



# United Electric Power



“New York Downtown Hospital” applied United Electric Power engineering solution to establish energy efficiencies across the company.

## Challenge:

New York Downtown Hospital had three aging (> 20 years) BAC Towers with 75 hp high speed motors and 25 hp low speed motors which were exhibiting numerous failures. These failures ranged from v-belt failures to motor failures.

These 3 BAC units were installed atop a 15 story section of the hospital. Most of the louvers were rotted out causing debris which fouled the pump intake. To replace these units would require street closures and a crane therefore New York Downtown requested other possible solutions from United Electric Power.

## Solution:

United Electric Power and New York Downtown Hospital determined the best solution was to rebuild the towers in place.

The approved scope of work for this project resulted in:

- Replacing all louvers.
- Replacing the hi-speed and lo-speed motors with a single motor utilizing Variable Frequency drives for the speed changes.
- Supply and install new shafts, pulleys, main fan and Inverter duty motors.

These BAC towers were installed adjacent to each other leaving no room for proper servicing of the louvers as the louvers are normally serviced from the ends. Since the three units were installed back to back the louvers in the center unit could not be serviced since louvers are provided in 12 foot lengths from BAC.

United Electric Power developed a custom former that would recreate the shape of the louvers in four foot lengths. By producing shorter sections we were able to simply overlap the four foot sections and fastened them together allowing us to replace all the louvers without removing the end frames of the towers.

In order to replace the drive gears, fans, and motors the old parts were rigged down from

the towers. The new equipment was then installed with two units left operating at all times as this repair was done during the peak of the cooling season.

The existing back panels from the enclosures were removed and sent to United Electric Power's UL-508 shop where all existing controls were removed and a new VFD with three contactor by-pass was installed on the existing back-plate. The enclosure was then modified to accept a Nema 3R cooling fan to adequately ventilate the enclosure. United Electric Power fitted the VFD's with a Metasys N2 communication card so that the Siemen's based Building Management System (BMS) could communicate directly with the drive modulating the speed of the fans based on cooling requirements. This allowed the Towers to operate at their lowest settings, controlled by demand, saving tremendous amounts of power. Since the Units were now being controlled by the BMS system they were operated at the lowest speed needed to maintain system requirements.

All this work done under the watchful eyes of Winston Taylor the Building's Engineer.

## Value Created:

Several Key benefits were attained under the careful planning and execution of United's Design-Build Team.

- There was no disruption to service. Replacement of the cooling towers would have taken several months with significant downtime that could not have been done during cooling season.
- Fabricating custom louvers allowed the job to be down without completely dismantling the towers.
- Utilizing our in-house UL-508 Panel shop gave us the flexibility to retrofit the existing enclosures saving both time and money. New enclosures would have also had to be lifted to the roof.
- Utilizing VFD's provided Energy saving features along with the ability to soft-start and stop the fans. This will significantly reduce the wear and tear on the power transmission components namely the Shaft, Pulleys, bearings and V-belts

## About New York Downtown Hospital

New York Downtown Hospital delivers state-of-the-art healthcare with the intimate attention and compassion of a community hospital. As the closest acute care hospital to the 600,000 people who work and live in Lower Manhattan, our mission is to serve the people who comprise the diverse business and residential communities of Wall Street, Chinatown, SoHo, TriBeCa, Battery Park City and the Lower East Side. Each year, the Hospital has more than 30,000 emergency visits, 146,000 outpatient visits, 10,000 inpatients, 5,300 outpatient surgeries and 2,400 new babies born.

New York Downtown Hospital has been recognized for its achievement in using evidence-based guidelines to provide the best possible care to patients through The American Heart Association/American Stroke Association's "Get With The Guidelines" SM program. As a result of this recognition, the Hospital was featured in a July 28 supplement to the "America's Best Hospitals" issue of US News & World Report.

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