



Sea Park Apartments

Two 150 kW CHP Systems

Project Overview

The Sea Park apartment complex is made of two buildings in Brooklyn's Coney Island, with a total of 694 affordable housing units. The complex, built in the early 1970s, was in need of substantial capital improvements in 2002, when it was bought by The Arker Companies. In the next two years, they made significant investments in the buildings, including new roofs, windows, and plumbing. HUD continued mortgage interest reduction payments under the Section 236 Rental Housing Assistance Program in order to allow for the much needed rehabilitation of these aging properties.

In 2007, The Arker Companies applied for the New York State Energy Research and Development Authority's (NYSERDA) Multifamily Building Performance Program to seek ways to reduce operating costs through energy efficiency.

Through the program, Steven Winter Associates developed a comprehensive cost-effective plan to reduce the buildings' energy consumption by 26%. The plan included the installation of a 150 kW combined heat and power (CHP) system in each building.

Since 2009, the CHP systems have been successfully generating electricity and domestic hot water for use on site, as well as contributing to heating the buildings.

System Design and Operation

The CHP systems in the Sea Park buildings were installed by All Systems Cogeneration in 2009. The system in each building consists of two Tecogen CM75 modules, which include a reciprocating engine fueled with natural gas, an electrical generator, equipment to recover heat from the engine's exhaust, electrical controls, emissions controls, and a modem for remote monitoring and data logging. The CM75 modules

Quick Facts

LOCATION: Brooklyn, NY

MARKET SECTOR: Multifamily housing

FUEL: Natural gas

EQUIPMENT: 4 Tecogen CM75 CHP Modules
with reciprocating engines
(2 in each building)

OPERATION: 24/7

SYSTEM CAPACITY: 300 kW (150 kW per building)

USE OF THERMAL ENERGY: Domestic hot water,
space heating

ANNUAL ELECTRICITY GENERATION: 2.4 MWh

ANNUAL SAVINGS: \$130,000

SIMPLE PAYBACK PERIOD: 4.4 years

BEGAN OPERATION: 2009

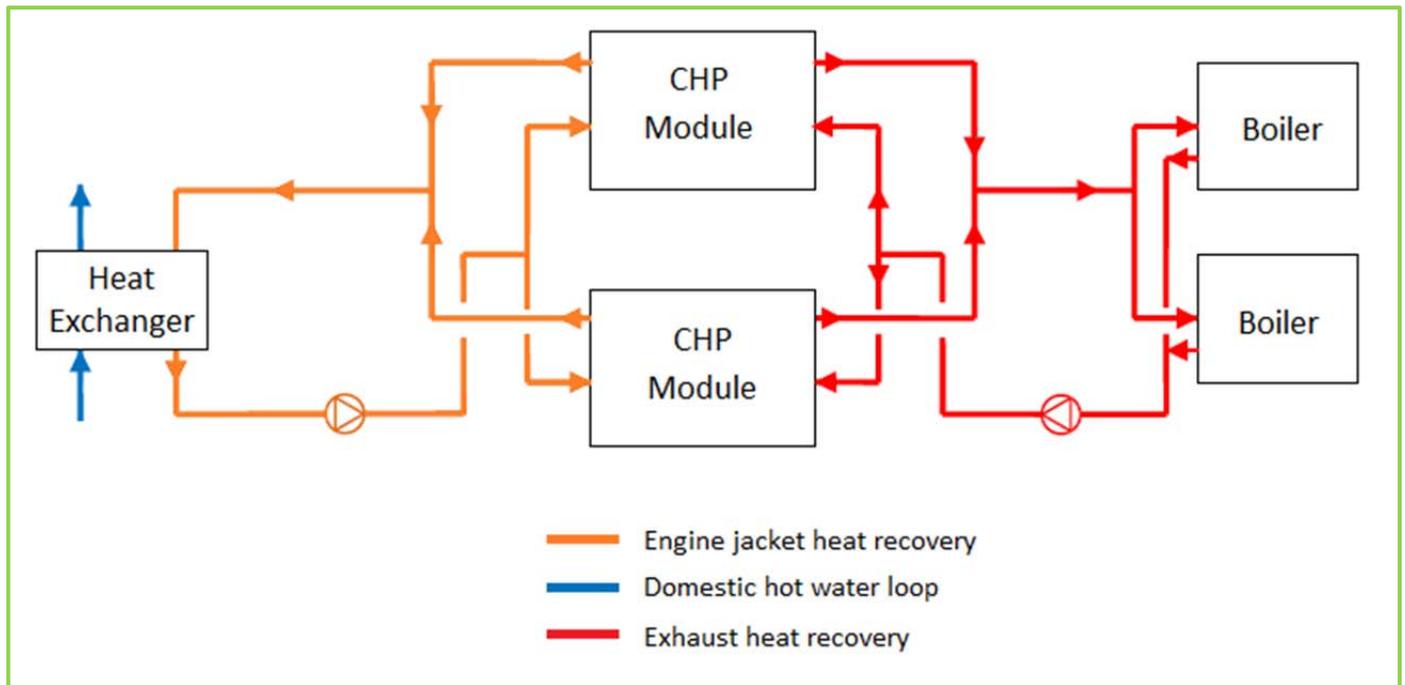


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each have electrical capacity of 75 kW each, for a total of 150 kW in each building.

The engines generate approximately one-fourth of the electricity used in the buildings. Heat is recovered from the engine jackets and sent through a heat exchanger to heat domestic hot water. During the heating season, exhaust from the engines is used to preheat water going into the boilers that generate steam for space heating.

The total installed cost for the two CHP systems was \$848,000, which made up approximately 40% of the total cost of the energy efficiency upgrades made at Sea Park through the Multifamily Building Performance Program. NYSERDA provided funding to support the project, including incentives totaling \$275,000 for the CHP systems.



Schematic of CHP System in Each Sea Park Building

System Benefits

The CHP system in each building generates an annual average of 1.2 million kWh, approximately one-fourth of the electricity used in each building. The net annual savings, after the cost of fuel and maintenance, averages \$130,000 total for the two buildings. With these savings, The Arker Companies' investment in CHP at Sea Park paid for itself in 4.4 years. This substantial reduction in operating costs has helped to maintain the affordability of this apartment complex.

Use of CHP helped Sea Park achieve the Multifamily Building Performance Program's target of at least a 20% reduction in energy consumption, which earned them a NYSERDA performance bonus and the New York Energy \$mart label.

These systems have operated so successfully that The Arker Companies has since hired All Systems Cogeneration to install similar systems in six other buildings they own.

For More Information

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The Northeast CHP TAP is a U.S. DOE sponsored program managed by the Pace Energy & Climate Center located at Pace Law School and by the Center for Energy Efficiency and Renewable Energy located at the University of Massachusetts Amherst

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