

Data Center

Fuel Cells and Data Centers

Data centers, banks and call centers require high quality, reliable power 24/7. Power outages collectively cost companies billions of dollars each year, and power quality issues, such as voltage sags or surges, can disrupt operations and damage sensitive equipment.

Fuel cells are increasingly being adopted for data center applications for their ability to generate high-quality, reliable power, eliminating the fear of damages from grid outages.

Benefits

Fuel cells generate electricity using an electrochemical reaction, not combustion, and when pure hydrogen is used, there are no polluting emissions, only water and heat as by-products.

Fuel cells can be configured to be a building's primary source of power, using the local grid as back-up power if needed. In addition, the excess heat generated by a fuel cell can be used to provide cooling for servers located in data centers and computer labs.

Depending on local markets, fuel cells can produce electricity at a cost lower than grid power – one third lower per kilowatt hour, for one California customer. Companies can also arrange purchase agreements that offer a fixed price for electricity over the term of the agreement, an advantage in an uncertain energy world.



6 MW fuel cell installation at eBay

Another beneficial use for fuel cells is as a fire suppression system, utilizing the nitrogen-rich output from the fuel cell to manage the oxygen level helps ensure that there is enough to breathe, but not enough to support a fire. Most data centers currently use either water or gas-based fire suppression systems; a data center in Germany, Equinix, installed a fuel cell in 2013 and is the first in the world use the fuel cell for reliable power and fire suppression capability.

Current Fuel Cell Customers

Companies using fuel cells to power their data centers include:

Apple – has installed 10 MW of fuel cells coupled with solar panels to power its Maiden, North Carolina iCloud data center.

Microsoft – has co-located a 300 kW fuel cell and a data center at a wastewater treatment plant in Cheyenne, Wyoming that runs off of the renewable methane generated by the facility.

eBay – operates 6 MW of fuel cells powering its South Jordan, Utah data center.

CenturyLink – powers its Irvine, California data center with a 500 kW fuel cell system.

Other customers using fuel cells to power data centers include AT&T, Google, Verizon, JPMorgan Chase, Williams-Sonoma, Cox, the First National Bank of Omaha, and more.