



Building Management System for Insurance Corporate Headquarters

Overview

A leading US insurance carrier commissioned EES to replace a building management system for an existing headquarters and core computer facility. The system was designed to run efficiently and minimize critical downtime. The system also needed to provide the operators with the tools to effectively manage energy use while maintaining cooling using mixed fuel chillers.



Owner Requirements

The facility is an existing 37 story office building covering one city block in New York City. The owner wanted a seamless solution that would utilize the integrated industrial hardware for controls of the major HVAC systems with DDC based controls for office space requirements. The owner required that the system replace the existing JCI Metasys and JC80 control systems installed in the facility. The facility consisted of the following:

- 101 fans serving various computer centers and office.
- 5800 ton chilled water system with steam turbine and centrifugal chillers of varying tonnages.
- Steam heating system and building perimeter heat control
- Computer data system environmental control and monitoring, including fully automated dedicated chilled water plant with heat exchangers for free cooling
- VAV box control

Solution

We worked with the owner on a design-build basis to provide a turnkey solution. The first step was to reverse engineer the existing JCI BMS, as documentation was limited or un-obtainable. After gaining a full understanding of the intended functionality of the existing BMS system, we examined the mechanical operation of the space and engineered solutions to meet the critical operational requirements for the systems. We provided full documentation and commissioned



the BMS system and the HMI. Where applicable, we re-utilized existing cabinets, instruments, wiring and interfaces to minimize cost and impact to the day-to-day operations.

Characteristics of the new control system:

- Monitors all room data and performs air side as well as water side control of the system.
- Automatically stages chillers based on load characteristics for optimized operation
- Takes evasive action in the event of mechanical system failure including damper control, air handler sequencing, chiller sequencing, tower sequencing, and pump operation so that space conditions are maintained.
- Installed separate PLC controllers on major AHU systems and integrated all instrumentation, valves, and VFD interfaces for distributed operation.
- Installed an integrated HMI that displays and trends all PLC based controllers
- Performed all necessary start up and commissioning on the BMS as well as the mechanical system.
- Monitor and control electrical demand usage
- Performed all necessary decommissioning of the JCI Metasys and systems

Results

The facility was retro-fitted in an efficient manner thereby minimizing the lost time to client activities. With the replacement of the existing commercial controls with a fully commissioned and documented BMS, operational staff have become more efficient on maintaining the system. This contributed to their overall bottom line. During performance of the project, the client commissioned Engineered Energy Solutions to retrofit two additional critical facilities utilizing similar technologies and goals.