

15.3.4.2 Product Portfolio

15.3.5 ITM Power plc

15.3.5.1 Company Overview

15.3.5.2 Product Portfolio

15.3.5.3 Financials

15.3.5.4 SWOT Analysis

15.3.6 McPhy Energy SAS

15.3.6.1 Company Overview

15.3.6.2 Product Portfolio

15.3.6.3 Financials

15.3.7 MicroPyros BioEnerTec GmbH

15.3.7.1 Company Overview

15.3.7.2 Product Portfolio

15.3.8 Nel ASA

15.3.8.1 Company Overview

15.3.8.2 Product Portfolio

15.3.8.3 Financials

15.3.9 Power-to-Gas Hungary Kft

15.3.9.1 Company Overview

15.3.9.2 Product Portfolio

15.3.10 Uniper SE

15.3.10.1 Company Overview

15.3.10.2 Product Portfolio

15.3.10.3 Financials

15.3.10.4 SWOT Analysis

Kindly note that this only represents a partial list of companies, and the complete list has been provided in the report.

List Of Tables

LIST OF TABLES

Table 1: Global: Power-to-gas Market: Key Industry Highlights, 2024 & 2033

Table 2: Global: Power-to-gas Market Forecast: Breakup by Technology (in Million USD), 2025-2033

Table 3: Global: Power-to-gas Market Forecast: Breakup by Capacity (in Million USD), 2025-2033

Table 4: Global: Power-to-gas Market Forecast: Breakup by Use Case (in Million USD), 2025-2033

Table 5: Global: Power-to-gas Market Forecast: Breakup by Application (in Million USD), 2025-2033

Table 6: Global: Power-to-gas Market Forecast: Breakup by Region (in Million USD), 2025-2033

Table 7: Global: Power-to-gas Market: Competitive Structure

Table 8: Global: Power-to-gas Market: Key Players

List Of Figures

LIST OF FIGURES

Figure 1: Global: Power-to-gas Market: Major Drivers and Challenges

Figure 2: Global: Power-to-gas Market: Sales Value (in Million USD), 2019-2024

Figure 3: Global: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 4: Global: Power-to-gas Market: Breakup by Technology (in %), 2024

Figure 5: Global: Power-to-gas Market: Breakup by Capacity (in %), 2024

Figure 6: Global: Power-to-gas Market: Breakup by Use Case (in %), 2024

Figure 7: Global: Power-to-gas Market: Breakup by Application (in %), 2024

Figure 8: Global: Power-to-gas Market: Breakup by Region (in %), 2024

Figure 9: Global: Power-to-gas (Electrolysis) Market: Sales Value (in Million USD), 2019 & 2024

Figure 10: Global: Power-to-gas (Electrolysis) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 11: Global: Power-to-gas (Methanation) Market: Sales Value (in Million USD), 2019 & 2024

Figure 12: Global: Power-to-gas (Methanation) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 13: Global: Power-to-gas (Less Than 100 kW) Market: Sales Value (in Million USD), 2019 & 2024

Figure 14: Global: Power-to-gas (Less Than 100 kW) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 15: Global: Power-to-gas (100–999 kW) Market: Sales Value (in Million USD), 2019 & 2024

Figure 16: Global: Power-to-gas (100–999 kW) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 17: Global: Power-to-gas (1000 kW and Above) Market: Sales Value (in Million USD), 2019 & 2024

Figure 18: Global: Power-to-gas (1000 kW and Above) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 19: Global: Power-to-gas (Wind) Market: Sales Value (in Million USD), 2019 & 2024

Figure 20: Global: Power-to-gas (Wind) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 21: Global: Power-to-gas (Solar) Market: Sales Value (in Million USD), 2019 & 2024

Figure 22: Global: Power-to-gas (Solar) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 23: Global: Power-to-gas (Biomass) Market: Sales Value (in Million USD), 2019 & 2024

Figure 24: Global: Power-to-gas (Biomass) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 25: Global: Power-to-gas (Residential) Market: Sales Value (in Million USD), 2019 & 2024

Figure 26: Global: Power-to-gas (Residential) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 27: Global: Power-to-gas (Commercial) Market: Sales Value (in Million USD), 2019 & 2024

Figure 28: Global: Power-to-gas (Commercial) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 29: Global: Power-to-gas (Utility) Market: Sales Value (in Million USD), 2019 & 2024

Figure 30: Global: Power-to-gas (Utility) Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 31: North America: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 32: North America: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 33: United States: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 34: United States: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 35: Canada: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 36: Canada: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 37: Asia-Pacific: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 38: Asia-Pacific: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 39: China: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 40: China: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 41: Japan: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 42: Japan: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 43: India: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 44: India: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 45: South Korea: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 46: South Korea: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 47: Australia: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 48: Australia: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 49: Indonesia: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 50: Indonesia: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 51: Others: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 52: Others: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 53: Europe: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 54: Europe: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 55: Germany: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 56: Germany: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 57: France: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 58: France: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 59: United Kingdom: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 60: United Kingdom: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 61: Italy: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 62: Italy: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 63: Spain: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 64: Spain: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 65: Russia: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 66: Russia: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 67: Others: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 68: Others: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 69: Latin America: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 70: Latin America: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 71: Brazil: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 72: Brazil: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 73: Mexico: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 74: Mexico: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 75: Others: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 76: Others: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 77: Middle East and Africa: Power-to-gas Market: Sales Value (in Million USD), 2019 & 2024

Figure 78: Middle East and Africa: Power-to-gas Market: Breakup by Country (in %), 2024

Figure 79: Middle East and Africa: Power-to-gas Market Forecast: Sales Value (in Million USD), 2025-2033

Figure 80: Global: Power-to-gas Industry: Drivers, Restraints, and Opportunities

Figure 81: Global: Power-to-gas Industry: Value Chain Analysis

Figure 82: Global: Power-to-gas Industry: Porter's Five Forces Analysis

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