



Turn to the Experts.™

Case Study – 65 Broadway

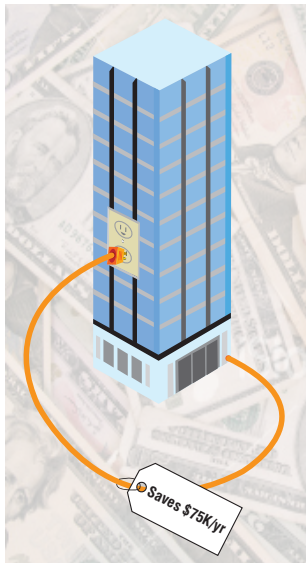
EDUCATION / HEALTH CARE / LODGING / MANUFACTURING / OFFICE BUILDING / RETAIL / SPECIAL



Microsteam® Power System Powers Building, Chiller With Green Electricity

Project Objectives

65 Broadway is a 350,000 square foot office building in the financial district of New York City. The facility buys steam from Con Edison, which operates under two modes, “Normal Day” and “New York Independent System Operator Day (NYISO).” NYISO days are declared during peak grid use conditions. 65 Broadway’s facilities management team sought a cooling system that would maintain comfortable conditions for building tenants in the most cost effective, energy efficient manner under Con Edison’s operating terms.



Project Solution

Carrier Commercial Service designed a combined heat and power (CHP) package for 65 Broadway that included a Microsteam® power system, two 16JB absorption chillers, a 19XRV Evergreen® centrifugal chiller and a Carrier Comfort Network® control system. The Microsteam unit converts Con Edison steam to electricity, which can be used to power the 19XRV chiller during “Normal Day” operation or can be fed back into the building’s electrical distribution on “NYISO” Days, reducing the amount of power the facility must buy. The system qualified the customer for \$400,000 in utility rebates and incentives, and it is estimated that it will save the facility \$75,000 in annual utility cost.

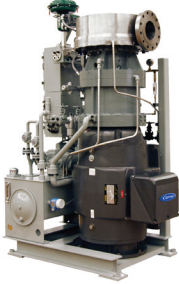
Electricity generated by Carrier’s Microsteam power system can run a chiller or provide power to the building. The customer estimates that the Microsteam power system will save \$75,000/year in energy costs.



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“The Carrier Microsteam® package gave us the efficiency of a double-stage absorber without the problem of the double-stage’s short lifespan.”

Mark Faith,
Chief Engineer,
65 Broadway

Project Synopsis

65 Broadway, an office building in New York City, buys steam from Con Edison under two modes, “Normal Day” and “New York Independent System Operator Day (NYISO).” The facilities management team sought a cooling system that would maintain comfortable conditions for building tenants in the most cost effective, energy efficient manner while adapting to both Con Edison operating modes.

Carrier Commercial Service designed a combined heat and power (CHP) package for 65 Broadway that included a Microsteam® power system, two 16JB absorption chillers, a 19XRV Evergreen® centrifugal chiller and a Carrier Comfort Network® control system.

The Carrier Microsteam power system is designed to be installed in parallel with pressure reducing valve stations in existing and new steam distribution systems. The unit is made up of a unique patented radial outflow turbine, mounted on an epicyclical speed reduction gear, which in turn is mounted on an induction generator. The vertical package is equipped with controls that synchronize the operation of the power reducing valve, turbine, and induction generator to provide for a smooth transition of power to the grid.

During “Normal Day” operation at 65 Broadway, two Carrier low pressure absorption chillers provide 600 tons of cooling. The Microsteam power system takes 150 psig steam from the Con Edison line, generates 275 kilowatts of electricity and reduces steam pressure to 10 psig to feed the absorbers. The electricity generated can run the 250 ton 19XRV chiller as needed.

During “NYISO Day” operation, the two absorption chillers handle the building’s cooling load, while the electricity generated by the Microsteam unit is returned to the facility’s electrical distribution system, which is estimated to save management \$75,000 per year in utility costs. The package also secured the facility over \$400,000 in utility rebates under a New York State Energy Research and Development Authority program.

“The Microsteam really gave us a competitive platform around which we could build a high performance system,” said Ernest Biron, Sales Manager, Carrier Commercial Service, Manhattan. “The customer chose the Carrier solution because we offered a system that can make electricity and provide more cooling tonnage with a longer life expectancy and lower maintenance costs.”

Mark Faith, Chief Engineer, 65 Broadway, confirmed that the equipment’s expected longevity was an important factor. “The Carrier Microsteam package gave us the efficiency of a double-stage absorber without the problem of the double-stage’s short lifespan.”

Project Summary

Location:
New York City, NY

Building Type:
Office tower

Project Type:
Design-build

Building Usage:
Offices

Building Size:
350,000 sq. ft.

Objective: Capture waste steam pressure and convert to electrical power to operate centrifugal chiller or power building system on peak Con Ed days, reducing the amount of electricity purchased from the utility.

Major Decision Drivers: Microsteam/19XRV chiller/absorption chillers package chosen over competitor’s design because the Carrier solution reduced the amount of electricity purchased, provided more cooling tonnage, and offered both longer life expectancy and lower maintenance costs.

HVAC Equipment: Microsteam power system, 19XRV Evergreen centrifugal chiller, 2 16JB absorption chillers, 5 pumps, variable speed drives, plate-framed heat exchanger.

Unique Features: Microsteam power system uses waste steam pressure to generate green/zero-emission electricity. Power can run the 19XRV chiller as needed or be fed into the building’s electrical system for internal use.

Design Considerations: Microsteam unit’s small size enables installation in existing HVAC rooms; pre-configured components facilitate streamlined installation and integration with city steam and building electrical system.

Installation Date: 2007

Controls: Carrier Comfort Network

Project Cost: \$2.5 million

For more information, contact your nearest Carrier Representative, call 1.800.CARRIER or visit our web site at www.carrier.com