

Our energy working for you.™



Critical Protection: Healthcare

Case History

Oregon State Hospital

Where:

Oregon State Hospital, Salem, Oregon, USA

What:

- Paralleling system with a DMC 300 Digital Master Control and 14 sections of switchgear
- Nine BTPC bypass switches; four 2000 amp, four 800 amp, one 400 amp
- Two 2 MW DQKAB generator sets in sound-attenuated housing
- Pulse monitoring system with JCAHO reporting tool

Purpose:

A dependable emergency standby system that ensures the hospital campus will have power 24/7, 365 days per year. The system also functions as a source of additional power for the local utility, Portland General Electric (PGE).

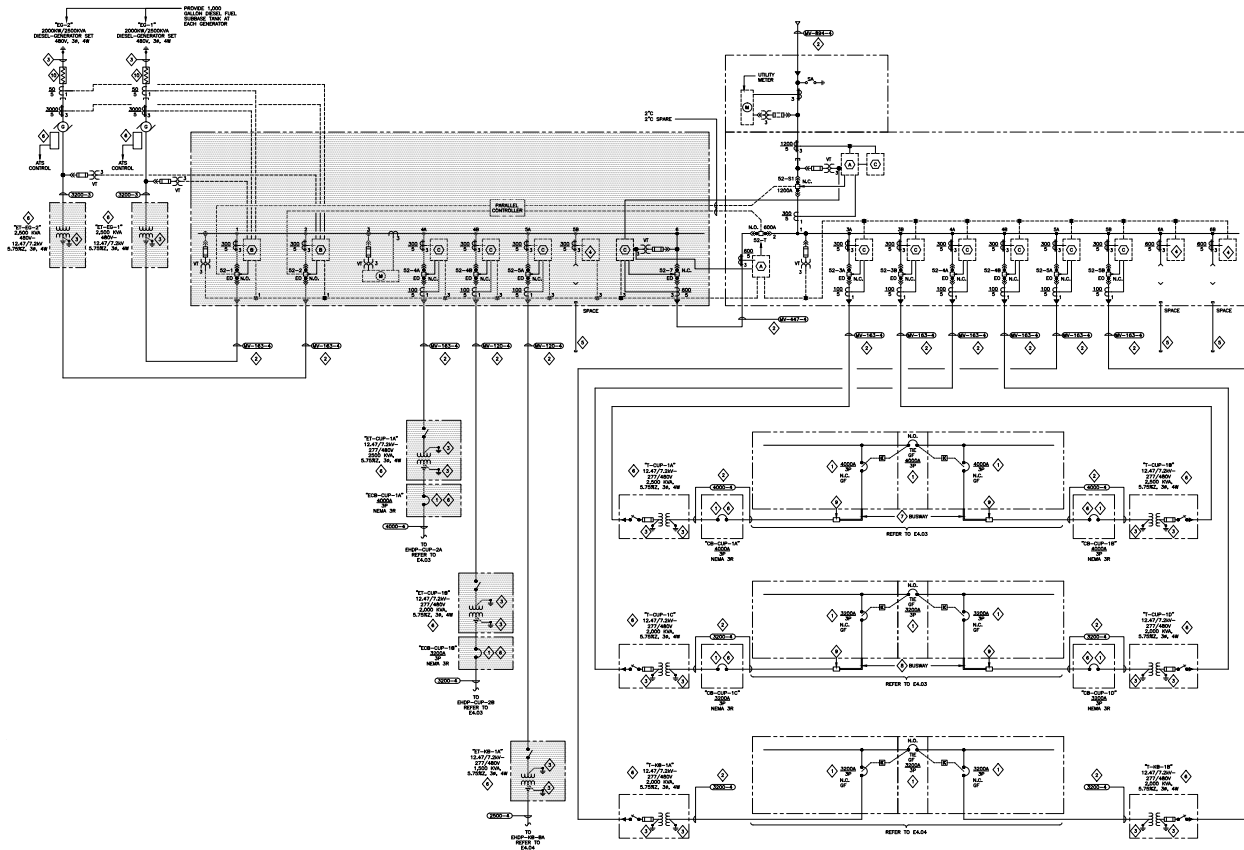
Primary Choice Factors:

A complete system from one source and one manufacturer; the option of factory witness testing; final programming prior to shipping; ability to meet size and noise level requirements.

Partnerships were key for updating Oregon State Hospital's power system

Undertaking a renovation and expansion of a hospital is a challenge for any facility management team, especially in today's uncertain economy. Facility managers must identify multiple alternatives to overcome the challenges when developing a plan.

One facility in particular, Oregon State Hospital, had more obstacles than most when planning and executing their \$458.1 million expansion of two hospitals. Their challenges were overcome by developing partnerships and creating a collaborative team from the hospital, Portland General Electric (PGE), Affiliated Engineers, Inc (AEI), Cummins Power Generation, local distributor Cummins Northwest and Hoffman Construction Company.



The one-line drawing shows the new power system design which converted the facility from multiple utility power sources to one primary power source for the entire campus, with a single utility connection.

A landmark since 1883

Oregon State Hospital in Salem was built in 1883 as the Oregon State Insane Asylum. Some of the original structures remain, including stone carried in by hand over a century ago from land in the area. The renovations needed to preserve as many of the original buildings as possible because the entire hospital campus had been inducted into the National Register of Historic Places in 2008.

Today Oregon State Hospital is the state's primary psychiatric facility for adults, delivering high-quality inpatient psychiatric and medical care through Forensic Psychiatric Services and Psychiatric Recovery Services. Patients are provided care on a campus that has seen several renovations over the years. The previous updates had created a better facility, but with a less than ideal power configuration with multiple utility services providing electricity to different parts of the campus. Therefore, the Oregon State Hospital Replacement Project plans for Salem included migration to a single point primary power source for the entire campus with distribution by a single utility connection. Completing such a plan with limited finances led the hospital to explore alternative ways for making the capital investment for a new power system.

Capital assistance was acquired through the local utility

Oregon State Hospital turned to PGE's Dispatchable Standby Generation program (DSG). Started 10 years ago, the program includes providing up-front capital funding assistance for power system improvements. "PGE can contribute capital for a better system with less capital outlay by the customer," according to Bruce Barney, project manager, PGE.

"The utility (PGE) assumes maintenance responsibility, but is not the owner, of generators, fuel systems and some of the electrical gear and controls," Barney said. "We maintain all of the switchgear and generators, and buy all the fuel, and in return, the customer lets us use that machine up to 400 hours per year. However, in a typical year, PGE's use is closer to 10 hours."

Becoming part of the DSG program introduced a new set of requirements for those designing and providing the power generation system. "Determining how to meet PGE's needs for the hospital to participate in the DSG program within the project's budget was definitely a challenge," according to Krista Murphy, senior electrical engineer and project manager at AEI. The specifications called for four-wire paralleling switchgear.



John Hamilton, operations director, Oregon State Hospital, started the project with a series of collaborative discussions with Oregon State Hospital, PGE and AEI. The 4 MW system from Cummins Power Generation included one DMC 300 Digital Master Control and paralleling switchgear.

The power generation provider needed to meet PGE's specifications

Determining ways to meet PGE's requirements started with a series of collaborative discussions with Oregon State Hospital, PGE and AEI. "We scheduled a series of meetings during the design phase to talk about what the utility requirements would be and the design team's intent through the specifications. We worked together to come up with a system configuration that would work for both parties," Murphy said.

The initial meetings were followed by Hoffman Construction managing a formal bid process to determine the power generation provider. "Hoffman Construction went through the process of accepting and leveling the bids so they were comparing apples to apples between the manufacturers, and they were instrumental in bringing all parties through the evaluation process," Murphy said. AEI recommended soliciting proposals from two of the industry's leading manufacturers, including Cummins Power Generation.

Several factors were considered in the selection process. "The decision was based on who could provide the most comprehensive package that met the requirements of the hospital as well as the specifications for PGE's Dispatchable Standby Power Generation program," Murphy said. "We evaluated who had all of the parts and pieces and didn't just look at the bottom line."

Cummins Power Generation was selected for the power system

Cummins Power Generation and the Cummins Northwest distributorship were selected to provide the power generation system for several reasons. One was their willingness to work in partnership with the hospital, PGE, AEI and Hoffman Construction to meet the unique system challenges facing the team.

Another was Cummins Power Generation and Cummins Northwest's ability to meet the short timeline. "Cummins was selected because we could meet the short lead time," according to Jim Stalnaker, Power Generation sales manager, Cummins Northwest, LLC. "We cut at least two months off the process with a switchgear option. Cummins provided the switchgear drawings within two weeks, and approval was received within a week allowing the factory to start building the equipment right away. This process usually averages 20-24 weeks."

Cummins Power Generation was also able to meet the space and sound limitations. "Space was certainly a challenge. The architect had designated a very specific service and loading dock area," Murphy said. "The generators needed to fit within the service yard enclosure and there was a pretty stringent acoustical requirement because these generators would be located so close to the residents at the facility." The acoustical attenuation of 65 dba at 23 feet was met by making the enclosures a little bit larger than usual.



The system includes nine bypass transfer switches: four 2000 amp BTPCs, four 800 amp BTPCs and one 400 amp BTPC.



The system is powered by two 2 MW DQKAB generator sets in sound-attenuated housing from Cummins according to Jim Stalnakar, Power Generation sales manager, Cummins Northwest, LLC.

Finding a single source and manufacturer was important

It was also important to Oregon State Hospital and Hoffman Construction to obtain all of the equipment from one company. "The other enticing thing for the general contractor was he was selecting a system that came all from the same company, all designed to work together," Stalnakar added. Cummins Power Generation was the single source manufacturer for the complete system consisting of products designed to work together as one.

The 4 MW system from Cummins Power Generation consists of one DMC 300 Digital Master Control with two paralleling switchgear line-ups, four BTPC 2000 amp bypass switches, four BTPC 800 amp bypass switches, and one BTPC 400 amp bypass switch, powered by two 2 MW DQKAB generator sets in sound-attenuated housing, and a Pulse monitoring system with JCAHO reporting tool.

Another reason Cummins was selected to provide the system was their commitment to go the extra mile to ensure system dependability. "We were able to take the contractor, engineering firm, utility and hospital staff to the Cummins factory for witness testing before shipping it to the job site," Stalnakar said. "This saved a lot of time and money in commissioning by eliminating the need for field modifications."

The system passed test after test

The system was put through a series of tests, more than most encounter, to identify any potential causes for concern. Failure tests and various sequencing tests were performed with input on adjustments from all parties. This provided essential data for final programming prior to shipment of the paralleling switchgear. "I think having Cummins host the factory witness testing and bringing all of us together really facilitated that programming process in a very detailed manner. Having the right staff from the Cummins perspective at those meetings also brought success to this project," Murphy said.

The project was a success not only because of the system and its testing, but because of Cummins Power Generation and Cummins Northwest's ability to partner with and meet the needs of not only the end customer, but all involved. The sentiment is expressed in the statement from John Hamilton, operations director, Oregon State Hospital, "It was done very well, we are very happy and yes, we would use Cummins again."

For more information about Cummins Power Generation systems currently in use around the world visit www.cumminspower.com.



Our energy working for you.™
www.cumminspower.com

©2011 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand is a registered trademark of Cummins Power Generation. "Our energy working for you." is a trademark of Cummins Power Generation. All rights reserved.
 F-2344 (10/11)