



Morgan Stanley

522 Fifth Avenue, New York, NY

Turnkey Thermal Storage Project

Built in 1896, this building has been a fixture of the Grand Central Station area of Manhattan for over 100 years. 522 Fifth Avenue is a 23 story, Class A office building with a long history of being occupied by financial institutions as evidenced by the massive safes located in the basement and sub-basement. Morgan Stanley executed a long-term lease of the 595,430 square foot facility in 2006 to house its growing asset management business. Morgan Stanley is one of the world’s largest diversified financial services company, with a reputation for excellence in advice and execution on a global scale. The firm has leading franchises in three businesses: Global Securities, Global Asset Management and Global Credit Card Services



Challenge

Morgan Stanley faced the challenge of an aging cooling infrastructure as well as increased cooling capacity requirements of the planned building usage for 522 that exceeded the existing system capacity. The company decided to pursue a high performance cooling infrastructure solution with the goals of energy efficiency, increased site resiliency and environmental responsibility, similar to the successful retrofit of their Purchase NY facility. One major difference between the projects was the increased complexity of the logistics in midtown Manhattan.

Solution

Morgan Stanley engaged the Trane New York – New Jersey Energy Services team to evaluate the building’s existing systems and develop innovative, high performance infrastructure solutions to satisfy the new requirements for the building. Using Trace 700 energy modeling software, the Trane team developed multiple solutions that would meet Morgan Stanley’s needs. Ultimately the team proposed a hybrid chiller plant with a refurbished steam turbine chiller and a new electric centrifugal chiller with a connected thermal storage system. The new electric chiller would be a dual-mode machine that would produce ice for a thermal storage solution and that would shift the building’s electric cooling load from daytime to night. Electric produced during night (off-peak) hours is more plentiful, less expensive and generated more efficiently. The solution included the replacement of a 50 year old steam chiller with a new, more efficient and inherently more reliable non-CFC electric chiller.

The Project Team

- **Morgan Stanley**
- **Trane** – HVAC system design expertise, project management, chillers
- **Turner Construction**—Construction Management
- **CALMAC** Manufacturing Corp – Ice Storage tanks
- **ECM** Energy Management Service – Building modeling
- **CBRE** – Building operations expertise

CASE STUDY



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Results

Trane New York – New Jersey provided the turnkey installation of a 900 ton Trane CentraVac centrifugal chiller, which replaced a 50 year old, 1000 ton, steam-turbine chiller. Trane also installed 40 CALMAC IceBank tanks to store up to 4000 ton-hours of ice produced by the chiller. The system makes ice at night during off-peak hours to provide cooling the next day during on-peak hours. The system is expected to lower the facility's peak energy usage by over 50,000 MMBtu's while improving the resiliency of the site.

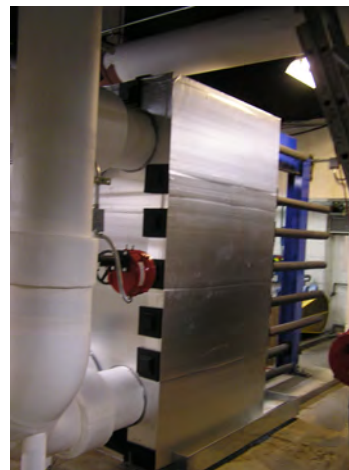
The system has the flexibility to run on chiller only, ice only or combined operation. There is also an emergency mode that can provide comfort cooling while making ice in the evening.

The environmental benefit of this project is equivalent to removing 760 cars from Manhattan. The new chiller uses environmentally responsible HCFC-123 refrigerant. Thermal storage systems have been recognized for improving the reliability of the electric grid by permanently shifting peak cooling loads from on-peak to off-peak.

All work was completed in concert with other major renovation work within the building. The difficult logistics of this project included rigging the disassembled chiller up an airshaft before lowering it into the sub-basement, removing and rebuilding walls as well as disassembling and reassembling air-handling units, heat exchangers and pumps that stood in the selected rigging path.

Transforming the aging infrastructure of our clients

“The Trane New York – New Jersey Energy Services group is transforming the aging infrastructure of our clients through their unwavering dedication to account management processes” said Rich Halley, District Manager of Trane New York – New Jersey. “They are leading our marketplace with proven high performance customer solutions that are developed with the use of sophisticated Trane energy and financial modeling tools. “



CASE STUDY