

WINTERGREEN RESEARCH, INC.

**Stationary Fuel Cell Market Opportunities, Strategies, and
Forecasts, 2004 to 2009**

Stationary Fuel Cell



Picture by Susie Eustis

MOUNTAINS OF OPPORTUNITY

**WinterGreen Research, Inc.
Lexington, Massachusetts**

www.wintergreenresearch.com

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CHECK OUT THESE KEY TOPICS

STATIONARY FUEL CELL MARKET SHARES
STATIONARY FUEL CELL MARKET FORECASTS
STATIONARY FUEL CELL MARKET DEVELOPMENT

Fuel Cell Operations

Fuel Cell Environmental Issues
Power Of A Fuel Cell

HYDROGEN FUEL CELL TECHNOLOGY

STATIONARY POWER APPLICATIONS

ON GRID AND OFF GRID ISSUES

FUEL CELL ISSUES

FUEL CELL RELIABILITY

LAWS AND REGULATIONS

SOLID OXIDE FUEL CELLS

FUEL CELL POWER PLANT

STATIONARY FUEL CELL REGIONAL ANALYSIS

STATIONARY FUEL CELL SYSTEM INTEGRATION

OPPORTUNITY ABOUNDS

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Commercialization of stationary fuel cells relate to making units cost competitive. Challenges are low-cost infrastructure, range, and power density. Cost reduction, component integration, complexity reduction, and increasing safety are needed.

Stationary fuel cells have the potential to play a key part in the evolution of the campus energy marketplace. Systems generate lower emissions and less carbon dioxide. They are cheaper to run, and more reliable. This was shown by the continued operation of a fuel cell in New York Central Park during the blackout.

Sixty-five large stationary fuel cell systems have been installed in 2003, a noticeable upturn in production numbers. Growth has been steady rather than dramatic. Stationary power remains the biggest fuel cell market in terms of installed capacity. 120 megawatts has been installed worldwide since the 1970s.

Stationary fuel cells, premium power, back-up power are applications most likely to be the first market for continued fuel cell commercialization. The high cost of premium power means that fuel cells are able to compete on cost in this market. These applications require fewer hours of operation over the lifetime of the energy device. Durability is a concern for fuel cells.

Residential stationary fuel cells outlook is more favorable in Japan, where the price of power is very high for residential power. The high cost of building a complete fuel cell system is a deterrent to this market. A utility can spread the infrastructure costs over many customers. An individual customer would not recoup the extra cost in a timely fashion.

Commercially significant markets for fuel cell products and systems are expected to emerge by 2006. The best prospects are expected in electric power generation in both grid-based and distributed power formats.

Residential fuel cell shipments are evolving to a countable level in 2004. They account for 13% of the shipment dollars in 2009. Total stationary fuel cell markets at \$154.2 million in 2004 are expected to reach \$11.4 billion by 2009.

Companies Profiled

Market Leaders

**UTC Fuel Cells
Siemens Westinghouse**

Market Participants

Air Products	Anuvu
Ballard	California Fuel Cell Partnership
DaimlerChrysler	Dynetek
Defense Advanced Research Projects Agency (DARPA)	Ebara
Energy Conversion Devices	Energy Partners Ltd.
Ford	FuelCell Energy
Fuel Cell Technologies	GE Energy
General Motors	GreenVolt Power
HERA	Hitachi/Tokai
Hydrogenics	Hyundai Motor
Icelandic New Energy	IdaCorp/IdaTech
Impco	Johnson Controls/Optima Batteries
Merubeni	Matsushita
Messer	Millennium Cell
Mitsui	NEC
Niagra Mowhawk Power Corp	Nuvera
Northeast Advanced Vehicle Consortium (NAVC)	Palcan
Northern Power Systems	Polar
Proton Energy Systems	Plug Power
PSA Peugeot Citroen	Polyfuel
Samsung Advanced Institute of Technology	Sanyo
Snow Leopard	Ultralife Batteries
Teledyne Technologies/Teledyne Energy Systems	Tokyo Gas
Toshiba	TotalFinaElf
Toyota	

Stationary Fuel Cells Strategies and Forecasts, 2004-2009

REPORT METHODOLOGY

THIS IS THE *TWO-HUNDRED AND SIXTEENTH* REPORT IN A SERIES OF MARKET RESEARCH REPORTS THAT PROVIDE FORECASTS IN COMMUNICATIONS, TELECOMMUNICATIONS, THE INTERNET, COMPUTER, SOFTWARE, TELEPHONE EQUIPMENT, AND ENERGY. 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. 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 PARTICIPATION 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.

YOU MUST HAVE THIS STUDY

Stationary Fuel Cells Market Opportunities, Strategies, and Forecasts, 2004 to 2009

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