



Commercial Fuel Cell Molten Carbonate



ASU East Campus
6040 S. Sawyer Street
Mesa, Arizona 85212

Facts

- Commercial Size Fuel Cell Power System
- 250 kW System Capacity
- Fueled by Natural Gas
- Grid Connected
- Facility located at ASU East
- “State of the Art” High Temperature Molten Carbonate Fuel Cell Technology
- Very Low Emissions

Overview

As part of SRP’s Renewable Energy Program, this project is the first demonstration of a commercial-scale fuel cell power system. This project will provide valuable information and experience, allowing SRP and our customers to make informed decisions about this emerging technology.

The fuel cell is a large-scale 250 kWac Molten Carbonate Fuel Cell System, fueled by natural gas. The natural gas is preconditioned in a reformer to extract the hydrogen. The hydrogen is then supplied to the fuel cell “stack.” Electrical output from the Fuel Cell (480 Vac) is stepped-up to 12 kV and interconnected to the SRP electric grid.

In cooperation with Arizona State University, the Fuel Cell Power System is installed on an SRP easement located on the University’s East

Campus (previously, Williams-Gateway Airport). ASU-East was chosen as the host site based on the academic opportunity to monitor and evaluate an emerging technology.

The project will provide a framework for evaluating performance and operation of a large-scale fuel cell and for assessing the costs and benefits of the technology.



**Fuel Cell Energy DFC300A
Commercial Fuel Cell System**

Fuel Cell System Highlights

- Equipment Manufacturer: Fuel Cell Energy, Danbury, CT
- Equipment Model: DFC300A
- System AC Power Rating: 250 kW [Inverter output at 480 Vac]
- Fuel Supply: Natural gas at 15psi
- Emissions: Nox: 0.1 ppmv
Sox: 0.01 ppmv
CO & VOC: 10 ppmv
- Operating Modes: Grid Connected – Base Loaded
Unit can switch to “stand-alone” mode if Grid is lost.
- Annual Energy Output: 1,752 MWh
- Dimensions: 0.11 acre, 15 year easement at the ASU East Campus

Sources

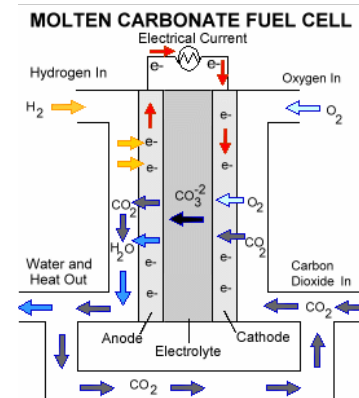
www.srpnet.com

www.fce.com

www.east.asu.edu

What is a Molten Carbonate Fuel Cell?

A fuel cell consists of two electrodes sandwiched around an electrolyte. Molten Carbonate fuel cells (MCFC) use high-temperature compounds of salt (like sodium or magnesium) carbonates (chemically, CO₃) as the electrolyte. Oxygen passes over one electrode and hydrogen over the other, generating electricity, water and heat. It will produce electricity as long as fuel is supplied.



Courtesy: US Department of Energy