



FuelCell Energy

Ultra-Clean, Efficient, Reliable Power



efficient
reliable
green



FuelCell Energy® provides efficient, reliable power to the world's most demanding markets. Fuel cell power plants offer inherent fuel flexibility, 24/7 operation, and the ability to capture waste heat for many practical uses.

Fuel cells do not depend on wind or sunshine, and generate more electricity per unit of fuel than almost any other distributed energy source.

Medical

Hospitals and other critical care facilities require reliable power around the clock. Fuel cells offer the only viable alternative to traditional dependence on utilities for baseload power and load management.

Hospitality

The success of a hotel depends largely on its ability to provide an attractive, clean, and quiet environment. Quiet and unobtrusive fuel cells can provide power to the facility with a heat byproduct that is useful for swimming pools, domestic hot water, and building heat.

Manufacturing

Manufacturing facilities take advantage of fuel cells for both baseload power and peak load management. Waste heat produced in the process is often used in the manufacturing process to augment or replace existing heating systems.

Food and Beverage Processing

Digester gases produced as a natural byproduct of food and beverage processing can be reformed into usable hydrogen to power a fuel cell, virtually eliminating digester gas emissions.

Wastewater Treatment

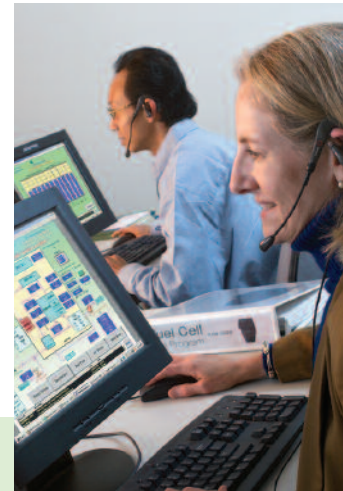
Many wastewater treatment plants use anaerobic digester gases. Fuel cells can take advantage of this gas more effectively than any other power source. This unique relationship between Direct FuelCells and anaerobic digesters results in the most efficient and environmentally friendly use of this energy source.



Fuel cell power plants are well suited for many diverse applications.

markets

Direct FuelCells provide reliable, Ultra-Clean power around the clock, are environmentally friendly, and can be located, literally, anywhere.



FuelCell Energy provides comprehensive training and 24/7 service and support.

benefits

The Fuel Cell Advantage

The most important advantage of fuel cell power plants is their ability to provide Ultra-Clean power without interruption. They do not depend on wind or sunshine, and have extremely low emissions, making them a desirable energy source for many applications. You can build one, literally, anywhere and operate it with biofuels as well as natural gas, ethanol, and other fuels.

FuelCell Energy works closely with both federal and state governments to help implement incentive programs for installing Ultra-Clean power generation technologies such as fuel cells. In many geographic locations these incentive programs can significantly offset the costs associated with installing a Direct FuelCell® (DFC®) power plant.

Fuel cell technology is a strong energy partner:

Efficiency: DFC fuel cell power plants generate more electricity per unit of fuel than almost any other distributed energy source. Efficiency is further increased when used in a Combined Heat and Power (CHP) application, or in conjunction with other power technologies (solar, gas turbine).

Environmental Impact: With negligible emissions of pollutants such as nitrogen oxides (NO_x) and sulfur oxides (SO_x), and dramatically reduced CO₂ greenhouse gas emissions compared to traditional fossil fuel power plants, fuel cell power plants qualify under several environmental certifications established by the government, making them eligible for significant financial incentive programs.

Reliability: By locating the power plant on-site, and implementing real-time monitoring capability, end-users are assured of increased reliability, a necessary requirement for applications such as hospitals, hotels, universities, and manufacturing facilities.

Fuel Flexibility: In addition to biofuels – gases from food processing, landfills, and wastewater treatment – fuel cells can run on natural gas, ethanol, diesel, and coal gas. In many geographic areas, fuel cells running on biogas are considered a renewable energy source, qualifying them for even more financial incentives.



Fuel cell power plants offer environmental, operational, and economic benefits.

Stationary Direct FuelCells

Direct FuelCell (DFC) power plants provide high grade electrical power and residual heat for Combined Heat and Power (CHP) applications, with virtually no pollutants. From 300 kW facility solutions to 50 MW grid support applications, FuelCell Energy can meet almost any distributed power requirement. Best of all, DFCs are friendly to the environment, quiet, and unobtrusive.

Service and support is an integral part of our product offering. FuelCell Energy provides complete support for the entire lifecycle of our DFC products. Our Global Technical Assistance Center (GTAC) and Regional Service Teams deliver full product line support. This includes long term service agreements, parts, technical services, repair and warranty services, and a full line of operations and maintenance training.



DFC300MA

With a small, modular footprint and 300 kW of continuous power output, the DFC300MA is well suited for super markets, medium-sized hotels, or similar commercial operations. With a reliability rating of more than 96%, the DFC300MA provides power where and when you need it.



DFC1500MA

Producing 1.2 MW of continuous baseload power, the DFC1500MA is perfect for large hotels, convention centers, and other medium-demand installations. Because of its quiet, clean operation, the DFC1500MA is hardly noticeable to patrons while serving your power needs 24/7.



DFC3000

Designed for high power demand applications, the DFC3000 produces 2.4 MW of baseload power that can be scaled up to 50 MW. It is well suited for hospitals, universities, large commercial complexes, and grid support.

products

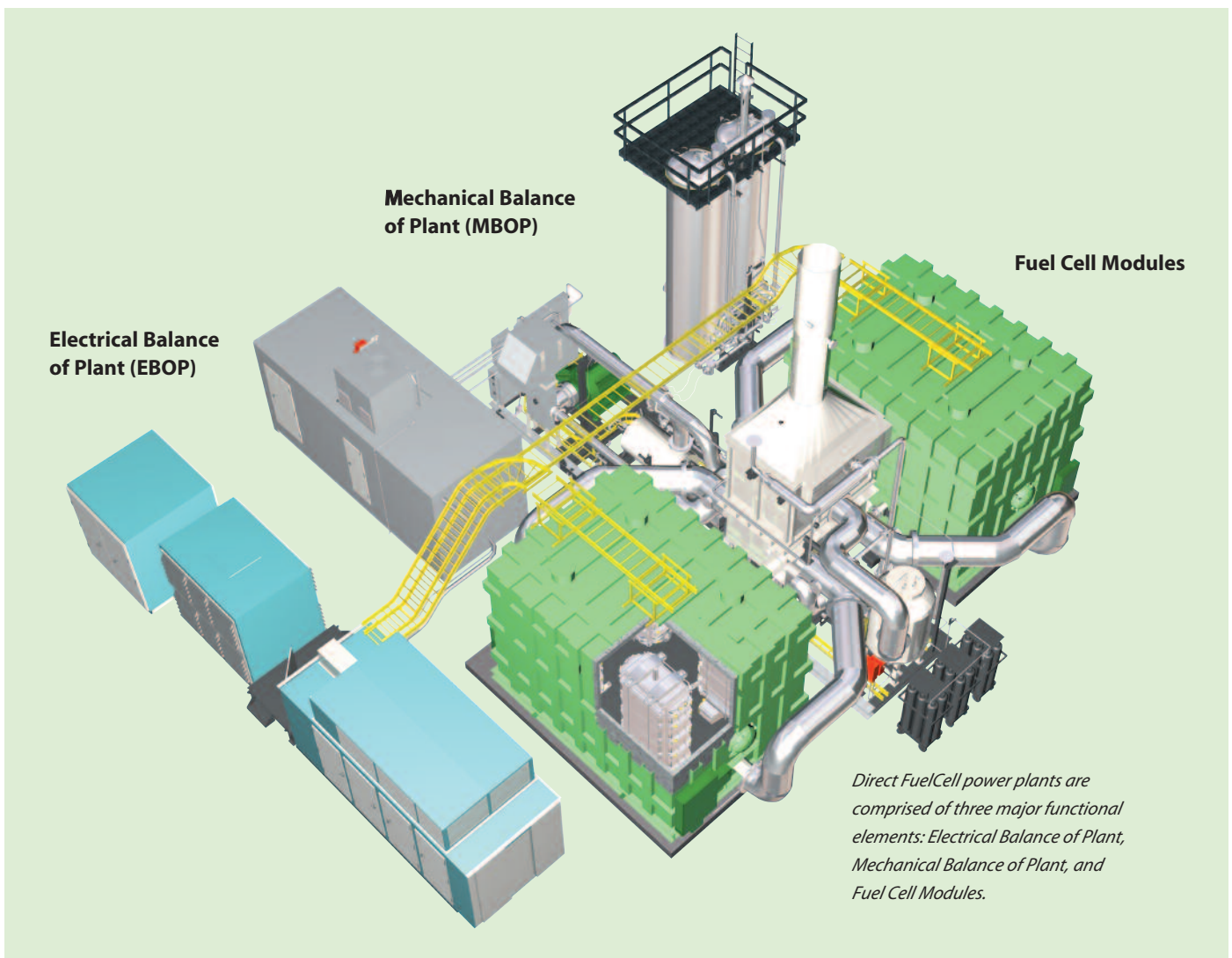
how stationary fuel cell power plants work

Direct FuelCell power plants are comprised of three major functional elements:

The Fuel Cell Module is the centerpiece of the power plant and is comprised of multiple fuel cells operating in parallel. Hydrogen is internally reformed from the source fuel to support the non-combustion electrochemical reaction in the fuel cell. Fuel is combined with oxygen from air to produce energy. Ultra-Clean electrical power, in the form of direct current (DC), and heat are produced in the process.

The Mechanical Balance of Plant (MBOP) operates both upstream and downstream of the fuel cell module. Upstream, the MBOP provides water and fuel treatment, preheats and humidifies the source fuel, and provides the outside air supply. Downstream, the MBOP serves as a heat exchanger to extract heat energy produced in the reaction and convert it to a usable form.

In the Electrical Balance of Plant (EBOP), downstream of the fuel cell module, DC electrical power is inverted and conditioned to form utility grade AC power. The voltage is stepped up to service local power needs and for grid support. Here, switching and protection equipment for the electrical service interconnect is provided.



Direct FuelCell power plants are comprised of three major functional elements: Electrical Balance of Plant, Mechanical Balance of Plant, and Fuel Cell Modules.



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FuelCell Energy, Inc.

FuelCell Energy, the world leader in Ultra-Clean power, provides stationary fuel cell power plants for a variety of applications. Headquartered in Danbury, Connecticut, FuelCell Energy services more than 50 power plant sites around the globe that have generated more than 180 million kilowatt hours of electrical energy. The company also conducts research and development on next-generation fuel cell technologies to meet the world's ever-increasing demand for Ultra-Clean distributed energy.

FuelCell Energy, Inc.

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