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Case Study – Hartford Hospital

EDUCATION / HEALTH CARE / LODGING / MANUFACTURING / OFFICE BUILDING / RETAIL / SPECIAL



Infrastructure Optimization Rx Saves Hospital \$1.2 Million Annually

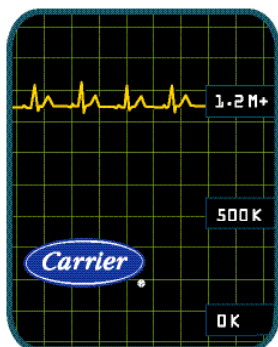
Project Objectives

Hartford Hospital's north campus infrastructure was operating at less than optimal efficiency — and with today's increasing utility rates, efficiency was an important factor in containing operational costs. In addition, maintaining patient comfort was an ongoing concern. Major contributors to the system inefficiencies were the chillers' constant volume pumping system, failing traps in the steam heating system and pneumatically-controlled air handling units. Hospital management wanted to partner with a systems expert to find a high-efficiency, integrated solution that would improve comfort, while saving money and offering strong return on investment (ROI).

Solution

Carrier implemented system-wide upgrades that saved the hospital \$1.2 million in annual operating costs. Direct digital controls (DDC) were integrated into many of the campus' mechanical systems, while variable frequency drives (VFDs) added to the increased efficiency and lower energy consumption. Steam trap repair/replacement, a new chiller plant variable flow pumping system and premium efficiency electric motors dramatically cut energy consumption. Lighting upgrades rounded out the improvements.

Annual Operating
Cost Savings = \$1.2M+

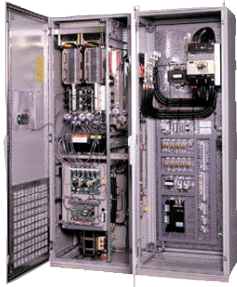


■ Annual Operating Cost Savings

Carrier's infrastructure upgrade cut Hartford Hospital's annual operating costs by \$1.2 million.



Case Study – Hartford Hospital *continued*



“Our energy conservation project developed and implemented with the Strategic Partnerships Group of Carrier Corporation was a truly collaborative effort that culminated in the win-win results of energy savings and patient-centered comfort solutions.”

Mark English
director of engineering
Hartford Hospital

Project Synopsis

Hartford Hospital, a leading Connecticut medical center and teaching hospital, was facing increasing expenses on its north campus. Rising utility rates, combined with heating, cooling and air distribution inefficiencies, were driving up operating costs. Managers were concerned about maintaining patient comfort, as well as staying competitive in the volatile health care industry.

Carrier’s Strategic Partnerships Group worked closely with hospital personnel — and addressed the problems with a campus-wide approach that included HVAC, lighting, and even the hospital’s pneumatic tube system. The improvements yielded exceptional utility and maintenance cost reductions, saving the hospital \$1.2 million annually.

System-wide efficiency was dramatically improved by upgrades in several areas. The addition of Carrier Comfort Network® (CCN) with ComfortWORKS® brought direct digital control (DDC) technology to the pumping and air distribution improvements, significantly increasing their benefits. The new controls system allowed for automatic adjustments, precisely matching conditioned air delivery to actual building conditions by monitoring more than 2,000 points.

A new variable flow pumping system with variable frequency drives (VFDs) greatly improved the distribution of chilled water, matching flow with demand, and decreasing the load on the pump motors. The existing motors were able to be downsized, and premium efficiency replacements further reduced electrical consumption. The addition of a plate frame heat exchanger allowed for “free cooling” from the cooling towers when outside temperatures dropped.

The north campus’ steam heating system was improved with the repair or replacement of 500 steam traps. Air distribution was improved as well, with VFDs and premium efficiency motor upgrades.

With out-of-the-box thinking, the Carrier team applied fan efficiency technology to the campus’ pneumatic tube communications system, reducing electrical costs. And lighting retrofits completed the infrastructure upgrade.

The Carrier team worked with hospital personnel to complete the work with minimized disruptions to the hospital’s normal operations. This was key to maintaining critical services and patient comfort. The project’s success led to the implementation of the same energy conservation measures in an additional, newly constructed hospital building.

Project Summary

Location: Hartford, CT	Objectives: Reduce operating costs; increase patient comfort; upgrade infrastructure	HVAC Equipment: DDC controls, CCN with ComfortWORKS; 35 VFDs for AHUs & variable flow pumping system; plate frame heat exchanger; 500 steam traps repaired or replaced; 83 premium-efficiency motor conversions	Project Cost Range: More than \$5 million
Building Age: Various — oldest 80 years	Major Decision Drivers: ROI & significant operating cost savings; solution addressed mechanical problems		Installation Date: December, 1998
Project Type: Retrofit	Design Considerations: Complete work with controlled, minimized disruptions to hospital operations	Unique Features: Pneumatic tube system optimization	
Building Type/Size: Various — 21 buildings, 1.6 million sq. ft. total			
Building Usage: Acute care and ambulatory services			

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