



**Volume Two / Issue 3**    **CASE STUDY**  
**September 2005**

**Halifax Regional Medical Center**

*In This Issue...*

**PRODUCT**  
*19XRV Evergreen®  
 Variable Speed Drive  
 Centrifugal Chillers*

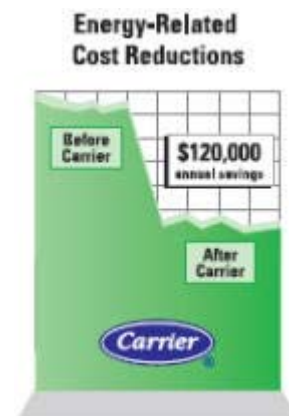


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Halifax Regional Medical Center was built in 1972 to serve Halifax and Northampton counties in North Carolina. Over the years, the facility grew from a 151-bed hospital to one that can accommodate 206 patients. The expansion was putting a strain on the aging chilled water plant, and the R-11 refrigerant that was used in the original equipment was being phased out through the federal Clean Air Act. So, in 2003, the Chief Engineer at the hospital, Ed Kinzer, awarded Carrier a unique single project management and implementation contract to provide a new independent central chilled water plant that would adequately cool the facility, utilize an environmentally sound refrigerant and reduce operating costs. This had to be done without disruption to the round-the-clock cooling provided to patients, physicians and hospital staff.

The contract, worth over \$2 million, focused on building a new plant independent of the current system, allowing the existing chilled water system to meet the hospital's cooling needs during construction. The existing system utilized 3-way cooling control valves resulting in a bypass pumping system, while the new project design incorporates the application of industry leading variable speed drive (VSD) centrifugal chillers with variable volume pumping. This new system design matches refrigeration capacity with the hospital's cooling system needs and is estimated to reduce operating costs by approximately \$120,000 annually.



*By incorporating Carrier's industry-leading variable speed drives, centrifugal chillers and variable volume pumping, Halifax Medical Center reduced its energy-related operating costs by \$120,000 annually.*

## CASE STUDY

Even months before the new plant was operational, an energy efficient 2-way control valve system was installed and an immediate operational cost savings was seen within the existing chilled water plant. And while replacing an additional 40-ton chiller in the old system, the Carrier project manager discovered the original installer had reversed the piping. With new piping, the replacement chiller is operating more efficiently and reducing operating costs, as well.

The new remote chilled water plant has two new Carrier 420-ton 19XRV Evergreen® chillers in addition to cooling towers, pumps, and miscellaneous mechanical and electrical equipment. Chillers and pumps are equipped with VSDs, and air handlers have been modified with 2-way control valves to accommodate variable volume pumping instead of the less efficient constant volume pumping of the original 3-way control valve system.

Replacing the R-11 with chlorine-free HFC-134a solved the refrigerant issue. HFC-134a meets federal Clean Air Act standards and has no future phase out date. Additionally, it has a zero Ozone Depletion Factor and warrants an A1 safety classification for the mechanical room as determined by the ASHRAE Safety Code for Mechanical Refrigeration which is consistent with the original building classification.

In addition to the technical aspects of this project, Carrier provided alternative financing options and is contracted to provide continuing maintenance and service support to Halifax Regional Medical Center.

[Learn more](#) about Carrier chillers or [download](#) the complete case study.



Installation of Carrier 19XRV 420 ton chiller

*“Although this was a large-scale project and had to be accomplished without any disruption to the 24-hour demands of our facility, Carrier’s team exceeded all our expectations.”*

Edward M. Kinzer,  
CHE, CPE, CFM  
Chief Engineer,  
Halifax Regional  
Medical Center

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