



# Emergency power

## > Case History

Metropolitan Community College Maple Woods  
Emergency Center, Kansas City, USA



**Power  
Generation**

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### **Where:**

Maple Woods Campus Center at Metropolitan  
Community College in Kansas City, Missouri, USA

### **What:**

An emergency power system consisting of a  
Cummins Power Generation 125 kW diesel standby  
generator set and PowerCommand OTEC150  
automatic transfer switches

### **Purpose:**

Emergency standby power to a campus center and a  
Federal Emergency Management Association (FEMA)  
shelter

### **Primary choice factors:**

IBC certification of 125 kW generator set from  
Cummins Power Generation

## **In a national first, an IBC-certified power generation system turns Kansas City classrooms into safe rooms**

KANSAS CITY, MISSOURI USA – One of the education  
buildings that dots Metropolitan Community College's  
(MCC) Maple Woods campus in Kansas City houses  
classrooms and meeting rooms that look like any  
institution of higher learning.

If a tornado, earthquake or other disaster strikes, the  
community will benefit from a backup power system and  
rock-solid construction that go far beyond typical.

The 14,389 square foot facility — the MCC Maple Woods  
Campus Center — serves as a Federal Emergency  
Management Agency (FEMA) shelter as well as a  
classroom building. In all, MCC was awarded \$10.8 million  
to build six shelters on five Kansas City-area campuses  
after taking advantage of a grant program through which  
FEMA bears 75 percent of the shelters' cost.

What makes the MCC Maple Woods FEMA shelter  
unique is that it marks the first U.S. installation of a  
generator set certified per the International Building  
Code (IBC). Created by the International Code Council,  
IBC has become the primary code document used by



The 125KW diesel generator set is certified to withstand the seismic design load for rooftop installation, which is three times higher than ground-level installation requirement per IBC.

engineers in the U.S. to specify generating equipment and supervise its installation.

Currently, authorities having jurisdiction may be using either the 2000, 2003 or 2006 edition of the IBC, with one of these editions now adopted at either the state or local level in all 50 states.

In the case of MCC-Maple Woods, engineers chose Cummins Power Generation's DGDK 125 kW diesel standby generator set and PowerCommand® OTEC150 automatic transfer switches. The products are the centerpieces of an emergency power system with a rooftop location and 336-gallon dual-wall subbase fuel tank. Because of the soil condition and being an essential building with a required generator for backup, the entire system had to be seismically certified to operate after a major seismic event.

One of the primary features of the 125 kW diesel standby generator is strong motor-starting capability and fast recovery from transient load changes. The torque-matched system includes a heavy-duty Cummins 4-cycle diesel engine, an AC alternator with high motor-starting kVA capacity, and an electronic voltage regulator with three-phase sensing for precise regulation under steady-state or transient loads.

### Location helps drive certification

MCC-Maple Woods is located between the Humboldt fault in Kansas and Missouri's New Madrid fault system, one of the most seismically active zones in the U.S. The fault system crosses five state lines and poses the highest earthquake risk in the U.S. outside the West Coast.

The building's location in a seismically active area, combined with the region's high number of tornadoes,



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makes the IBC certification essential for the FEMA shelter. According to Justin Niehaus, a sales engineer with Cummins Central Power, FEMA restrictions related to storm shelters require that the building also needs to be able to withstand an F<sub>4</sub> or F<sub>5</sub> tornado.

*"The MCC-Maple Woods Campus Center is built like a fortress because it needs to be strong enough to withstand winds of 250 miles per hour and protect all of the people who could get to the shelter within five minutes of an emergency siren," Niehaus said.*

The edifice was designed by Gould Evan Architects and engineered by Lankford + associates Consulting Engineers, Inc. JE Dunn Construction served as construction manager. The structure features cast-in-place concrete walls, while the roof consists of cast-in-place concrete pans and steel beams with a concrete metal deck. The "green" roof also includes an irrigation system.

In jurisdictions following the 2003 edition of the IBC, manufacturers of "designated seismic systems" — including generator sets — must supply both a certificate of compliance to the code's seismic requirements, and equipment labeling that contains the name of the approved agency that performed the certification testing.

The Special Inspections Unit of the City of Kansas City certified that the power generation equipment at MCC-Maple Woods met IBC requirements.

For more information about integrated emergency power systems, contact your local Cummins Power Generation distributor or visit [www.cumminspower.com](http://www.cumminspower.com).

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