Standby power

> **Case History**
Hancock Memorial Hospital, USA

Cummins Power Generation

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Where:
Hancock Memorial Hospital and Health Services, Greenfield, Indiana, USA

What:
Standby power controlled by digital technology

Purpose:
To provide full redundancy to three of the hospital's power branches: life safety, critical circuits and equipment circuits

Primary choice factors:
Improve the hospital's standby power distribution system using digital technology for redundancy and real-time information

Hospital expands services with digital on-site power system

GREENFIELD, INDIANA, USA — For more than 50 years, Hancock Memorial Hospital and Health Services (HMHHS) has served Greenfield, Indiana, and Hancock County with an emphasis on primary care, patient comfort and convenience. Located 30 miles east of Indianapolis, Hancock aims to be one of the best suburban/rural healthcare systems in the United States.

It was Hancock's emphasis on excellence and growth that prompted facility officials to go beyond a traditional standby power system when they upgraded its on-site power. Instead of relying on conventional analog technology for standby power, they opted for a system controlled by digital technology: a Cummins Power Generation Inc. 2 MW power generation system with PowerCommand® digital controls.

"We wanted to have a state-of-the-art installation," said Brad Stevens, team leader of building services, HMHHS. "We had seen other digital installations and were impressed with the amount of information and control that was available. Other manufacturers we looked at would have had to supply digital equipment through a third party, but Cummins Power Generation was the only manufacturer that provided the entire system."

Two 1 MW Cummins Power Generation units occupy less space than the three lower-capacity units they replaced.

PowerCommand digital controls provide redundancy and real-time information in a smaller footprint; this installation occupies 25 percent less space in the mechanical room than analog technology.

Digital controls help increase reliability

Although analog transfer switches have provided reliable service for decades, digital controls are becoming an industry standard for many reasons — especially greater reliability. Redundancy can be built into digital circuitry at very low cost. This redundancy prevents single-point failures from causing system-wide failures. Digital controls also require less space in the mechanical room.

"The paralleled system provides full redundancy to three power branches … The hospital dramatically increased its standby power reliability."

Hancock's new on-site power system was designed by BSA LifeStructures (www.bsalifestructures.com), specialists in healthcare architecture and engineering. Engineers specified system redundancy, real-time reporting and diagnostics, and the capacity to meet future expansion needs, including the ability to parallel with the utility grid for energy management.

"The existing system lacked redundancy, and that was its major drawback," said Daniel Campbell, P.E., project lead engineer with BSA. "If one of the generators failed, the area of the hospital being served by that genset did not have emergency power." The hospital's three existing gensets — 300, 400 and 500 kW — served different portions of the campus with only a part of the load and could not be paralleled. "Our design sought to improve the standby power distribution system. A primary goal was to put the standby distribution system on a common bus, so that if one of the gensets failed, the others could take up the load."

"We removed all three of the existing gensets, installed two 1 MW units and paralleled the new ones together," said Campbell. "The paralleled system provides full redundancy to three power branches: life safety, critical circuits and equipment circuits. The hospital dramatically increased its standby power reliability."

The critical circuits supply patient rooms, nurse stations and the operating rooms, while the equipment circuits supply air-handling units and chillers.

Real-time information gives operators instant feedback

The hospital's existing standby system included 11 analog transfer switches, none of which provided any sort of reporting. Operators never knew the position of the switches — emergency or utility — or how much load they carried, without physically going to look at the switches. With the installation of the PowerCommand system, a Cummins Power Generation monitoring module was added to each analog transfer switch, which, in effect, "digitized" the switches. The modules were networked together and fed back to the digital paralleling controls.

Through the software, operators can now see all 18 transfer switches together and determine their position and load in volts, amps and kW. This real-time information is routed over the hospital network, so the entire operation can be monitored remotely. "Information is a benefit everybody likes about digital," said Bob Fulcher, generator account manager, Cummins Mid-States Power Inc.

For more information about integrated standby power systems, contact your local Cummins Power Generation distributor or visit www.cumminspower.com.

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