



**Volume Two / Issue 9  
February 2007**

**CASE STUDY - Gaston County Medical Building**

*In This Issue...*

**Carrier 23XRV Evergreen® Water-Cooled Chiller Provides Full-Load and Off-Peak Energy Savings**

**PRODUCT**

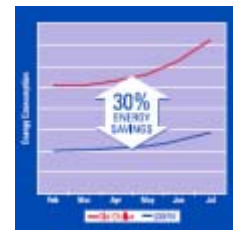
*Evergreen® Water-Cooled Chillers*

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The Gaston County Medical Center, located in Gastonia, North Carolina, is a multi-use facility that incorporates the county's health and medical department offices. The center is also home to a number of important clinics and related services for the residents of Gaston County, serving more than 63,000 people each year. While the center is in heavy use during weekdays, only a small portion of the 91,000 square-foot facility is used in the evenings and over the weekend. This substantial difference in usage and loads resulted in a great deal of wasted energy consumption by the existing chiller plant during off-peak hours.



*Carrier's 23XRV screw chiller consumed on average 30% less energy than the chiller it replaced.*

After analyzing the local weather data and cooling tower capabilities, astute Gaston County staff determined that a water-side economizer could eliminate chiller operation for hundreds of hours per year. However, the existing R-11 chiller encountered problems with its purge unit when started with cold condenser water, making the transition from free cooling using the economizer to mechanical cooling using the R-11 chiller a maintenance problem. Using the water-side economizer with the existing chiller was therefore an unacceptable solution, given that the county staff maintains over 140 widely scattered buildings for the county and has a need to reduce equipment down-time without increasing the number of maintenance events.

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## CASE STUDY

To take advantage of operating with cold cooling tower water, and to provide excellent performance at both peak-load and low-load conditions, a new 23XRV variable speed screw chiller was installed. Controls for the new system were configured to automatically transition from free cooling to nearly free mechanical cooling. "It likes cold water," advised Barry Styers, facilities supervisor, noting the success of the implementation. The 23XRV chiller also delivers the superior peak and off-peak energy savings desired by the county. "The variable speed screw chiller gives us the flexibility to efficiently reduce the load when the center is either closed or in limited use," said Styers. Even during the extremely hot weeks in the summer, the 23XRV chiller continues to use less energy. The chiller provides efficient, reliable operation to below 25% load even if entering condenser water temperatures rise to more than 95°F, a full 10 degrees above design. Overall, the chiller plant experienced a substantial energy improvement with more than a 30% reduction in energy usage observed during the spring months.

A compressor design that has only three moving parts, no slide valves, purge unit, or shaft seals makes the 23XRV very easy to maintain, a critical feature for any facility manager who maintains a large number of buildings. "The 23XRV has certainly worked well for us. I don't have to do anything to it; it just runs," remarked Styers.

[Learn more](#) about Evergreen® water-cooled chillers or [download](#) the complete case study.



Installation of Carrier 23XRV  
Water-Cooled Chiller

*"The variable speed screw chiller gives us the flexibility to efficiently reduce the load when the center is either closed or in limited use."*

Barry Styers  
Facilities Supervisor  
Gaston County

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