Hydrogen Generators - Global Strategic Business Report

Description: This report analyzes the worldwide markets for Hydrogen Generators in US$ Million. The Global Market is further analysed by the following Product Types and End-Use Segments: Product Types On-Site, and Portable; End-Use Segments Fuel Cells, Petroleum, Chemicals, and Others. The report provides separate comprehensive analytics for the US, Canada, Europe, Asia-Pacific, and Rest of World.

Annual estimates and forecasts are provided for the period 2015 through 2022. Also, a six-year historic analysis is provided for these markets. Market data and analytics are derived from primary and secondary research.

Company profiles are primarily based on public domain information including company URLs. The report profiles 74 companies including many key and niche players such as -

- Air Liquide S.A.
- Air Products and Chemicals, Inc.
- EPOCH Energy Technology Corporation
- Hy9 Corporation
- Hydrogenics Corporation

Contents:

I. INTRODUCTION, METHODOLOGY & PRODUCT DEFINITIONS
- Study Reliability and Reporting Limitations
- Disclaimers
- Data Interpretation & Reporting Level
- Quantitative Techniques & Analytics
- Product Definitions and Scope of Study

II. EXECUTIVE SUMMARY

1. INDUSTRY OVERVIEW
   - Hydrogen
   - A Clean Fuel with Huge Potential
   - Hydrogen Generation Units to Surge in the Coming Years
   - Hydrogen to Play A Critical Role in Energy Generation Mix
   - Growth Drivers and Challenges in a Nut Shell
   - Growth Drivers
   - Challenges

   Demand from End-Use Segments Augurs well for the Hydrogen Generators Market

   Current & Future Analysis

   Table 1: Global Hydrogen Generator Market
   - Geographic Regions Ranked by % CAGR (Value) for 2015-2022: Asia-Pacific, Rest of World, US, Europe, and Canada (includes corresponding Graph/Chart)
   - Hydrogen Production: Captive Vs. Merchant Production

   Table 2: Global Captive Hydrogen Production Capacity at Refineries: 2012-2016 (includes corresponding Graph/Chart)

   Table 3: Captive Hydrogen Production Capacity at Refineries by Leading Countries: 2016 (includes corresponding Graph/Chart)

   Demand for Clean Energy Offers Significant Growth Opportunities

2. MARKET TRENDS, DRIVERS & ISSUES
   - Technological Advancements Bring in New Growth Opportunities
   - Increasing Demand for Electric Vehicles Based on Fuel Cells to Drive Market Growth
   - Hydrogen FCEVs to Combat GHG Emissions

   Table 4: Percentage Breakdown of Carbon Dioxide Emissions by Country: 2015 (includes corresponding Graph/Chart)
Favorable Government Regulations and Policies: Critical for Market Penetration
Domestic Targets for Greenhouse Gas Emissions of Select Regions/Countries
Whimsical Visions of an All-Hydrogen Economy Drives Interest in Fuel Cells
Hydrogen 2.0
Unlocking Major Economic Potential of Hydrogen
Aircraft Manufacturing Industry to Integrate Hydrogen- Fuel Cells
Power Plants Shift to Hydrogen Generators to Save Costs
Laboratories Increasingly Replace Gas Cylinders with Hydrogen Generators
International Level Collaborations to Accelerate Technology Development for Hydrogen Supply
International Partnership for a Hydrogen Economy (IPHE)
International Energy Agency (IEA)
International Organization for Standardization Technical Committee on Hydrogen Technologies

3. TECHNOLOGICAL ADVANCEMENTS IN HYDROGEN PRODUCTION AND STORAGE
Simplified Hydrogen Production Process through Balancing Fluid Mechanic Forces
Titania to Power Future Hydrogen Production
Affordable and Commonly Found Minerals to Replace Platinum as Catalyst
Research Programs to Enhance SR and DRI Process Performances
Hydrogen Electrolysis: A Potential Laden Energy Storage Solution
Researchers Explore Novel Options for Hydrogen Generation
Sorbent Enhanced Reforming
Ion Transport Membrane (ITM) Reforming
Plasma Reformers
Micro-channel Reformer
Ongoing Research and Development Work in Generation of Hydrogen from Biomass
Cheaper On-Demand Hydrogen Production on the Horizon
University of Leeds Develops Eco-Friendly and Energy-Efficient Hydrogen Production System
‘Caldicellulosiruptor saccharolyticus’ Bacterium Increases Hydrogen Production
Synthesized Amine Broane Set to Transform Hydrogen Storage
Solar Energy Powers Simple Hydrogen Storage Solution
Carnegie Institution Discovers New Hydrogen Storage Method

4. PRODUCT OVERVIEW
Introduction
Properties of Hydrogen
Comparative Analysis of Hydrogen with Other Fuel Types
Table 5: Energy Density of Various Fuel Types (includes corresponding Graph/Chart)
Table 6: Flammability and Auto Ignition Temperature Properties of Various Fuel Types (includes corresponding Graph/Chart)
Hydrogen Generators
Onsite Hydrogen Generators
Portable Hydrogen Generators
Hydrogen Production Technologies
A General Perspective
Thermochemical Production Technologies
Steam Methane Reforming (SMR)
Advantages
Disadvantages
Partial Oxidation
Autothermal Reforming
Methanol Reformation
Ammonia Cracking
Sorbent-enhanced Catalytic Steam-reforming System
Thermal Plasma-Reformer Technology
Sulfur-Iodide Cycle/Thermochemical Water-Splitting Process
Natural Gas-Reforming
Gasification of Heavy Hydrocarbons
Coal Gasification
Biomass Gasification
Bio Hydrogen Process
Electrolytic Production Technologies
Water Electrolysis
Alkaline Electrolysis
Polymer Electrolyte Membrane (PEM) Electrolysis
High-Temperature Electrolysis
Photolytic Production Technologies
Photoelectrochemical Hydrogen Production
Photobiological Hydrogen Production / Biophotolysis
Other Hydrogen Production Technologies
Dark Fermentation

5. APPLICATION OF HYDROGEN IN SELECT END-USE DOMAINS
Chemical Processing
Petrochemical Industry
Industrial Applications
Fuel Cells
Usage of Hydrogen as Fuel in Road Vehicles
Food Industry
Other Industries

6. PRODUCT LAUNCHES
The Linde Group Launches HYDROPRIME®
Proton OnSite Unveils 1 and 2 Megawatt M Series PEM Hydrogen Generation Systems

7. RECENT INDUSTRY ACTIVITY
Air Liquide Acquires Airgas
Plug Power and HyGear Enters into a Partnership
Praxair Unveils Hydrogen Plant for Repsol
Hydrexia Signs Agreement with HyGear
Solvay Inks Agreement with Siberwood
Hyster-Yale Materials Handling Acquires Nuvera Fuel Cells
Plug Power Enters into a Liquid Hydrogen Agreement with Praxair
Bashneft Commences Pilot Operations at New Hydrogen Production Unit
Safran and Cella Energy Sign Exclusive Partnership Agreement
AREVA, SMART ENERGIES and ADEME Forms AREVA H2-Gen Joint Venture
Neste Oil and AGA Inks Long-Term Hydrogen Supply Agreement
Electro Power Systems Partners with McPhy Energy

8. FOCUS ON SELECT KEY PLAYERS
Air Liquide S.A. (France)
Air Products and Chemicals, Inc. (USA)
EPOCH Energy Technology Corporation (Taiwan)
Hy9 Corporation (USA)
Hydrogenics Corporation (Canada)
Idroenergy (Italy)
ITM Power Plc (UK)
McPhy Energy S.A. (France)
Nuvera Fuel Cells, LLC (USA)
Praxair, Inc. (USA)
Proton OnSite (USA)
The Linde Group (Germany)

9. GLOBAL MARKET PERSPECTIVE
Table 7: World Recent Past, Current and Future Analysis for Hydrogen Generators by Geographic Region
US, Canada, Europe, Asia-Pacific (including Japan) and Rest of World Markets Independently Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
Table 8: World Historic Review for Hydrogen Generators by Geographic Region
US, Canada, Europe, Asia-Pacific (including Japan) and Rest of World Markets Independently Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)
Table 9: World 14-Year Perspective for Hydrogen Generators by Geographic Region
Percentage Breakdown of Dollar Sales for US, Canada, Europe, Asia-Pacific (including Japan) and Rest of World Markets for Years 2009, 2016 and 2022 (includes corresponding Graph/Chart)
Table 10: World Recent Past, Current and Future Analysis for Hydrogen Generators by Product Type
On-Site and Portable Markets Independently Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
Table 11: World Historic Review for Hydrogen Generators by Product Type
On-Site and Portable Markets Independently Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)
Table 12: World 14-Year Perspective for Hydrogen Generators by Product Type
Percentage Breakdown of Dollar Sales for On-Site and Portable Markets for Years 2009, 2016 and 2022 (includes corresponding Graph/Chart)
Table 13: World Recent Past, Current and Future Analysis for Hydrogen Generators by End-Use Segment Fuel Cells, Petroleum, Chemicals, and Other Application Markets Independently Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
Table 14: World Historic Review for Hydrogen Generators by End-Use Segment Fuel Cells, Petroleum, Chemicals, and Other Application Markets Independently Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)
Table 15: World 14-Year Perspective for Hydrogen Generators by End-Use Segment Percentage Breakdown of Dollar Sales for Fuel Cells, Petroleum, Chemicals, and Other Application Markets for Years 2009, 2016 and 2022 (includes corresponding Graph/Chart)

III. MARKET

1. THE UNITED STATES
   A. Market Analysis
      Fuel Cells Demand Fosters Growth
      Table 16: Number of Active Fuel Cell Installations by Fuel Cell Type in the US: 2016 (includes corresponding Graph/Chart)
      Table 17: Number of Active Fuel Cell Installations by State in the US: 2016 (includes corresponding Graph/Chart)
      Table 18: Number of Planned Fuel Cell Installations by State in the US (includes corresponding Graph/Chart)
      Table 19: Number of Hydrogen Vehicles by Type in the US: 2016 (includes corresponding Graph/Chart)
      Table 20: Number of Hydrogen Passenger Vehicles by Model in the US: 2016 (includes corresponding Graph/Chart)
      US Government Efforts on Hydrogen Energy Development
      Role in Promoting a Hydrogen Economy
      Energy Policy Act
      Renewable Portfolio Standards
      FreedomCAR Program
      FreedomFuel Program
      Solid State Energy Conversion Alliance
      Hydrogen Production Statistics
      Table 21: The US Merchant Hydrogen Production (2016): Percentage Breakdown of Production Capacity by Type for Cryogenic Liquid and Compressed Gas (includes corresponding Graph/Chart)
      Table 22: Captive, On-Purpose Hydrogen Production Capacity of the Leading US Refineries in Million Standard Cubic Feet Per Day (MMSCFD): 2016 (includes corresponding Graph/Chart)
      Table 23: Leading Merchant Hydrogen Producers in the US (2016): Percentage Breakdown by Plant Production Capacities for Air Liquide, Air Products, Linde, Praxair, and Others (includes corresponding Graph/Chart)
      Product Launch
      Strategic Corporate Developments
      Select Key Players
   B. Market Analytics
      Table 24: The US Recent Past, Current and Future Analysis for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
      Table 25: The US Historic Review for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)

2. CANADA
   A. Market Analysis
      Hydrogenics Corporation
      A Major Canadian Player
   B. Market Analytics
      Table 26: Canadian Recent Past, Current and Future Analysis for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
      Table 27: Canadian Historic Review for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)

3. EUROPE
4. ASIA-PACIFIC
A. Market Analysis
   Competition
   Table 33: Leading Merchant Hydrogen Producers in Asia-Pacific (2016): Percentage Breakdown by Plant Production Capacities for Air Liquide, Air Products, Deokyang, Linde, Praxair, and Others (includes corresponding Graph/Chart)

EPOCH Energy Technology Corporation
A Major Taiwanese Player

B. Market Analytics
   Table 34: Asia-Pacific Recent Past, Current and Future Analysis for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
   Table 35: Asia-Pacific Historic Review for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)

5. REST OF WORLD
A. Market Analysis
   Select Regional Markets
   Brazil
   South Africa
   Hydrogen to Light up Remote South African Communities

B. Market Analytics
   Table 36: Rest of World Recent Past, Current and Future Analysis for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2015 through 2022 (includes corresponding Graph/Chart)
   Table 37: Rest of World Historic Review for Hydrogen Generators Market Analyzed with Annual Sales Figures in US$ Million for Years 2009 through 2014 (includes corresponding Graph/Chart)

IV. COMPETITIVE LANDSCAPE
Total Companies Profiled: 74 (including Divisions/Subsidiaries 81)
The United States (28)
  Canada (5)
  Japan (6)
Europe (29)
  - France (5)
  - Germany (5)
  - The United Kingdom (9)
  - Italy (5)
  - Rest of Europe (5)
Asia-Pacific (Excluding Japan) (11)
  Africa (1)
Ordering:  

Order Online - [http://www.researchandmarkets.com/reports/2228036/](http://www.researchandmarkets.com/reports/2228036/)

Order by Fax - using the form below

Order by Post - print the order form below and send to

Research and Markets,
Guinness Centre,
Taylors Lane,
Dublin 8,
Ireland.
Fax Order Form
To place an order via fax simply print this form, fill in the information below and fax the completed form to 646-607-1907 (from USA) or +353-1-481-1716 (from Rest of World). If you have any questions please visit http://www.researchandmarkets.com/contact/

Order Information
Please verify that the product information is correct and select the format(s) you require.

Product Name: Hydrogen Generators - Global Strategic Business Report
Web Address: http://www.researchandmarkets.com/reports/2228036/
Office Code: SC2GXZE9

Product Formats
Please select the product formats and quantity you require:

<table>
<thead>
<tr>
<th>Product Format</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic (PDF) - Single User</td>
<td>□</td>
<td>USD 4500</td>
</tr>
<tr>
<td>Electronic (PDF) - 1 - 5 Users</td>
<td>□</td>
<td>USD 6300</td>
</tr>
<tr>
<td>Electronic (PDF) - 1 - 10 Users</td>
<td>□</td>
<td>USD 8550</td>
</tr>
<tr>
<td>Electronic (PDF) - 1 - 15 Users</td>
<td>□</td>
<td>USD 10800</td>
</tr>
</tbody>
</table>

* The price quoted above is only valid for 30 days. Please submit your order within that time frame to avail of this price as all prices are subject to change.

Contact Information
Please enter all the information below in BLOCK CAPITALS

Title: □ Mr □ Mrs □ Dr □ Miss □ Ms □ Prof
First Name: ________________________ Last Name: ________________________
Email Address: * ________________________
Job Title: ________________________
Organisation: ________________________
Address: ________________________
City: ________________________
Postal / Zip Code: ________________________
Country: ________________________
Phone Number: ________________________
Fax Number: ________________________

* Please refrain from using free email accounts when ordering (e.g. Yahoo, Hotmail, AOL)
Payment Information

Please indicate the payment method you would like to use by selecting the appropriate box.

☐ Pay by credit card: You will receive an email with a link to a secure webpage to enter your credit card details.

☐ Pay by check: Please post the check, accompanied by this form, to:
Research and Markets,
Guinness Center,
Taylors Lane,
Dublin 8,
Ireland.

☐ Pay by wire transfer: Please transfer funds to:
Account number 833 130 83
Sort code 98-53-30
Swift code ULSBIE2D
IBAN number IE78ULSB98533083313083
Bank Address Ulster Bank,
27-35 Main Street,
Blackrock,
Co. Dublin,
Ireland.

If you have a Marketing Code please enter it below:

Marketing Code: __________________________

Please note that by ordering from Research and Markets you are agreeing to our Terms and Conditions at http://www.researchandmarkets.com/info/terms.asp

Please fax this form to:
(646) 607-1907 or (646) 964-6609 - From USA
+353-1-481-1716 or +353-1-653-1571 - From Rest of World