

# POWER PROFILE

**Customer:** Mercy Health

**Location:**

Muskegon, Michigan, USA

**Customer Business Issue:**

Reliable backup power within a limited building footprint

**Solution:**

Cat EMCP 4.4 control system with onboard paralleling capabilities

**Cat® Dealer:**

Michigan Cat

**POWER NEED**

Mercy Health is a regional, multi-campus, Catholic health care system serving West Michigan with four hospital campuses, more than 85 physician offices and more than 1,300 medical staff physicians.

In 2013, hospital administrators announced plans to expand the Mercy Health Muskegon Mercy Campus by building a new ten-story tower that features 267 private patient rooms, a new emergency department, and state-of-the-art surgical and procedural areas. As part of the project, planners looked to replace two Cat® generator sets that had provided standby power for the existing hospital for over 45 years. However, space would be limited in the new power room.

“We didn’t have much room to work with here,” said Jerry Booth, environmental care leader for Mercy Health. “We had to build a separate place to store everything. Cost is a huge deal in all hospitals.”

**SOLUTION**

Mercy Health officials selected Cat dealer Michigan Cat to supply four Cat C32 diesel generator sets that offer onboard paralleling through the Cat EMCP 4.4 control system. This configuration eliminates the need for traditional paralleling switchgear, resulting in a smaller, space-saving footprint and a lower project capital cost.

“Mercy Health was looking at all the newest technologies, and they decided that the onboard paralleling system was a way to give them what they needed and still have the reliability and footprint that was required with the space they had available,” noted Mark Wild, account manager for Michigan Cat.

In facilities with a high demand for power, such as a hospital or data center, communication among generator sets is crucial for maintaining power levels. In these applications, paralleling generator sets helps to ensure more efficient load sharing and load response within a network.

One way to parallel generator sets is by using dedicated multi-function engine generator set controllers with integrated paralleling controls on the generator set. With the Cat EMCP 4.4 control system, individual controllers communicate with each other by way of an Ethernet backbone, synchronizing the generator sets through a connection to a single Ethernet switch.

According to Milo Amundson, a veteran technician with Michigan Cat, setting up the multi-generator data link (MGDL) system is essentially a plug-and-play exercise. The generator set control panels are connected by Ethernet cables, and five different parameters are programmed through the MGDL.

“You instantly have all your generators communicating together, and then it’s just a matter of establishing your set points and programming what you want,” Amundson explained. “We can adjust load demands depending on the hospital’s load. If the generator is under a light load, you can drop generators so that you’re not running too light of a load. If the load increases, the generator will automatically start up and come on to the bus and share load with the other generators.”

In a traditional application, switchgear is often provided by a third-party supplier, requiring additional setup time, site integration and maintenance. The seamless integration that comes from utilizing one equipment vendor for a factory-installed control system is another advantage of onboard paralleling.

“It represents a cost savings when it comes to preventive maintenance on these generators since they’re all seamlessly integrated with Caterpillar,” said Brian Schiellerd, product support sales representative for Michigan Cat. “It’s Cat controls, Cat generators and Cat engines – everything is Cat equipment. When you have the seamless integration that the EMCP 4.4 panel provides, then you can have a Cat technician come out who knows the whole system, and that provides a tremendous amount of value.”



*The centerpiece of the Mercy Health Muskegon Mercy Campus is a ten-story tower with 267 private patient rooms, a new emergency department, and state-of-the-art surgical and procedural areas.*

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## RESULTS

The generator sets were commissioned in 2016, and the system has worked as planned.

“We weren’t sure if we were comfortable with it in the beginning, but after meeting with the engineers and Michigan Cat, and talking to some other people who utilize it, we felt comfortable with the decision to forego the switchgear,” Booth observed. “We’ve had it for a year and a half now and it works great, we’ve had no issues. Onboard paralleling of the generators has been awesome, and it was the right decision.”

During commissioning, technicians for Michigan Cat conducted a load bank test with all four generators paralleled at once. They were tested at 100 percent load with a reactive load bank, and a second load test with reactive and resistive load at 100 percent was conducted to meet National Fire Protection Association (NFPA) 110 regulations.

“We were able to make sure that the generators would share the bus,” Amundson reported.

“Everything went well – we ran 100 percent for four hours with no issues.”

For Mercy Health’s Booth, the upgrade to the new Cat generator sets with onboard paralleling gives him peace of mind.

“By choosing to go with onboard paralleling, it means we were able to fit these generator sets into a building where space was at an absolute premium,” Booth explained. “And having the new Cat generators has just been a huge load off of our shoulders. It’s a critical piece when you’re running a hospital with vulnerable patients and surgeries going on. I can sleep at night with no worries. It’s just a very reliable system.”



*Michigan Cat supplied four Cat® C32 diesel generator sets that offer onboard paralleling through the Cat EMCP 4.4 control system.*