Lotte New York Palace Hotel

Hospitality

The Challenge

The Lotte New York Palace Hotel (formerly The Palace Hotel), located in midtown Manhattan, New York City, offers 813 guest rooms and 86 suites, 22,000-square-feet (2,043-square-meters) of meeting and event space, a spa and fitness center. After years of using city steam, the most expensive fuel source in New York City, the hotel decided it was time to save some operational dollars and offset some of its fuel consumption, especially during the colder months. The hotel along with RSP Systems, Capstone's distributor for New York and Connecticut, worked closely with the local utility to run sufficient gas volume and pressure to the site in order to make possible a clean-and-green power generation solution.

The Solution

The Lotte installed a combined cooling, heat and power (CCHP) system, designed and developed by RSP Systems, to reduce overall energy costs and increase energy efficiency. Electrically, the microturbines are divided into two banks of six, with each set of microturbines displacing the load on a separate utility service. The integrated combined heat and power (ICHP) part of the system consists of 12 65kW dual-mode Capstone microturbines with integrated heat exchanger modules that provide up to 780kW of gross electrical generation capacity, including backup power and up to 3.45 MMBtu/h of hot water at 200°F (93°C).

The heat recovery loop can operate in one of two modes depending on the season. During the cooling season (warmer months), the microturbines utilize the ICHP system to supply hot water to an absorption chiller for CCHP, offsetting approximately 200 tons from their existing electric chillers. During the heating season (colder months), the microturbines utilize the ICHP system to supply hot water to the "building side" of their city steam-to-hot-water heat exchangers, thus displacing city steam.

Power Profile

Customer
Lotte New York Palace Hotel

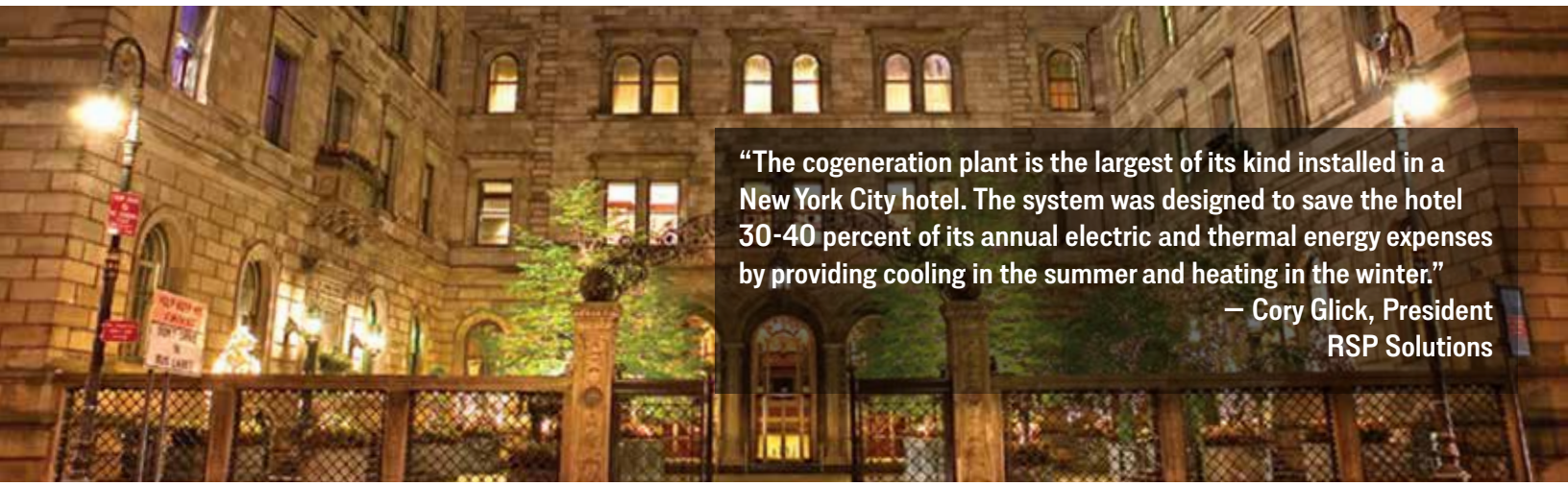
Location
New York, New York, USA

Commissioned
October 2013

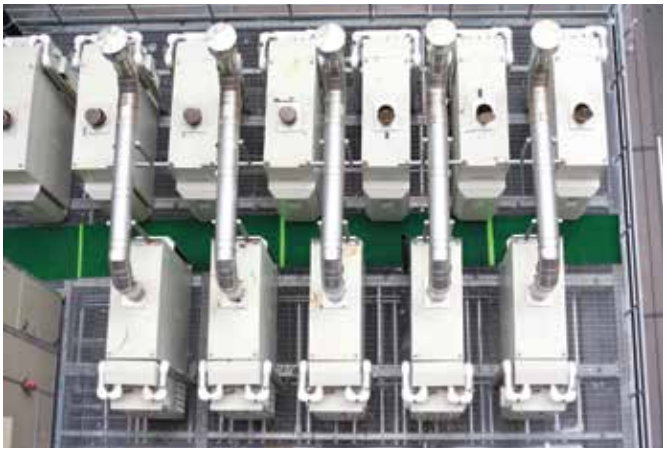
Fuel
Natural Gas

Technologies
- 12 Capstone C65 ICHP Dual-Mode Microturbines
- Integrated Hot Water Heat Exchangers
- 200-ton Exhausted-Fired Absorption Chiller

Capstone Turbine Dealer
RSP Systems



"The cogeneration plant is the largest of its kind installed in a New York City hotel. The system was designed to save the hotel 30-40 percent of its annual electric and thermal energy expenses by providing cooling in the summer and heating in the winter."
— Cory Glick, President RSP Solutions



The Capstone C65 ICHP system ensures high reliability while also benefiting the environment.

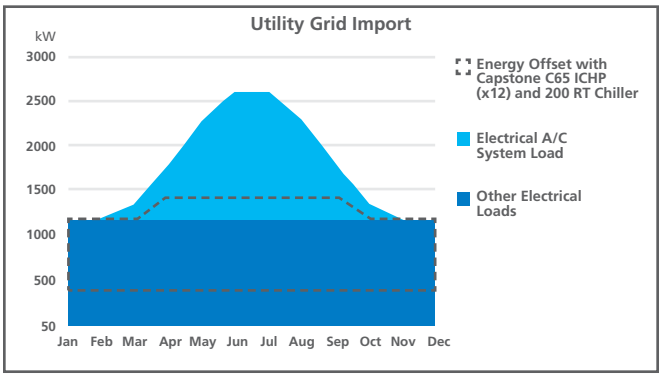
Depending on the time of year, hot water produced by the microturbine skid is used to either drive the 200-ton single effect hot water absorption chiller or provide supplemental heat to the building's hot water loop via plate frame heat exchanger. The system alternates between the heating and cooling modes using isolation valves to dedicate the heat recovered solely to the chiller or heat exchanger as deemed appropriate.

"We designed and built a very ambitious, energy-saving project at The Lotte New York Palace Hotel," said Cory Glick, president of RSP Systems. "The cogeneration plant is the largest of its kind installed in a New York City hotel. The system was designed to save the hotel 30-40 percent of its annual electric and thermal energy expenses by providing cooling in the summer and heating in the winter."

The Results

The CCHP system has reduced the Lotte New York Palace Hotel's carbon footprint by 481 tons per year by recapturing the thermal energy it produces and deploying the recovered heat on site. The system also reduces the building's operating expenses as well as its reliance on the grid with integrated on-site generation capabilities. Monitored data is constantly being collected from the hotel site and is available in an hourly format on the New York State Energy Research and Development Authority's (NYSERDA) DG/CHP website.

With the assistance of RSP Systems, the Lotte New York Palace Hotel successfully finished its energy-efficient cogeneration plant. The biggest impact comes in the winter months when the recycled heat is used to significantly lower the hotel's electric bills. The Lotte has also experienced moderate summer electrical savings. ■



Capstone C65 ICHP Microturbine

A C65 provides up to 65kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150kW of thermal power for CHP and CCHP applications.

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