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Case Study – Lehigh Valley Health Network

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



Lehigh Valley Health Network Retrofits Headquarters with AquaEdge® 23XRV Chiller

OBJECTIVES:

Lehigh Valley Health Network (LVHN) is a regional healthcare provider with multiple hospital and primary care locations, staffed by almost 14,000 employees. Its headquarters, home to the administrators who manage this large operation, is located in a multi-story, 160,000ft² building in Allentown, PA. When LVHN acquired the facility, it was served by two chillers, one of which dated back to the building's construction, circa 1970. The second unit was a more recent magnetic-bearing chiller. The original chiller had reached its planned lifespan, while the magnetic-bearing chiller had developed costly ongoing maintenance issues. Facilities staff sought to replace the original chiller with a reliable, efficient model that could also take over the load carried by the magnetic-bearing unit.

SOLUTION:

The LVHN facilities staff was familiar with the quality, efficiency and reliability of Carrier chillers from their experience with the Carrier AquaEdge® 19XR chiller that serves one of their other buildings. Thinking forward to the future phase-out of the older, ozone-depleting refrigerants used by some chillers, the staff selected an AquaEdge 23XRV screw chiller with chlorine-free HFC-134a refrigerant, which is not subject to phase-out. Carrier Commercial Service, which maintains the heating, ventilating and air conditioning (HVAC) equipment for Lehigh Valley Health Network, was chosen to perform the installation. Since the 23XRV chiller came into service, reduction in electrical demand has led to approximately \$24,000 lower utility costs at the facility per year.

After the retrofit installation of a Carrier AquaEdge® 23XRV screw chiller at the Lehigh Valley Health Network headquarters building, utility costs were reduced approximately \$24,000 per year due to decrease in demand, caused by more efficient performance.

**Carrier Screw Chiller
Technology Yields
Significant Energy Savings**

**\$24,000
Annual
Energy
Savings**





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“Carrier Commercial Service gets right to the root causes of performance issues. And they are always responsive when we need them.”

Todd J. Bachl, PE, CEM,
Senior HVAC Engineer,
Lehigh Valley Health Network

SYNOPSIS:

Lehigh Valley Health Network (LVHN) is a regional healthcare provider with multiple hospital and primary care locations staffed by almost 14,000 employees. The network’s 208,882 emergency room visits and 2,115,165 physician visits in 2014 represent just a portion of the multi-faceted care its facilities provide.

This complex network has its headquarters in a multi-story, 160,000ft² building in Allentown, PA. When LVHN acquired the facility, two chillers provided comfort cooling. The first chiller dated back to the building’s original construction, circa 1970. The second unit was a more recent magnetic-bearing chiller. The original chiller had reached its planned lifespan, while the magnetic-bearing chiller had developed costly ongoing maintenance issues, such as the need for compressor re-builds, which averaged approximately \$50,000 each and meant a six-month downtime period while the compressor unit had to be shipped to the mandated factory for refurbishing.

To attain modern energy efficiencies and reduce maintenance costs, facilities staff sought to replace the original chiller with a reliable, efficient unit that could also take over the load previously carried by the magnetic-bearing chiller.

The LVHN facilities staff was familiar with the quality, efficiency and reliability of Carrier chillers from their experience with a Carrier AquaEdge 19XR chiller that serves another one of their buildings. The staff also thought ahead to the future phase-out of the older, ozone-depleting refrigerants used by some chillers, and wanted to avoid the cost and downtime of re-charging the new chiller before the end of its operating life. With these points in mind, the LVHN facilities staff selected an AquaEdge 23XRV screw chiller. This water-cooled chiller has variable speed drive (VSD) for high efficiency under full- and part-load conditions, and uses chlorine-free HFC-134a refrigerant, which is environmentally balanced and therefore not subject to phase-out. Carrier Commercial Service, which maintains the HVAC equipment for Lehigh Valley Health Network, was selected to perform the installation.

Todd J. Bachl, PE, CEM, Senior HVAC Engineer at Lehigh Valley Health Network, said, “Carrier Commercial Service gave us a fair price and did a great job on the installation. During regular maintenance visits, they get right to the root causes of performance issues. And they are always responsive when we need them. Carrier Service Technician Frank Benick once took my call from his fishing vacation and immediately had another technician sent out to help us!”

The facilities staff at LVHN reports that the 23XRV chiller has been performing well since its installation, with no maintenance costs beyond its normal upkeep. And since the unit came into service, reduction in electrical demand has led to approximately \$24,000 lower utility costs per year.

Donovan Denlinger, Commercial Sales Engineer for Carrier, said, “The staff at LVHN has been so pleased with the 23XRV chiller that they allow us to bring prospective customers to see the unit in action. People are always impressed by how quiet the chiller is. And the efficiency numbers speak for themselves.”

Project Summary

Location: Allentown, Pennsylvania

Project Type: Retrofit

Building Size: 160,000ft²

Built: c. 1970

Facility Usage: Offices

Objectives: Replace outdated original chiller

and magnetic-bearing chiller with reliable, efficient unit

Equipment: AquaEdge® 23XRV screw chiller

Cooling Tons: 400

Major Decision Drivers: Previous experience with efficient, reliable Carrier 19XR chiller; desire to avoid refrigerants slated for future phase-out

Unique Features: Carrier 23XRV chiller, installed and maintained by Carrier Commercial Service, replaced original chiller and also took over the load of the magnetic bearing chiller

Installation Date: 2013