

CASE STUDY

BUILDING AUTOMATION CONTRACTORS

The Harlem Health Center

The Environment of Care Demands Optimal Controls & Comfort Systems

Sited on a triangular-shaped lot at West 125th Street, Morningside Avenue and Hancock Place in New York City, NY, the new \$30 million Harlem Health Center is already an architectural fixture, embodying the dramatic additions to the historic neighborhood. Developed and owned by



the New York City Hotel Trades Council and Hotel Association of New York City (HANYC), the center is demonstrating trends toward community renewal, architectural prowess, and advanced building controls and comfort systems. Designed by Perkins Eastman Architects, out of New York City, the 110,000-square-foot facility has been developed primarily for the benefit of union members and their families (the HANYC member population totals over 30,000 employees). Clinics include dentistry, obstetrics and gynecology, pediatrics and physical therapy. Rising to 10-stories (includes a cellar and 9th floor penthouse), the center occupies the first five floors and basement, leaving the sixth through eight floors as office space. Designated as a community-use facility, the complex also has 11,000 square-feet of retail space.

Designers "AAM" High To Ensure Efficiency

The angularly shape glass and brick clad

structure presented a plethora of challenges to the Perkins Eastman led construction team, concerns that led planners and designers to seek an unconventional outward appearance, but one that use the space efficiently; an impressive achievement echoed particularly well throughout the facility's mechanical, electrical and plumbing design.

To introduce a truly first rate facility environment at the center, designers and planners specified the standardization of plant operations to the innovative and technologically advanced American Auto-Matrix (AAM) building automation system (BAS) platform. AAM offers "true generation-to-generation compatibility," enhanced cost effectiveness and system reliability. AAM also offers interoperability through the use of traditional open protocol as well as the capability to add industry standard protocols like BACnet®.

The responsibility of satisfying this mandate rested "on the shoulders" of, T.E.C. Systems - a provider of innovative and cost-effective controls and facility management solutions throughout the New York Metropolitan Area. As an Authorized Solutions Integrator of AAM for nearly a quarter of a century, T.E.C. Systems was able to offer the center state-of-the-art solutions that maximized the facility environment.

At first glance, the company outlined two prime directives:

1. Provide a high-quality healing environment for patients at minimum cost; that is to contain facility management and energy consumption

Project Team

Owner & Developer: The New York City Hotel Trades Council and Hotel Association of New York City

Architect: Perkins Eastman Architects, NY

Mechanical, Electrical & Plumbing Engineer: Edwards & Zuck, P.C., NY

Construction Manager: C. Raimondo & Sons Construction, NJ

Key Benefits

Benefits of the system can be seen to fall into one of two major categories: direct and indirect. The direct benefits represent the efficiency and effectiveness results inherent to the Auto Pilot system, which includes the continuous monitoring of care and comfort parameters for temperature, and humidity; allowing facility personnel to take proactive steps to reduce energy consumption and increase operational efficiencies. Although these benefits are significant, a greater payoff is expected as an indirect result of the BAS. The indirect benefits include savings related to better use of energy, water, and materials; reduced occupational safety and health costs; fewer compliance obligations; and less waste to treat or dispose.

costs while maintaining the quality of patient care, comfort and security.
2. Streamline the overall energy performance & management process.

Using extensive input from the mechanical, electrical and plumbing engineer, Edwards & Zuck, P.C., out of New York City, T.E.C. Systems finalized a function-driven direct digital control (DDC) design for the building. Engineered for convenience and flexibility the design enabled the customization of the BAS to the specific needs of the center.

Mechanical Plant

The 9th floor plant is approximately 40 feet above the main medical offices. The inherent benefit in this approach is the reduction in the acoustic impact on patient care areas and it simplifies future complex expansion. It also turned out to be a lower-cost method than including the mechanical plant at the base of the building. The mechanical plant was designed to allow installation of additional load capacity as needed by future expansion of the medical facility. The comfort conditioning requirements for the new building were not only rigorous, but also varied for the different use areas; differing temperature and ventilation requirements for operating rooms, meeting areas and patient rooms.

The facility includes a wide range of equipment including hot and condenser water systems, air handling units, air conditioning (AC) units as well as smoke purge, gas, and CO2 monitoring systems. The condenser system includes a cooling tower, and primary and secondary chilled water pumps. The hot water system features boilers, hot water pumps, and ventilation combustion dampers. The air handling units operates on 100% outside air, and supports 12 AC units, 59 (VAV) boxes, 60 fan powered VAV boxes,

and 10 general exhaust fans. The varying comfort requirements led the engineer to specify individual floor air handlers to better serve the facility.

Controls

To monitor, manage and maintain the HVAC and ancillary comfort systems, T.E.C. Systems implemented AAM's highly adaptable Auto Pilot system, a graphical user interface (GUI) that optimizes the facility management process. Auto Pilot is an automation platform for distributed hardware and provides end-to-end control, graphical view, monitoring, and management of multiple devices across platforms. The system monitors and manages the operational status of building-critical equipment and systems. It offers sophisticated management functions to improve reliability and availability at all layers of an integrated environment. The complexity of monitoring and remedying various operational conditions and faults makes the management of building systems, especially those using one or more solutions, a critical and specialized task. Auto Pilot is an industry-based, distributed monitoring and control solution that is designed to manage today's open-protocol based building systems. It monitors and logs facts about the operational state of equipment and entire infrastructure. These facts, collected in real time local to the node running the monitored controller, can be accessed over the entire managed network and selectively correlated to provide a system view.

The theme at the Harlem Health Center is responsiveness to patient needs. The medical center is a reflection on how those needs have changed. The design of the facility reflects the expectation that those changes will continue in the future. As medical needs of patients change, so can the systems that serve them.

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