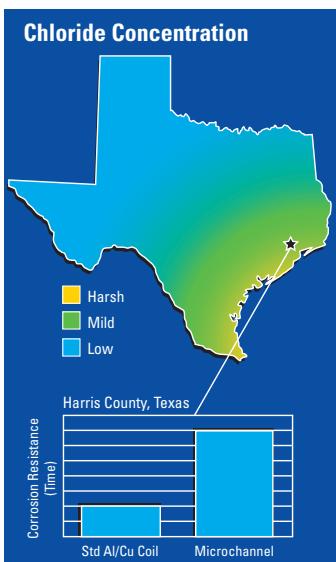


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Case Study – Harris County Sheriff's Building

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



Carrier 30XA AquaForce™ Chiller Delivers Durability, Corrosion Resistance and Energy Efficiency

Project Objectives

The sheriff's building for Harris County, Texas, is located about 50 miles from the Gulf Coast. The combination of high humidity, scorching temperatures, and mild salty gulf air creates a demanding environment for air-cooled chillers, particularly for the chiller coils. The environment is also challenging for Harris County's facility property management engineers, who manage the air conditioning for 250 properties. When they needed to replace an aging chiller that had corroded coils, they turned to a new Carrier air-cooled chiller with microchannel technology for efficient, dependable operation in a challenging coastal environment.

Solution

One Carrier 30XA AquaForce™ air-cooled chiller was installed to replace an existing chiller that had deteriorated over time as a result of environmental conditions. The 30XA was also chosen for its improved energy efficiency capabilities.

The Carrier 30XA AquaForce™ air-cooled chiller employs microchannel technology for improved coil corrosion resistance in coastal areas with salty, corrosive air.



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Project Synopsis

Harris County, Texas, one of the 10 largest counties in the United States, is situated inland from the Gulf Coast and poses a number of environmental challenges that place high demands on heating, ventilating, and air-conditioning equipment. First, the consistently high temperatures and humidity mean the equipment is in continual use. Add to that the exposure to mild, salty air from the nearby gulf, and you have a scenario that tests the integrity of the machines used to keep the building occupants cool and comfortable.

These circumstances recently played out at the Harris County's Sheriff's Office Building, which houses the sheriff's department, a recycling facility, record retention area, and county prison inmate trade school. After several years of constant operation in this environment, the chiller at the sheriff's building was worn out, suffering from coil corrosion, and needed replacing.

"After many years in this coastal hot environment, the chiller had met its match," said Johnnie Krolczyk, air conditioning shop supervisor of Harris County Facility Property Management. "In addition, we knew that if we installed a newer chiller, we would also benefit from increased efficiency."

Krolczyk and his staff worked with Carrier to specify and install one of the first 30XA AquaForce™ air-cooled chillers available, to take advantage of the unit's efficiency and unique microchannel technology.

Improved protection from corrosion due to environmental factors is a key attribute of Carrier's microchannel technology. The microchannel heat exchanger employs aluminum tubes and fins with special metallic coatings compared to the standard copper tube coil/aluminum fin combination found on traditional designs. As a result, corrosion is limited and the life of the coil extended compared to traditional designs. As an added bonus, the microchannel coils use 30% less refrigerant.

"I like the way the coils are designed. They seem to be much easier to keep clean since they are more like a radiator rather than a traditional condenser coil," said Krolczyk.

The 30XA is one of the highest efficiency air-cooled chillers available, which translates directly into energy savings for Harris County. From November '05 through April '06, energy savings with the new chiller have amounted to \$2,767.37. Efficiency is extremely important to Harris County because energy costs have increased from \$0.075/kWh last year to \$0.082 this year. Based on the project cost and energy savings, the 30XA will provide an estimated simple payback of just 2.5 years.

"We were able to save taxpayer money by using our own staff to install the new 30XA, and we had it up and running quickly with help from the Carrier team," said Krolczyk. "Thus far, it has been running smoothly."

Project Summary

Location: Harris County, Texas

Project Type: Replacement

Building Age: Approximately 70-80 years old

Project Cost Range: \$15,000

Project Contact: Johnnie Krolczyk

Building Type/Size: Multi-use office building/252,000 square-foot

Building Usage: Sheriff's Department (investigation unit, evidence, uniform services), recycling facility, records retention, inmate trade school

Objective: Replace old chiller with a newer, more efficient and durable chiller

Major Design Drivers: Efficiency and durability

Installation Date: June 7, 2005

Design Considerations: Exposure to the elements

HVAC Equipment: (1) 30XA AquaForce air-cooled chiller

Unique Features: Carrier microchannel coil technology

Total Cooling: 140 tons