

POWER PROFILE

Customer: TierPoint

Location:

Lenexa, Kansas, United States

Customer Business Issue:

Business continuity, 100 percent uptime

Solution:

4,000 amp, 480V low voltage Cat® switchgear

Cat® Dealer:

Foley Power Solutions

POWER NEED

With more than 40 state-of-the-art data centers strategically located across the United States, TierPoint has one of the largest and most geographically diversified footprints in the nation. The company's portfolio includes colocation, cloud computing, backup and business continuity, managed security, firewall and professional services.

TierPoint's data center in Lenexa, Kansas, comprises 56,000 square feet, with 10,000 square feet of production floor space in operation and an additional 10,000 square feet that can be built out for future clients.

The Lenexa data center supports a wide range of customers including major financial institutions, pharmaceutical companies and small businesses.

"Our clients expect us to maintain 100 percent uptime, and if we don't maintain that then we're not providing the best solutions for them," said Andrew Watkins, manager of TierPoint's Lenexa data center. "If we lose power, it could have adverse consequences to their business, not to mention cause potential harm to our reputation."

The front end of TierPoint's standby power system in Lenexa is anchored by two Cat® 3516C diesel generator sets that supply a combined 2.5 MW of power to the data center in an N+1 configuration. Electrical power is controlled via two identical switchgear rooms that ensure redundancy should one of the two sides experience a failure.

For enterprises that require power that's always on and never fails, paralleling switchgear is a key component that needs to be maintained so that it can transfer emergency loads from a standby generator at a moment's notice.

But with an expected life cycle of around 15 to 20 years, budget constraints can lead facility managers to postpone modernization to the last possible minute, thereby increasing the risk of electrical failures such as unplanned outages that lead to costly downtime — which, in the case of a data center, can have a major financial impact and damage the company's reputation.

While generator sets receive the most scrutiny when it comes to maintaining and testing a standby power system, switchgear typically receives minimal attention until something fails or a component becomes obsolete.

"Frequently, the switchgear and automatic transfer switches are forgotten, so our team goes out and conducts thorough site evaluations and preventive maintenance," noted Jeff Miller, EPG service manager for Cat dealer Foley Power Solutions in Kansas City.

Armed with that information, the Cat dealer confers with engineers at the Cat Switchgear facility in Alpharetta, Georgia, to determine if there are any obsolete or end-of-life parts. If that's the case, Cat Switchgear will make recommendations, at which point a representative from Foley Power Solutions will go back to the client and present options for upgrading their system.

Likely candidates for switchgear upgrades include hospitals, data centers, pharmaceutical plants and manufacturing facilities.

"Anyone that has infrastructure or mission critical operations where the power cannot go down should evaluate their switchgear for a possible upgrade," said Miller.

SOLUTION

Working in tandem with Foley Power Solutions, engineers from Caterpillar Switchgear evaluated the TierPoint system in early 2018.

"We evaluated all the components within the gear, and then we took that information back to the factory and had the engineers take a look at what needed to be replaced or upgraded, what could stay and then we came up with a solution for TierPoint," said Miller.

The audit determined that the switchgear had some components that were nearing obsolescence.



It is essential for TierPoint to maintain 100 percent uptime at its data center in Lenexa, Kansas. Cat dealer Foley Power Solutions and engineers from the Cat Switchgear facility in Alpharetta, Georgia evaluated TierPoint's equipment and oversaw a modernization of the company's switchgear.

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Based on these recommendations, the Lenexa data center opted for an upgrade to 4,000 amp, 480V low voltage switchgear. In advance of the installation, Watkins visited the Cat Switchgear facility as part of a factory witness test.

"I was able to sit down for two days and try to break down what they were recommending we upgrade," Watkins said. "I got to take a tour of the facility and actually see how they build their switchgear. So not only did I get to go out and test run my upgrade, but I got to see it actually being built out."

Miller said that the ability to partner with TierPoint and Cat Switchgear in the planning of the project well in advance of the actual site upgrade is what allowed the project to flow seamlessly at implementation time.

The modernization was conducted by two technicians from Cat Switchgear along with Cliff Putoff, a master technician from Foley Power Solutions.

"We've been doing a lot of upgrades with Cat Switchgear, and they're scripted," explained Putoff. "They start on one day and end the next day or in the following days depending on the size of the upgrade, and no there are no hiccups. By the time the new equipment arrives, all the software is loaded and configured. The upgrades are plug and play — there's no trying to figure out what's going to happen later. It all comes off on time."

Modernization of TierPoint's switchgear was completed ahead of schedule. During the upgrade, representatives from Foley and Cat Switchgear provided TierPoint with regular updates on the progress of the project.

"We were having to provide updates all the time not only to our customers but to our upper management, and that made it essential to keep us in the loop and complete the project on time," said Watkins. "It was great — it worked out well."

RESULTS

One of the advantages of modernization includes new PLC processors, which enables the standby power system to process faster, which is key for a data center. The upgrade also includes enhanced graphics, timers and color-coded alarms. Updated HMI software and new graphics were integrated into the system to provide TierPoint with better recognition of alarms and a clearer understanding of how to operate the system.

"Previously, we had no idea when our standby power was going to shut off or how long it had been running," stated Watkins. "That's huge when it comes to our business. I want to know how long we've been running on that generator and when we're going to be transferring back — how many minutes I have remaining before it goes back on utility power — so having the main HMI screen countdown timer is critical."

Watkins added that the enhanced graphics that came with the switchgear upgrade provide a lot more functionality to be able to utilize their equipment to see what's going on in real time.

Once the upgrade was completed, a functional test was conducted. Cat Switchgear personnel provided a full day of instruction to the TierPoint team, training them on how to utilize the graphics, as well as an operational review of how the switchgear works.

"We ran through a complete scenario from our viewpoint and then from the customer's standpoint also — any test that could be run, we ran it," said Putoff. "We verified that everything worked and integrated well with itself. And then the customer had us go through and do a functional test, making sure all the points came in from the generator and that everything showed up on the screen."

The Cat dealer provides ongoing support and maintenance of TierPoint's standby power system.

"Foley has been a great partner with TierPoint," Watkins said. "And going through the Cat Switchgear upgrade has given us an added level of confidence, as we were a direct recipient of first-rate factory support."



During the planning stage of the site upgrade, Andrew Watkins, manager of TierPoint's Lenexa data center, visited the Cat Switchgear facility as part of a factory witness test.