



Report of Materials and Equipment Acceptance Division

NYC Department of Buildings
280 Broadway, New York, NY 10007
Robert D. LiMandri, Acting Commissioner
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Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use subject to the terms and conditions contained herein.

MEA 77-08-E

Manufacturer: FuelCell Energy Inc., 3 Great Pasture Road, Danbury, CT 06813

Trade Name(s): FuelCell Energy - Direct FuelCell, DFC

Product: DFC300MA fuel cell power plant, 300kW

Pertinent Code Section(s): Subchapter 14, Reference Standard RS 14

Prescribed Test(s): ANSI/CSA FC1-2004 (formerly ANSI 21.83)

Laboratory: CSA International

Test Report(s): CSA File No. 213339 issued March 14, 2008.

Description: The DFC300MA is a stationary fuel cell power system that exports up to 300 kW of 480V/3-phase/60 Hz power to the local distribution network (grid). Power is generated by means of an electrochemical conversion of natural gas. The direct current thereby generated is inverted to alternating current. The DFC300MA is of a three (3) part modular design:

1. The Mechanical Balance of Plant (MBOP) module that contains the fuel preparation, air supply, water treatment and the control system. This module prepares the natural gas by desulfurization, preheating and humidification; an air blower provides oxidant; a control system modulates and controls operation and safety functions.
2. The Fuel Cell module converts the natural gas fuel electrochemically into DC power.
3. The power Conversion Unit (PCU) converts DC power to AC power.

The following table provides descriptive details of the DFC300MA including input and output specifications while it is in operation.

DFC300<u>MA</u> Power Plant Specifications	
Dimensions-Feet (LxWxH) and Weight lbs.)	Dimensions and Weight
Mechanical Balance of Plant Module	19.8 x 8.0 x 9.6 - 27,000 lbs
Fuel Cell Stack Module	15 x 8.2 x 8.4 - 35,000 lbs
Electrical Balance of Plant Module	9.0 x 8.0 x 14.6 - 15,000 lbs
Power Output:	
Power at plant nameplate rating	300 kW
Voltage	480 VAC
Frequency	60 Hz
Power Quality	Per IEEE 519
Efficiency at Rated Output:	47% LHV
Heat Rate	7260 Btu/kWh
Water Use:	
Water Average Consumption at rated power	0.9 gpm
Water Peak Consumption during system backflush	10 gpm
Water Average Discharge at rated power	0.45 gpm
Water Peak Discharge during system backflush	10 gpm
Available Heat at rated Power	480,000 Btu/h when exhaust is cooled to 250°F
Exhaust Temperature	700 +- 50°F
Exhaust Flow	3950 lb/hr
Exhaust Absolute Humidity	~20%
Noise	72 dBA at 10 feet
Emissions:	
NOx	≤ 0.01 lb/MWh
SOx	≤ 0.0001 lb/MWh
CO	≤ 0.01 lb/MWh
VOC	≤ 0.02 lb/MWh

Pursuant to "Promulgation of the Rules relating to Material and Equipment Application Procedures" dated November 5, 1992, the Bureau of Fire Prevention has no objections (letter dated July 8, 2008, F.P. Index #0803027B).

Terms and Conditions: The above units are accepted on condition that:

1. The DFC300MA stationary fuel cell power system may be installed either outdoors or indoors, in accordance with all applicable requirements, conditions and limitations outlined in this approval.
2. Installation and use of the DFC300MA shall meet all applicable requirements, conditions and limitations of:
 - a. CSA International Certificate of Compliance, Cert. #1428674, dated 3/14/2008.
 - b. NYC DOB Electrical Division Advisory Board approval letter dated 5/23/2007.
 - c. ANSI/CSA America FC 1-2004 (formerly ANSI Z21.83).

- d. NFPA 853 – “*Standard for the Installation of Stationary Fuel Cell Power Systems*”.
 - e. NYC Department of Buildings, NYC Construction Codes.
 - f. NYC Fire Department, NYC Fire Code and Fire Department Rules.
 - g. NYC Electrical Code.
 - h. All other agencies having jurisdiction.
3. Interconnection to the grid shall meet all applicable requirements, conditions and limitations of:
 - a. 2.a through 2.h. (above)
 - b. IEEE 1547 – “*Standard for Interconnecting Distributed Resources with Electric Power Systems*”.
 - c. The local utility.
4. In accordance with Department of Buildings PPN #1/96, the DFC300MA shall not be used to supply emergency power to fire safety devices.
5. For **indoor** installations, ventilation and exhaust systems shall comply with the following:
 - a. The ventilation and exhaust system shall be designed to provide a negative or neutral pressure in the room (where the DFC300MA is located), with respect to the building.
 - b. A separate mechanical ventilation system shall be provided for the area where the DFC300MA is located.
 - c. A control interlock shall be provided to shut down the DFC300MA upon loss of ventilation.
 - d. The inlet air vent shall be designed to prevent foreign matter from entering.
 - e. An exhaust system shall be provided for the area where the DFC300MA is located.
 - f. The exhaust system shall be designed such that all emissions are exhausted to a safe location.
 - g. The exhaust rate from the room shall not be less than 1 cfm/sq. ft. of floor area, and not less than 150 cfm.
 - h. A control interlock shall be provided to shut down the DFC300MA upon loss of exhaust.
 - i. Pressure tanks and piping intended to be purged, pressure regulators, relief valves and other potential sources of combustible gas shall be vented to the outside of the building. The vent shall be designed to prevent entry of water or foreign objects.
6. For **indoor** installations, combustible gas detection systems shall comply with the following:
 - a. A combustible gas detection system shall be installed in the room or area where the DFC300MA is installed.

- b. The combustible gas detection system alarm shall annunciate in a supervised location.
 - c. The combustible gas detection system shall be arranged to alarm at 25% of the lower flammable limit (LEL) and be interlocked to shutdown the DFC300MA fuel supply at 60% LEL.
7. In the event of a fire emergency in the building, it may become necessary to shut down electric power to the building via the building main utility disconnect. A disconnect for the DFC300MA shall be provided in a manner and location acceptable to the NYC Department of Buildings and the Fire Department.
 8. In the event of fire emergency in the building, it may become necessary to shut down the natural gas supply to the building. Means to shut down the natural gas supply to the DFC300MA shall be provided in a manner and location acceptable to the NYC Department of Buildings and the Fire Department.
 9. All manufacturers' recommendations regarding site preparation, installation, plumbing requirements and interface connections, electrical requirements and interface connections, as described in the installation manual, shall be strictly adhered to.
 10. Manufacturer's routine scheduled maintenance requirements shall be strictly adhered to.
 11. All shipments and deliveries of such equipment shall be provided with a metal tag, suitably placed, certifying that the equipment shipped or delivered is equivalent to that tested and accepted for use, as provided in Section 27-131 of the New York City Building Code.

NOTE: In accordance with Section 27-131(d), all materials tested and accepted for use shall be subject to periodic retesting as determined by the Commissioner; and any material which upon retesting is found not to comply with Code requirements or the requirements set forth in the approval of the Commissioner shall cease to be acceptable for the use intended. During the period for such retesting, the Commissioner may require the use of such material to be restricted or discontinued if necessary to secure safety.

Final Acceptance August 21, 2008
Examined By Donald [Signature]

