717 Fifth Avenue

1.6 MW On-site Cogeneration System

BlueEarth Generator

PROJECT - CASE STUDY

AT A GLANCE

Equity Office wanted to be more energy efficient at its' 717 Fifth Avenue office building.

THE SOLUTION

A 1.6 MW combined heat and power system designed to handle 60% of electrical and 65% of cooling and heating needs for the building.

SYSTEM OVERVIEW

Customer	Equity Office
Application	On-site generation of electricity, hot and chilled water
System Type	1.6 MW cogeneration system Site 717 Fifth Ave., New York, NY
Location	Setback rooftop, 15th floor
Weight	135 tons

SYSTEM CONFIGURATION

- Two 820 kW lean burn gas-fired generator sets
- Two engine exhaust heat recovery units for hot water
- One 290-ton hot water absorption chiller
- Remote monitoring and control system
- Synchronizing switchgear to parallel with ConEd's secondary network grid
- Sound-attenuated enclosure to reduce noise
- Steel dunnage for structural support

BLUE EARTH GENERATOR SYSTEM SERVICE & MAINTENANCE

The complete cogeneration plant is serviced and maintained by BE Generator. We service and maintain cogeneration and standby power systems for customers throughout the NY metropolitan area.

1.6 MW On-site Cogeneration System

On Fifth Avenue in New York City, one office building has managed to cut its electric usage and cooling & heating needs through the use of a 1.6 MW on-site combined heat and power (CHP) system.

Located in the heart of the Plaza District at 717 Fifth Avenue between 55th & 56th Streets, it is the first of its kind to be synchronously interconnected to the critical midtown network grid of utility provider Con Edison.

The power system, supported by a $745,000 grant from the New York State Energy Research and Development Authority (NYSERDA), handles 60% of the building's electric usage and 65% of its cooling and heating needs. The 450,000-square foot, Class-A office building is owned by Equity Office.

The system was engineered, built and installed on a turnkey basis by CHP specialists now with BE Generator. It generates electric power during on- and mid-peak hours, and provides chilled water in the summer and hot water in the winter. It is sized to provide nearly two thirds of the building's peak summer electric demand.

Though its primary function is to increase the building's energy efficiency, the system can also be configured to provide backup power (in conjunction with the building's existing life safety diesel generator) to keep the building operational during an extended power outage, such as the one experienced by tenants during super storm Sandy. Whenever the system is operational, the building remains connected to Con Edison, running in parallel with the utility's grid.

Our certified and factory trained technicians restore engines to OEM specifications, utilizing only OEM approved critical parts, ensuring top engine performance. BE generator also overhauls generators, control panels and switchgear, ensuring all repairs meet OEM specifications.

SYSTEM TECHNOLOGY

By capturing waste heat from the engine generators and using it to drive both heating and cooling systems for the building, the system achieves a combined efficiency of 80%, approximately double the efficiency of conventional power supplied by the grid. The higher efficiency of the on-site power system translates into significant energy cost savings and an attractive return on investment for Equity Office. At the same time, the higher efficiency will reduce greenhouse gas emissions and provide better power quality.

According to John Brogan, Chief Operating Officer for BE Generator, "The system is quieter than the adjacent cooling towers that operate 365 day a year. In addition to the housing enclosure, the system is mounted on steel dunnage that incorporates vibration isolation to ensure that the system does not disturb tenants."

SYSTEM DETAILS

The state-of-the-art CHP system consists of two 820 kW lean burn generator sets, heat exchangers, and a 290-ton hot water absorption chiller, all housed in a sound-attenuated enclosure. The turnkey CHP system is installed on an open setback roof atop the low-rise portion of the building. The generators tie in to the two main building electrical services. Hot water from the system's heat exchangers connects into the building perimeter heating loop, while the output from the absorption chiller ties in directly to the chilled water system.

SUPPORTING GOALS of EQUITY OFFICE & NYSERDA

Building management reports that the system adds value for existing customers and its economic benefits will also provide leverage to further position 717 Fifth competitively among other Midtown office buildings when recruiting prospective new tenants.

The 717 Fifth Avenue CHP project also directly supports NYSERDA's goals of improving grid reliability, increasing overall energy efficiency and reducing energy costs to promote economic expansion. It also helps meet NY State's 15% energy reduction by 2015 initiative (the NYS Energy Efficiency Portfolio Standard) and New York City's PlaNYC 2030 mandate of 30% reduced greenhouse emissions by 2030, as well a goal of 800 MW of distributed generation in New York City. After 5,000 operating hours, the system was awarded the US Environmental Protection Agency's CHP Energy Star Award.

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"Our Blue Earth Generator Team has designed, built and installed ultra-reliable electric power and thermal energy system solutions for commercial, industrial and government customers globally. One of our main focus areas is the metro New York region, where we have unsurpassed experience working with Con Edison and the New York State Energy Research and Development Authority (NYSERDA)".

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