



New York State Energy Research and Development Authority

Greenpark Care Center

Engine Heat used for Building Services

DG/CHP Program

Project Profile

Combined heat and power for
Senior Care Facility



Overview

The Greenpark Care Center is a 400 bed extended care facility located in the Fort Greene section of Brooklyn, NY. The Center provides comprehensive medical services for infirmed patients. Foremost attention is given to maintaining the residents comfort and safety.

Greenpark installed two 75 kW engine-generator sets to help reduce energy costs at the 30 year old facility. Power produced onsite directly reduces consumption of utility supplied electricity. Heat recovered from the engine jackets and exhaust is used for space heating, domestic hot water (DHW) and laundry service.

The Application

Like any other business, Greenpark tries to minimize its operating costs without jeopardizing quality; a difficult objective given the services necessary in critical care situations. Rising energy prices exaggerated inefficiencies related to the age of the existing mechanical equipment and encouraged Greenpark to seek alternative technology solutions.

Greenpark worked with American DG Energy to install two 75 kW Tecogen CHP modules. American DG developed the installation and is responsible for its ongoing operation. The system offsets purchase of nearly 1 million kWh of electricity annually. Heat from the engine coolant jackets and exhaust is recovered as hot water that is used to offset some of the site's existing thermal loads. As much as 490,000 Btu/h can be recovered from each module at a maximum water temperature of 230°F.

Quick Facts

Location:
Brooklyn, NY (Con Edison)

Installation Date:
May 2003

Operating Experience:
2.5 years (as of January 2006)

CHP Equipment:
Two 75 kW Engine-Generators Sets

Generating Capacity:
150 kW

Heat Recovery Application:
HVAC and DHW (980 MBtu/h peak)

Design CHP Efficiency:
76% HHV (estimated)

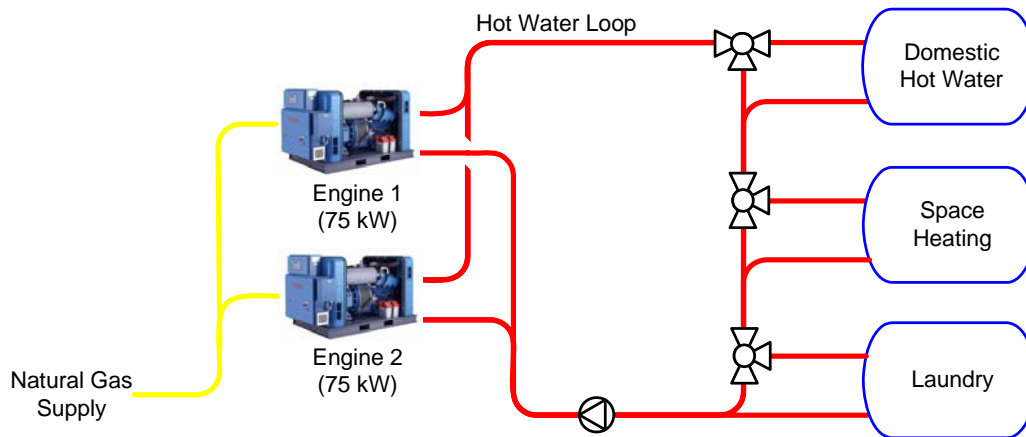
Type of Fuel:
Natural Gas



Packaged Engine-Generator Set As Used At Site

CHP System and Equipment

Greenpark's CHP system is configured on two, 8-cylinder natural gas fired engine-generator sets. All of the electricity that is produced is consumed onsite; the system's output can be modulated when the demand is at a minimum. Waste heat from the engine jackets and exhaust is recovered as hot water that is circulated through heat exchangers serving the hot water and space heating systems. The supply water is thus heated before reaching the existing boilers causing fuel consumption to be proportional decreased. Excess heat is rejected to the atmosphere through external radiators.



Economics and Environmental Benefits

Hourly data were collected from the site from December 2003 through July 2007 and are available on NYSERDA's DG/CHP web site. The data indicate the CHP system generally operated at its rated capacity and typically produced more than 900,000 kWh per year significantly reducing the consumption of utility supplied electricity. At design conditions the CHP system should consume 27% less fuel than would otherwise have been used purchasing power from the grid and producing the equivalent of the recoverable heat onsite. Based on this comparison, use of the CHP system should result in carbon dioxide emissions being reduced by approximately 530 tons per year.



Installed Module



Electric and Service Connections

Summary of Benefits

- CHP system predominately operates at rated capacity
- High level of efficiency is sustained
- Recovered heat serves multiple end uses

“A solution that promises to improve our energy efficiency and reduce our energy costs is very appealing to us.”
- Brian Glattstein,
President, Greenpark
Care Center

Web Links and Further Information:

AmericanDG
Energy –
Developer/Engineer

www.americandg.com

Equipment
Manufacturer

www.tecogen.com

Other
DG/CHP
Resources

chp.nyserda.org

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