



US Fuel Cell Council

Fuel Cells: Stationary Power - Industrial Applications

Industrial applications for stationary power generation represent the first area of significant market penetration for fuel cell systems. Currently, there are more than 250 stationary fuel cell systems generating power for industrial applications around the world. Most of these are phosphoric acid fuel cells (PAFCs), but there are also solid oxide (SOFC), molten carbonate (MCFC), and Proton Exchange Membrane (PEM) fuel cell installations in operation.

Benefits of Stationary Fuel Cells

Stationary fuel cell systems provide many benefits to the industrial power market. First, they provide extremely reliable power, which many service industries and manufacturers -- like hospitals, data processing centers, or semiconductor chipmakers -- require. This reliability can be counted on when



In 2004, FuelCell Energy's European partner, MTU CFC Solutions GmbH, plans to begin commercial sales of MCFC power plants, such as this one installed at the

the grid connection fails, or in everyday off-grid operation, possibly saving lives or millions of dollars in ruined products or lost transactions.

Power from the electric grid can have dangerous voltage fluctuations, often resulting in expensive damages to computer based systems. Premium power is becoming an ever increasing attraction, as our computer based economy grows.

Second, the modularity of stationary fuel cell systems enables consumers to scale up as their power needs increase. For example, 200-kW fuel cells have been strung together to generate over 1 MW of maximum capacity.

Third, stationary fuel cell systems generate waste heat that can be captured and used to provide heating, cooling (utilizing absorption chilling, for example) or even turn steam-turbine generators



FuelCell Energy's first commercial product, the DFC300A, produces 250 kW

for additional electricity. This ability to utilize both the electricity and the waste heat, known as cogeneration, greatly enhances a fuel cell's efficiency and comparative advantage. Stationary fuel cell systems have efficiencies around 40+ percent alone and around 85 percent with heat recovery.

Fourth, stationary fuel cell systems possess the ability to utilize different fuels. With their high temperatures, SOFCs and MCFCs can internally reform various fuels like natural gas or coal gas for the hydrogen to produce electricity.

And last, fuel cells have proven to be environmentally preferable to traditional power generation technologies. The first commercially available fuel cell power plants, produced by UTC Fuel Cells, create less than 20 grams of pollutants per MWh, compared to over 11,388 grams per MWh for an average U.S. fossil-fueled plant.



UTC Fuel Cells installed this 200-kW fuel cell power plant at the Central Park Police Precinct in New York City.

For more information, visit our web site at www.usfcc.com.