

Creative Chiller Replacement Project Fits into Existing Building Infrastructure

New electric modular chiller plant reduces cooling energy use by 83% for \$143,600 in annual savings



Multifamily

Property Profile

- Location: Midtown, Manhattan
- Square Footage: 564,000
- Units: 309 Residential Units; 5 Commercial Units
- Year Built: 1963
- Building Type: Luxury Multifamily

Services

- HVAC (Cooling)
- Feasibility Study
- Controls & Building Automation
- Project Construction Management
- Rebates & Incentives

Project Achievements

- Cooling Energy Savings: 83% (12% Source Savings)
- Annual Utility Cost Savings: \$143,600
- Annual Utility Savings: 8,700 Mlbs District Steam, replaced by 528,000 kWh
- Total Project Cost without Incentives: \$800,000
- Total Eligible Incentives: \$115,900
- Simple Payback with Incentives: 4.8 years

Project Highlight

Within a tight five-month timeframe, successfully replaced the single steam chiller with a new electric modular chiller system that provided cooling redundancy and a nearly 10-fold efficiency gain, utilized the building's existing wiring infrastructure, and could be installed without expensive rigging equipment

A 35-story mixed residential and commercial property located on Central Park South hired EN-POWER GROUP to upgrade its outdated one-stage steam absorption chiller. Our engineers overcame multiple challenges – a tight construction schedule of five months, a heavily foot-trafficked location, and limited electrical infrastructure – to successfully replace the chiller on time with a far more efficient electric modular chiller plant, all while avoiding expensive rigging and re-wiring of the facility.

The original chiller was a 444-ton single-stage low pressure absorption chiller located in the penthouse's mechanical room. Following the 2015 cooling season, it became obvious the chiller was nearing the end of its life and needed to be replaced before the start of the 2016 cooling season. The extremely tight timeline – fewer than five months – meant temporary equipment could not be installed and the project had to be completed on time. Moreover, rigging a new chiller up to the 35th floor's roof would be expensive and would create tremendous disruption to the residing owners.

Our engineers came up with the creative solution to replace the outdated, district steam dependent chiller with an electric modular chiller system consisting of sixteen (16) 30-ton units. The replacement not only provided

redundancy in case of equipment failure, but also increased the efficiency of the cooling plant almost 10-fold to annually save the building \$143,600 in cooling costs. Because the new system came in modular sections that could be assembled on-site, this solution also could be installed without using expensive rigging equipment. Furthermore, our engineers utilized an existing electric riser by stepping up the voltage in the basement from 208 volts to 480 volts to minimize the amps and stepping down the voltage upstairs for equipment that continued to need 208-volt power. In other words, we not only bypassed using expensive rigging equipment, but also saved the existing wiring infrastructure by manipulating its voltage and amps rather than re-wiring the building. To protect equipment longevity and ensure ease of operation, our engineers designed and oversaw the installation of a building management system (BMS) to allow for remote control and monitoring of the new chiller system as well as for water leak detection of the apartment fan coils. The project also earned a \$115,900 incentive from NYSEDA. The property was so pleased with the cooling system upgrade, they have continued their partnership with EN-POWER GROUP to design and upgrade their heating, domestic hot water, and ventilation systems.