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Power Transfer & Paralleling

Case History

Phoenix NAP

Where:

Phoenix, Arizona, USA
Co-location & network access point data center servicing customers nationally & internationally

What:

- PowerCommand® digital paralleling solution with a DMC 200 digital master control
- Ten section switchgear line-up
- Two 2 MW DQKAB generator sets in sound attenuated housing

Application:

Standby power

Primary Choice Factors:

- Previous experience with Cummins
- Ability to meet specifications
- Reliability

Distributor:

- Cummins Rocky Mountain

Next generation data center relies on Cummins for dependable power

Reliability was foremost for Phoenix NAP, a premier data center that provides co-location and network access point services for customers. They wanted a facility featuring the latest technology, that would be referred to as “the next generation in data centers.” They required systems that would meet the needs of financial institutions, web properties and web commerce and give customers the peace of mind knowing their information was safe and secure, not affected by Mother Nature or faulty utility power. They needed the capability to provide services for customers located not only in the city of Phoenix, but nationwide and around the globe.

And they wanted to obtain the entire standby power system from a single source with experience in meeting special power requirements for data centers. Phoenix NAP turned to Cummins Power Generation for a total power solution.



The 160,000 square-foot data center is equipped with redundant, reliable systems in a disaster-proof environment.

Building a best-of-the-best system in record time

Phoenix NAP was interested in not just any power system, but the best. They also wanted a system from a company they knew and trusted. “We wanted the best of the best, Cummins had some nice technology and all of us had used Cummins before,” according to Jordan Jacobs, director of corporate strategy, Phoenix NAP. “In addition to the familiarity, a significant factor was simply price. When we looked at other options and alternatives it made sense for us to go with Cummins.”

Cummins Power Generation has developed data center systems before, but each project comes with a unique set of challenges. “The most difficult part was the timeline,” according to Jacobs. “How fast we could come to market because of such a need in the marketplace.” To meet the short time frame, Cummins Power Generation’s local distributor,

Cummins Rocky Mountain, joined with Arizona Pinnacle Engineering. Their task was to turn a 160,000 square-foot battery manufacturing building into a premier multi-tenant data center ASAP.

“There were many challenges to complete the project including negotiations between the owner and the utility company, equipment lead times and just the magnitude of the project,” according to Scott Woods, managing member & senior electrical engineer, Arizona Pinnacle Engineering, LLC. “However, considering the complexity of the project, it was completed in an impressive time frame.”

“The total time of the data center build project was right around 12 months,” Jacobs said. “Much of the construction was completed in slightly less time, around 10 months, which is considered fast for any large construction project, let alone a data center.”



The system provided by Cummins Power Generation includes a PowerCommand® digital paralleling system with a DMC 200 and ten sections of switchgear.

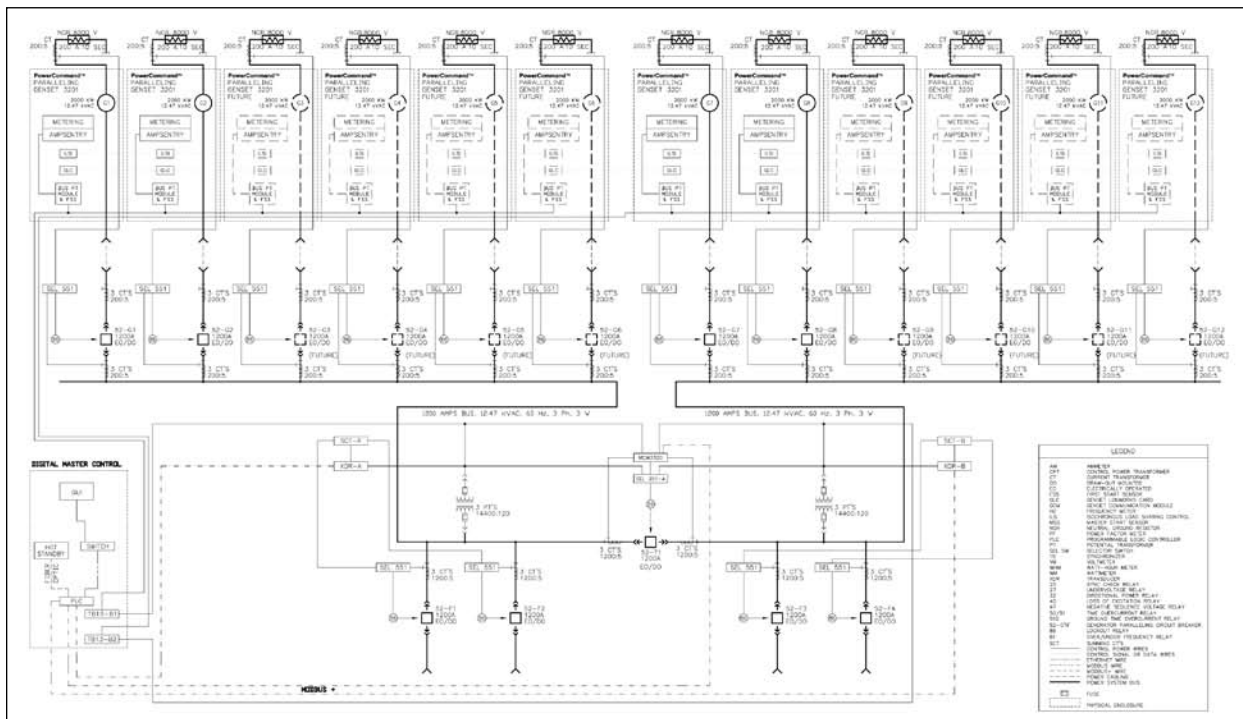
Designing a redundant power distribution system

The project called for Cummins Power Generation to provide “A backup system for a 40 MW medium voltage 2 N network access point facility,” Jacobs said. The initial standby power system was a PowerCommand digital paralleling system with a DMC 200, 10 section switchgear line-up and two 2 MW DQKAB generator sets in sound attenuated housing. Additional generators sets will be added

as business continues to grow. “We now have 4 MW and we’re going to be adding 8 MW in our next phase of deployment,” Jacobs said.

The design specifications also called for a system with a focus on redundancy. For the initial seconds of a utility outage, power is to be provided by highly efficient UPS systems. “The Cummins backup power generation system starts providing power system within 15 seconds,” according to Carl B. Knapp, regional sales engineering manager, Cummins Power Generation.

A one-line drawing of the standby power system.





The power system can be controlled from three different locations within the complex.

Providing a smaller footprint with multiple control stations

Phoenix NAP wanted the capability of controlling the system from several locations. The power system can be monitored and controlled from a panel at three different locations — control room, mechanical HVAC and enclosure room.

Modifications also had to be made to accommodate the Phoenix climate. Phoenix NAP utilized highly efficient modular chilled water plants (MCWPs). Designed to be scalable and N1 throughout, Phoenix NAP MCWPs are UL listed equipment that connect to redundant water loops, feeding the computer room air handlers (CRAH).

The physical size of the system was also a factor since space was very limited. “The unique challenges included getting new, redundant utility feeders to the building to support the load and finding the space to install the UPS and generator systems,” Woods said. The generator sets were placed outdoors in acoustical enclosures designed specifically for Phoenix NAP by Cummins Rocky Mountain. The paralleling switchgear was placed in an outdoor enclosure to save precious space inside the building.

“The solution provided a compact, high power electrical system that saved an enormous amount of interior building space,” according to Woods. “This is a very robust power system with the ability to ride through an extended utility power outage with no perceivable interruption to the critical load.”



Standby power is provided by two 2 MW DQKAB generator sets in a sound attenuated housing.

Another satisfied customer

Jacobs said Cummins was selected for several reasons. “I think two of the biggest reasons would be because Cummins systems work great and are reasonably priced. In fact, we will be purchasing more as the data center continues to grow.” Woods added that Cummins was selected because of the two-generator enclosure design and overall value.

As for satisfaction, “We have been very satisfied with the Cummins products,” Jacobs said “The account team has been fantastic to work with and the products themselves are performing as expected.”

Furthermore, Phoenix NAP’s confidence level with Cummins is demonstrated in their plan to install additional generator sets from the manufacturer. In part the result of Cummins ability to achieve their short time frame, provide a reasonably priced solution and build the system to Phoenix NAP’s specifications — with multiple control locations.

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



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