Standby power

> Case History
Alberta Children's Hospital, Canada

Cummins Power Generation

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Where:
Calgary, Alberta, Canada

What:
Three 2 MW standby generators in a remote power building with a high-voltage distribution system connected to the hospital

Purpose:
To provide emergency standby power for all of the hospital's electrical needs in the event of a utility outage

Primary choice factors:
Cummins Power Generation was chosen because the power system offered the best value; Cummins Power Generation also participated in project budget control and system design decisions

Alberta Children's Hospital designed for speedy recoveries and power reliability

CALGARY, ALBERTA, CANADA — The bright, playful façade of Alberta Children's Hospital in Calgary looks like a random stack of colorful building blocks — and that's how the kids who had a hand in its design wanted it to look. From the state-of-the-art medical facilities that aid patients' recoveries to the standby power system that ensures their safety, the hospital's vision is to reduce stress and promote healing in ways that are uniquely tailored to children. For the 3.5 MW electrical needs of the 133-bed, 750,000-square-foot hospital, officials chose Cummins Power Generation Inc. generators and controls.

With kids as customers, quality is the bottom line
During the early design stages of the hospital, architects asked young patients what they thought a hospital for kids should look like. From these early concepts, the hospital is designed to be all about the children who go there for treatment.

"Everyone on the design and construction team agreed that intangible factors — not just price — were important, because it is a children's hospital," said Gerry Stebnicki, electrical design team leader with Stebnicki + Partners

Three 2 MW diesel generator sets from Cummins Power Generation provide standby power for Alberta Children's Hospital.

A fully redundant standby power system that can supply all of the hospital's needs is vital for modern neonatal care.

in Calgary. "This made the whole approach unique. We chose Cummins Power Generation within that context, because they offered the best value of all the tendered proposals. Once they were chosen, they participated in the budget control and design decisions, working in concert with the rest of the group to make it happen. That's a big reason why the project was so successful."

Separate power building offers benefits and challenges

Three Cummins Power Generation generators are housed in a building 400 meters (1,312 feet) away from the main building. This minimizes noise and vibration in the hospital, allows ground-level access to the generators in an emergency and simplified the design of the generator cooling system.

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Because of the distance between the power building and the hospital, Stebnicki chose 4,160-volt supply lines to the hospital rather than the Canadian standard of 600 volts. "Increasing the voltage allowed us to deliver the same amount of power with smaller conductors," he said. "We saved so much on the conductor costs that the overall standby system ultimately cost less." The 4,160-volt lines run underground and then through a series of duct banks to the main building's penthouse. From there, power is stepped down to 347/600 volts.

The design team chose the PowerCommand® digital master control (DMC) system from Cummins Power Generation for two reasons: 1) complete integration with the generators; and 2) its ability to meet interoperability requirements. There are two touch-screen control panels for the generators and transfer system, one in the generator building and another in the penthouse. They are linked by fiber optics and can be controlled from either point.

System exceeds standards

The Canadian Standards Association's Z-32-04 standard requires that generators be online within 12 seconds of utility outage. The PowerCommand system does much better than that, according to Stebnicki. Once the generators are up to speed — which takes about 10 seconds — the system transfers power smoothly from the UPS system to the generators. Then the system senses when the utility comes back online, and again makes a smooth, synchronous switch back to the utility power. Fuel capacity for the generators is 50,000 liters (13,208 U.S. gallons); depending on loading and the season, the generators could power the entire hospital for approximately 44 hours.

With reliability and redundancy as their watchwords, everyone on the Alberta Children's Hospital design team — including Cummins Power Generation — has responded to problems with innovative solutions. But, then again, innovative solutions were the requirement since the health — and often the lives — of children hang in the balance every day.

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

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