



New York State Energy Research and Development Authority

Burke Rehabilitation Hospital

CHP Plant Provides Building HVAC

DG/CHP Program

Project Profile

Combined heat and power for Rehabilitation Hospital



Overview

Burke Rehabilitation Hospital is located in White Plains, NY. The Hospital consists of 17 buildings with a total floor space of 257,000 ft². In-patient capacity is 140 beds.

Eight Tecogen 75kW engine-generator units were installed to provide electricity; heat is recovered from the engines to supplement space heating. The system provides 72% of the site's annual electricity consumption at an estimated CHP efficiency of 80%.

Quick Facts

Location:
White Plains, NY (Con Ed)

Installation Date:
September 2006

Operating Experience:
7 months (as of October 2008)

CHP Equipment:
Eight Tecogen 75 kW
Engine-Generator Sets

Generating Capacity:
600 kW

Heat Recovery Application:
Space Heating and Hot Water
Loads

Design CHP Efficiency:
80% HHV

Type of Fuel:
Natural Gas

Annual Utility Savings:
\$353,000 per year (estimated)

Simple Payback:
9 years (estimated)

The Application

As a result of an energy audit by Siemens Building Technologies, Inc., a cogeneration plant has been installed consisting of six 75 kW Tecogen units that will cover the base load and two additional 75kW units to meet the daily peak demand. This project also included one 1025 kW stand-by generator which was added to the existing 400 kW stand-by generator system. This system provides backup power to the hospital during a blackout.

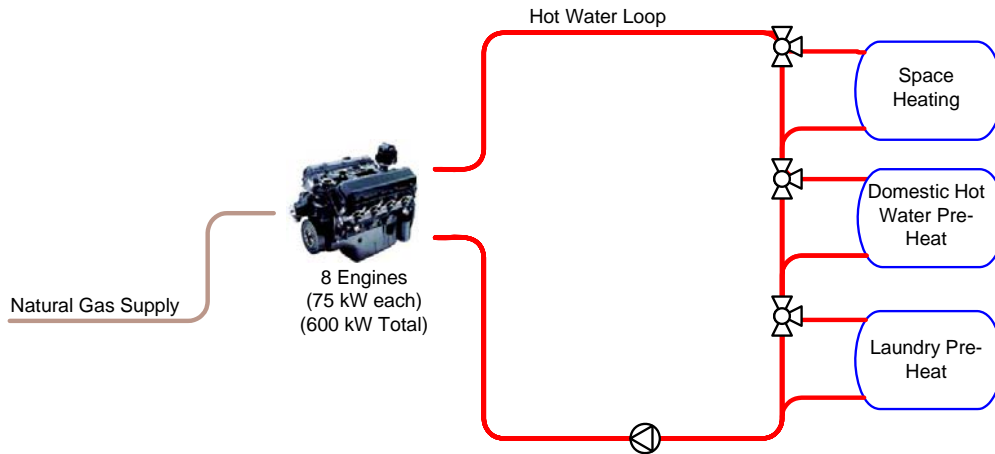
Heat recovered from the engines is used to offset space heating loads and make-up pre-heating for both domestic hot water and for laundry.



Installed 75kW Engine Generating Sets

CHP System and Equipment

The hospital's CHP system consists of eight 75 kW, natural gas fueled engine-generator sets. Electricity is produced in parallel with the local utility. The engine generation system can operate in 75 kW increments that allow the facility to never import more than 75 kW, except during high load periods where the facility's electric load exceeds the 600 kW total generation capacity. Individual heat exchangers, packaged as part of each engine, recover heat from the exhaust to a hot water circulation loop. The loop has heat exchangers for multiple end-use loads including perimeter space heating, makeup water pre-heating for domestic hot water and makeup water pre-heating for laundry services. Along with a backup generator, the system provides stand-alone generation capacity sufficient to maintain full hospital operation during electric outages.



Economics and Environmental Benefits

The total project cost is \$2.8 million. Based on projected 2006 utility rates and loads, the plant will generate power and thermal heat for an overall net energy cost savings of \$270,200. Proposed NYSERDA incentives are \$433,998.30. Therefore the hospital's \$2.8 million capital outlay will be recovered within 9 years. Monitored data are being collected from the site and are available in an hourly format on NYSERDA's DG/CHP website starting from May 2008.



Installed View of Heat Exchangers

Summary of Benefits

- Modular system provides redundancy and reliability
- Cogeneration system provides stand-alone generation capability during outages
- Hot Water heat recovery loads provide suitable economic benefit to the hospital

“This project increases the hospital's efficiency while also improving system reliability during blackouts.”
- the Siemens' report

Web Links and Further Information:

Siemens Building Technologies – ESCO

www.siemens.com

Equipment Manufacturer

www.tecogen.com

Other DG/CHP Resources

chp.nyserd.org

Prepared for NYSERDA by:
CDH Energy Corp.
Cazenovia, NY 13035
315-655-1063
www.cdhenery.com
dgchp_data@cdhenery.com