

powerprofile

COGENERATION

CUSTOMER: Warren County's Westmount Nursing Home

LOCATION: Queensbury, New York, USA

Customer Requirement: Combined heat and power system to enable removal of the government center and nursing home from the utility grid

Scope of Supply: Equipment –
Three Cat® G3406 gas generator sets (220 kW) and paralleling switchgear to automate load following
Emergency diesel (500 kW) in sound-attenuated enclosure for emergency backup power

Services –
Thermal output projections and recommend heat recovery equipment, system design and layout assistance, major maintenance support

Cat Dealer: Milton Cat
Milford, Massachusetts, USA



The Westmount Health Facility went off the grid in 2005, made possible by three Cat® G3406 gas generator sets and an emergency diesel generator.

POWER NEED

The Westmount Health Facility in Warren County, New York, has been off the utility grid since May 2005 – fully self-sufficient for electricity after a project by Siemens Building Technologies, powered by equipment from Milton Cat of Milford, Massachusetts, the Cat® dealer in upstate New York and New England.

The combined heat and power system went into operation after an eight-month construction project. It provides 600 kW of electricity for Warren County's nursing home and three county government buildings. Heat recovered from the generator sets feeds the nursing home's boiler and provides hot water for its laundry system, allowing the nursing home to do its own laundry rather than contract for the service.

Siemens Building Technologies was in charge of the project and called on Milton Cat to help maximize the savings from operating off the grid. There is no back-up utility connection, according to Craig Johansen, the construction manager for Siemens.

“The way you design an off-grid system is a matter of determining your maximum, minimum, and average loads and what you need in an engine lineup to have an efficient system,” he explains. “It was teamwork between Siemens and Milton Cat based on the load profile of the facility that determined the engine lineup.”

Bucky Brennan, sales representative for Milton Cat, says the two companies had worked together on a similar project in Monroe County, New York, and on a 7 MW off-grid system for the 17 buildings on the campus of Hudson Valley Community College in Troy, New York.

SOLUTION

Siemens has a fifteen-year performance contract with Westmount County, funded by guaranteed energy savings, according to Johansen. “Milton Cat is a strategic partner of Siemens Building Technologies in upstate New York,” he says.

Milton Cat provided three Cat G3406 natural-gas generator sets (220 kW each) and the paralleling switchgear enabling the units to follow the electrical load automatically. The G3406 is a proven generator set used in thousands of applications around the world. It uses low-pressure gas (1.5 psi/0.1 bar) to improve reliability, while a 10.3:1 compression ratio and a turbocharger with an after-cooler enhance performance.

The Cat EMCP II+ control panel provides comprehensive monitoring of key parameters, a complete range of automatic safety alarms and shutdowns, and built-in diagnostics. It also provides full-featured power metering and protective relaying. The advanced microprocessor-based control, combined with the Caterpillar® Customer Communication Module (CCM) integrated into the paralleling switchgear, gives Westmount the flexibility to manage the specific needs of the system remotely.

Johansen explains that two of the engines are needed at any given time to meet the load. “I need that third engine for when we’re servicing one of the other engines,” he says. Backup power comes from a 500 kW Cat 3456 diesel generator in a sound-attenuated enclosure. “The backup has to provide the necessary power in case of a gas supply loss, and it needs to be quiet because it’s next to the nursing home,” says Brennan.

Milton Cat also helped design the system. “We worked right along with the Siemens design engineer to design a robust system that will meet their performance contract while being easily serviceable,” says Milton Cat project manager Chris Laverty. Milton also did the thermal output projections needed to design the heating system.



Three Cat® G3406 generator sets provide power for the Westmount complex along with heat for its boilers and laundry system. Operated by Siemens Building Technologies, the plant can be managed remotely to adjust for changing conditions.

RESULT

“The proof has been in the performance: The plant hasn’t had a single outage, and the thermal output projections have been very accurate,” according to Brennan. Power quality has also been good. “Cat generators often have better voltage control than the utility grid, especially during peak usage times,” he says.

As Johansen observes, it’s all about performance because his company guarantees a certain level of savings for customers. “Siemens’ is in the energy performance business,” he stresses. “If we’re not providing energy savings, were providing financial restitution. Not only does Milton Cat have a quality product, they have a service team to back it up.”