

Stationary Fuel Cells

What Are Stationary Fuel Cells?

Stationary fuel cells generate electricity through an electrochemical reaction, not combustion, providing clean, efficient, and reliable off-grid power to homes, businesses, telecommunications networks, utilities, and others. Many companies around the country are adopting fuel cells for primary and backup power including Adobe, Apple, AT&T, CBS, Coca-Cola, Cox Communications, Delmarva Power, eBay, Google, Honda, Microsoft, Target and Walmart, among others.ⁱ

Why Use Stationary Fuel Cells?

On-Demand, Resilient Power

Stationary fuel cells are quiet and have very low emissions, so they can be installed nearly anywhere. These systems provide power on-site directly to customers, without the efficiency losses of long-range grid transmission.

Most stationary fuel cells connect directly to our nation's natural gas infrastructure, generating resilient power to critical facilities, even when grid power is unavailable. When several major natural disasters battered the Northeast over the last few years, fuel cells proved their reliability again and again in keeping the lights on for businesses, hospitals, grocery stores and schools, powering emergency shelters for damaged neighborhoods, and saving hundreds of thousands of dollars of potentially lost revenue.ⁱⁱⁱⁱⁱ

High Efficiencies, Made Higher with Combined Heat & Power

Fuel cells are highly efficient, typically reaching fuel to electricity efficiencies of 60 percent,^{iv} nearly double the efficiency of today's electric grid.^v Fuel cells also generate heat which, if captured, can increase overall energy efficiency to more than 90 percent. The heat produced by fuel cells can generate additional electricity through a turbine, provide heating directly to nearby buildings or facilities, and even cooling with the addition of an absorption chiller.

Environmental Performance

Unlike combustion-based power generation, stationary fuel cells provide virtually emission-free power. Fuel cells do not produce particulate pollutants, unburned hydrocarbons, or the gases that produce acid rain. They emit less carbon dioxide than other, less efficient technologies, and when using fuel generated from renewable sources such as biomass, fuel cells are completely carbon neutral.^{vi}

Because of these environmental benefits, fuel cells are being adopted by federal facility managers in order to reach mandatory air pollution goals, utilities working to meet various state renewable fuel standards, and companies working to protect the environment and meet stringent emissions requirements.^{viiiii}

ⁱ The Business Case for Fuel Cells 2012: America's Partner in Power. <http://www.fuelcells.org/uploads/FC-Business-Case-2012.pdf>

ⁱⁱ Extreme Weather and Fuel Cell Backup Power. http://www.fuelcelltoday.com/media/1739294/12-11-07_extreme_weather_and_fuel_cell_backup_power.pdf

ⁱⁱⁱ Fuel Cells in Storms. <http://www.fuelcells.org/uploads/Fuel-Cells-in-Storms.pdf>

^{iv} Types of Fuel Cells. http://www1.eere.energy.gov/hydrogenandfuelcells/fuelcells/fc_types.html

^v What is the efficiency of different types of power plants? <http://www.eia.gov/tools/faqs/faq.cfm?id=107&t=3>

^{vi} Procuring Fuel Cells for Stationary Power: A Guide for Federal Facility Decision Makers. http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/fed_facility_guide_fc_chp.pdf

^{vii} Delaware Renewables Portfolio Standard. http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=DE06R

^{viii} American Honda Installs Stationary Fuel Cell System that Will Produce a Megawatt of Clean Energy, Reduce CO2. <http://www.honda.com/newsandviews/article.aspx?id=7138-en>