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Case Study: Microsteam® Power System Powers Building, Chiller With Green Electricity

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CASE STUDY

Microsteam® Power System.

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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)." NYISO days are declared during peak grid use conditions. 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



Carrier's energy-efficient equipment helped the facility save \$75,000 in annual utility costs.

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.”

For more information on the Microsteam Power System, please visit Carrier’s [Commercial](#) web site.



18MS Microsteam Power System

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Mark Faith,
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