

Stationary Fuel Cells: Market Shares, Strategies, and Forecasts, Worldwide, 2014 to 2020

Mountains of Opportunity



Picture by Susan Eustis

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CHECK OUT THESE KEY TOPICS

Stationary Fuel Cell
Forecasts
Stationary Fuel Cell Market
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Continued Fuel Cell
Commercialization
Fuel Cell Operation
Fuel Environmental Issues
Power of a Fuel Cell
Hydrogen Fuel Cell
Technology
On Grid And Off Grid Issues
Impact of Deregulation
Fuel Cell Issues
Fuel Cell Reliability

Laws and regulations
Solid Oxide Fuel Cells
(SOFC)
Alkaline Fuel Cells (AFC),
Phosphoric Acid Fuel Cells
(PAFC)
Molten Carbonate Fuel Cells
(MCFC)
PEM Technology
Proton Exchange Membrane
(PEM)
Fuel Cells
PEM Fuel Cells
Platinum Catalysts

Vision For The New Electrical
Grid
Fuel Cell Clean Air Permitting
Cycle Efficiency
Gas turbine
Hybrid Solid Oxide Fuel Cell
Energy Efficiency
Fuel Cell
Fuelcell Energy
Smart Grid
Utilities
Increased Power Density
Stationary Power
Applications

Stationary Fuel Cells: Economies of Scale Provide Growth Strategy

Stationary Fuel Cells: Market Shares, Strategies, and Forecasts, Worldwide, 2014-2020

LEXINGTON, Massachusetts (February 26, 2014) – WinterGreen Research announces that it has published a new study Stationary Fuel Cell Market Shares, Strategy, and Forecasts, Worldwide, 2014 to 2020. The 2014 study has 603 pages, 258 tables and figures. Worldwide markets are poised to achieve significant growth as the Stationary Fuel Cells used to provide distributed power for campus environments achieve better technology and economies of scale. They have achieved grid parity in many cases. They improve and lower energy costs. They threaten to erode utility profitability.

Stationary Fuel Cells are on the cusp of becoming commercially viable, creating companies that are profitable and produce electricity at or below parity with the grid giving every user alternatives to the grid. Bloom Energy has solved the SOFC engineering challenges. Breakthroughs in materials science, and revolutionary designs give Bloom SOFC technology a cost effective, all-electric solution.

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Vendors have solved the SOFC conundrum, developing new materials that make units affordable and provide energy device economies of scale and support for wind and solar renewable energy sources.

Stationary fuel cells represent the base for distributed power generation worldwide. No more new coal plants, no more extensions to the grid. Distributed power has become mainstream. Distributed generation (DG) refers to power generation at the point of consumption.

Generating power on-site, rather than centrally, eliminates the cost, complexity, interdependencies, and inefficiencies associated with energy transmission and distribution. Distributed energy is evolving in a manner like distributed PC and laptop computing, cars for transportation, and smart phones. As distributed Internet data and telephony have found a place in the market, so also will distributed energy generation become widespread. Distributed power shifts energy generation control to the consumer much to the consternation of the existing utility companies.

Renewable energy is intermittent and needs stationary fuel cells for renewables to achieve mainstream adoption as a stable power source. Wind and solar power cannot be stored except by using the energy derived from these sources to make hydrogen that can be stored. Stationary fuel cells are likely to function as a battery in the long term, creating a way to use hydrogen that is manufactured from the renewable energy sources. It is likely that the wind and tide energy will be transported as electricity to a location where the hydrogen can be manufactured. It is far easier to transport electricity than to transport hydrogen. Hydrogen serves as an energy storage mechanism.

Stationary fuel cell markets need government sponsorship. As government funding shifts from huge military obligations, sustainable energy policy becomes a compelling investment model for government.

Stationary fuel cell markets at \$1.2 billion in 2013 are projected to increase to \$14.3 billion in 2020. Growth is anticipated to be based on demand for distributed power generation that uses natural gas. Systems provide clean energy that is good for the environment. Growth is based on global demand and will shift from simple growth to rapid growth measured as a penetration analysis as markets move beyond the early adopter stage. The big box retailers including many, led by Walmart, the data centers, and companies like Verizon are early adopters.

Eventually hydrogen will be used as fuel in the same stationary fuel cell devices. The hydrogen is manufactured from solar farms. Stationary fuel cells have become more feasible as the industry is able to move beyond platinum catalysts.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including

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Global Information Info Shop, Market Research.com, Research and Markets, Electronics.CA, Bloomberg, and Thompson Financial.

WinterGreen Research is positioned to help customers face challenges that define the modern enterprises. The increasingly global nature of science, technology and engineering is a reflection of the implementation of the globally integrated enterprise. Customers trust WinterGreen Research to work alongside them to ensure the success of the participation in a particular market segment.

WinterGreen Research supports various market segment programs; provides trusted technical services to the marketing departments. It carries out accurate market share and forecast analysis services for a range of commercial and government customers globally. These are all vital market research support solutions requiring trust and integrity.

Companies Profiled

Market Leaders

Bloom Energy
UTC
Ballard
Plug Power

FuelCell Energy
ClearEdge
Hydrogenics

Market Participants

Acumentrics
Advent Technologies
AFC Energy
Allergy
Ansaldo Fuel Cells 461
Ballard Power Systems

BASF
Blasch Precision Ceramics
SoftBank & Bloom Energy Joint
Venture
ClearEdge Power / UTC Power
Ceramic Fuel Cells

Delphi
Doosan Corporation
Elcore
Enbridge
Fuji Electric
GE

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HydroGen LLC
ITN Lithium Technology
ITN Plasmonics
LG Electronics
Nuvera

POSCO Power
Rolls Royce
SafeHydrogen LLC
Samsung
Serenergy

Siemens AG
SoftBank
Southern California Edison
Truma

About The Company

WinterGreen Research,

Founded in 1985, provides strategic market assessments in software, communications products, communications services, and advanced technology.

Reports focus on opportunities to expand existing markets or develop new markets. The reports access corporate positioning, market strategies, and product marketing opportunities. Reports evaluate the impact of new technologies. Reports assess the strategies and positions of leading participants.

The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in healthcare, energy, telecommunications, and advanced computer technology markets for over 30 years.

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Research Methodology

WinterGreen Research authors use a structured, consistent, and detailed research approach. The methodology supports an analytical approach to market research. In depth comparisons are made of many aspects of the market. Data relating to Industry segments is developed to permit presentation of forecasts and market share positioned to have substantive value.

Research involves talking to customers, vendors, and distributors, doing trend analysis and attending local and national meetings, conducting interviews while there.

Full spectrum research and information services, including market reports, customized research, and customer interviewing are available, reports and research are positioned to provide strategic value to industry participants, strategic planners, and product managers.

New systems combine sales tools and independent industry analysis, seeking to leverage the expertise of the sales force and combine it with the skepticism of the analysts to provide accurate return on investment analysis.

This stationary fuel cell shipment analysis is based on consideration of the metrics for the number of campus environments worldwide. Distributor and customer experience using the stationary fuel cell devices is another factor that contributes to development of triangulation regarding market forecasts for the sector.

**Stationary Fuel Cell: Market Shares, Strategies, and Forecasts,
Worldwide, 2014 to 2020**

Report Methodology

This is the 588th report in a series of primary market research reports that provide forecasts in communications, telecommunications, the Internet, computer, software, telephone equipment, health equipment, and energy. Automated process and significant growth potential are priorities in topic selection. The project leaders take direct responsibility for writing and preparing each report. They have significant experience preparing industry studies. Forecasts are based on primary research and proprietary data bases.

The primary research is conducted by talking to customers, distributors and companies. The survey data is not enough to make accurate assessment of market size, so WinterGreen Research looks at the value of shipments and the average price to achieve market assessments. Our track record in achieving accuracy is unsurpassed in the industry. We are known for being able to develop accurate market shares and projections. This is our specialty.

The analyst process is concentrated on getting good market numbers. This process involves looking at the markets from several different perspectives, including vendor shipments. The interview process is an essential aspect as well. We do have a lot of granular analysis of the different shipments by vendor in the study and addenda prepared after the study was published if that is appropriate.

Forecasts reflect analysis of the market trends in the segment and related segments. Unit and dollar shipments are analyzed through consideration of dollar volume of each market participant in the segment. Installed base analysis and unit analysis is based on interviews and an information search. Market share analysis includes conversations with key customers of products, industry segment leaders, marketing directors, distributors, leading market participants, opinion leaders, and companies seeking to develop measurable market share.

Over 200 in depth interviews are conducted for each report with a broad range of key participants and industry leaders in the market segment. We establish accurate market forecasts based on economic and market conditions as a base. Use input/output ratios, flow charts, and other economic methods to quantify data. Use in-house analysts who meet stringent quality standards.

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Interviewing key industry participants, experts and end-users is a central part of the study. Our research includes access to large proprietary databases. Literature search includes analysis of trade publications, government reports, and corporate literature.

Findings and conclusions of this report are based on information gathered from industry sources, including manufacturers, distributors, partners, opinion leaders, and users. Interview data was combined with information gathered through an extensive review of internet and printed sources such as trade publications, trade associations, company literature, and online databases. The projections contained in this report are checked from top down and bottom up analysis to be sure there is congruence from that perspective.

The base year for analysis and projection is 2010. With 2010 and several years prior to that as a baseline, market projections were developed for 2011 through 2017. These projections are based on a combination of a consensus among the opinion leader contacts interviewed combined with understanding of the key market drivers and their impact from a historical and analytical perspective. The analytical methodologies used to generate the market estimates are based on penetration analyses, similar market analyses, and delta calculations to supplement independent and dependent variable analysis. All analyses are displaying selected descriptions of products and services.

This research includes reference to an ROI model that is part of a series that provides IT systems financial planners access to information that supports analysis of all the numbers that impact management of a product launch or large and complex data center. The methodology used in the models relates to having a sophisticated analytical technique for understanding the impact of workload on processor consumption and cost.

WinterGreen Research has looked at the metrics and independent research to develop assumptions that reflect the actual anticipated usage and cost of systems. Comparative analyses reflect the input of these values into models.

The variables and assumptions provided in the market research study and the ROI models are based on extensive experience in providing research to large enterprise organizations and data centers. The ROI models have lists of servers from different manufacturers, Systems z models from IBM, and labor costs by category around the world. This information has been developed from WinterGreen research proprietary data bases constructed as a result of preparing market research studies that address the software, energy, healthcare, telecommunications, and hardware businesses.

YOU MUST HAVE THIS STUDY

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Stationary Fuel Cells: Market Shares, Strategy, and Forecasts, 2014 to 2020

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The study is designed to give a comprehensive overview of Stationary Fuel Cells equipment market segment. Research represents a selection from the mountains of data available of the most relevant and cogent market materials, with selections made by the most senior analysts. Commentary on every aspect of the market from independent analysts creates an independent perspective in the evaluation of the market. In this manner the study presents a comprehensive overview of what is going on in this market, assisting managers with designing market strategies likely to succeed.

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 **Fuel cells**

- Bonus valid for installations with a start of operations between April 1, 2002 and December 31, 2016.
- Bonus paid for 10 years

 **CHP Units**

- For electricity produced through steam motor/turbine, gas turbine, combustion engine, ORC engine (organic Rankine cycle), string engine
- Bonus valid for new or refurbished installations starting operations between January 1, 2009 and December 31, 2016. Units must be "high efficiency" units as defined by the EU

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ABOUT THE COMPANY

WinterGreen Research, research strategy relates to identifying market trends through reading and interviewing opinion leaders. By using analysis of published materials, interview material, private research, detailed research, social network materials, blogs, and electronic analytics, the market size, shares, and trends are identified. Analysis of the published materials and interviews permits WinterGreen Research senior analysts to learn a lot more about markets. Discovering, tracking, and thinking about market trends is a high priority at WinterGreen Research. As with all research, the value proposition for competitive analysis comes from intellectual input.

WinterGreen Research, founded in 1985, provides strategic market assessments in telecommunications, communications equipment, health care, Software, Internet, Energy Generation, Energy Storage, Renewable energy, and advanced computer technology.

Industry reports focus on opportunities that expand existing markets or develop major new markets. The reports access new product and service positioning strategies, new and evolving technologies, and technological impact on products, services, and markets. Innovation that drives markets is explored. Market shares are provided. Leading market participants are profiled, and their marketing strategies, acquisitions, and strategic alliances are discussed. The principals of WinterGreen Research have been involved in analysis and forecasting of international business opportunities in telecommunications and advanced computer technology markets for over 30 years.

The studies provide primary analytical insight about the market participants. By publishing material relevant to the positioning of each company, readers can look at the basis for analysis. By providing descriptions of each major participant in the market, the reader is not dependent on analyst assumptions, the information backing the assumptions is provided, permitting readers to examine the basis for the conclusions.

About The Principal Authors

Ellen T. Curtiss, Technical Director, co-founder of WinterGreen Research, conducts strategic and market assessments in technology-based industries. Previously she was a member of the staff of Arthur D. Little, Inc., for 23 years, most recently as Vice President of Arthur D. Little Decision Resources, specializing in strategic planning and market development services. She is a graduate of Boston University and the Program for Management Development at Harvard Graduate School of Business Administration. She is the author of recent studies on worldwide telecommunications markets, the top ten internet equipment companies, the top ten contract manufacturing companies, and the Top Ten Telecommunications market analysis and forecasts.

Susan Eustis, President, co-founder of WinterGreen Research is a senior analyst. She has done research in communications and computer markets and applications. She holds several patents in microcomputing and parallel processing. She has the original patents in electronic voting machines where she was featured in People Magazine in 1976. She has new patent applications in format varying, multiprocessing, and electronic voting. She is the author of recent studies of the Solar Renewable Energy, Wind Energy, Thin Film Batteries, Business Process Management marketing strategies, Internet equipment, biometrics, a study of Internet Equipment, Worldwide Telecommunications Equipment, Top Ten Telecommunications, Digital Loop Carrier, Web Hosting, Web Services, and Application Integration markets. Ms. Eustis is a graduate of Barnard College. Susan Eustis was named as top female executive of the year by Who's Who Worldwide in 2012. She was named page one of the top 100 Industry leaders in Who's Who in 2013.

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