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Case Study – Crowne Plaza

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



Start-up Cost Savings

\$90,000



By selecting Carrier's energy efficient 23XRV chillers, Crowne Plaza qualified for a \$100/ton rebate from the New Jersey SmartStart program which is designed to provide incentives for purchasing equipment that offers significant long-term energy savings.

23XRV Evergreen® Chillers Keep Hotel Guests Comfortable

Project Objectives

The Crowne Plaza Hotel Philadelphia—Cherry Hill is the largest hotel in southern New Jersey outside of Atlantic City. The owners were interested in lowering the operating costs associated with maintaining comfortable environments in guest and conference rooms, a difficult proposition given the large variance in cooling requirements between seasons. A complicating factor was that the mechanical equipment room was in close proximity to accommodations, requiring that the solution use the quietest equipment available.

Solution

Crown Plaza Hotel hired Fluidics, Inc., a facilities services firm, to identify the best equipment for the application. To satisfy fluctuating internal load and noise restrictions and improve energy efficiency, Fluidics recommended replacing the existing system with two 23XRV Evergreen® variable-speed water-cooled screw chillers. The 23XRV was chosen because its unique design is especially well suited to maintaining comfort levels in applications that have large variances between minimum and maximum load conditions. In addition, the design of the 23XRV allows the chiller to operate at sound levels that are comparable to or lower than many centrifugal chillers.



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Case Study – Crowne Plaza *continued*

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“We’ve been tracking data since the chillers were installed, and already we have seen significant savings.”

Salvatore Tamberella,
Director of Engineering at
Crowne Plaza
Philadelphia–Cherry Hill

Project Synopsis

The seventeen-story Crowne Plaza hotel contains 408 guest rooms and suites, and more than 43,000 square feet of meeting space, including many conference rooms and two ballrooms. Like many hospitality facilities built in the 1970s and 1980s, the building faced rising energy costs exacerbated by the use of aging, inefficient chillers. The hotel’s conference rooms are used during all seasons, so cooling is required even in the coldest months. Because the chiller plant had to handle peak cooling loads during the summer and substantial but greatly reduced loads in the winter, the chillers needed to be efficient under a broad range of operating conditions. The existing chillers were simply not up to the task. In addition, the hotel’s mechanical equipment room was located directly above guest rooms on the seventeenth floor so low sound levels were a requirement for any replacement system.

As a member of the Crowne Plaza family, the hotel maintains a high standard of hospitality, and Sharon Hyland, Account Manager at Fluidics, was determined to find the best solution for her customer. Hyland researched several alternatives and selected the 23XRV, noting that “After evaluating the equipment on the market, we chose the Carrier 23XRV Evergreen® chiller. Not only was it the most efficient machine available but also one of the quietest. Our positive relationship with Carrier in the past gave us confidence we would achieve our objectives and serve our client well.”

The 23XRV Evergreen Chiller utilizes variable-speed screw compressor technology, making it ideal for the Crowne Plaza installation. Using this technology, the unit exceeds other chillers’ ability to run efficiently under the low load conditions found at Crowne Plaza during winter months. The variable speed drive used by the 23XRV is IEEE-519 compliant, eliminating the need for field-installed harmonic filters or a harmonic study of the building’s electrical system.

The 23XRV’s energy efficiency qualified Crowne Plaza for a \$100/ton rebate from the New Jersey SmartStart program. The SmartStart program is designed to provide incentives for purchasing equipment that offers significant long-term energy savings. Joseph Griffin, Senior Sales Engineer with Carrier Building Systems and Services said, “We were pleased to assist Crowne Plaza with the SmartStart application process. The 23XRV Evergreen Chillers saved the client \$90,000 in initial costs, and will continue to deliver energy savings for decades.”

Salvatore Tamberella, Director of Engineering at Crowne Plaza Philadelphia–Cherry Hill, concurred with Mr. Griffin. Mr. Tamberella added, “We’ve been tracking data since the chillers were installed, and already we have seen significant savings. Due to hotel-wide renovations, our occupancy was down slightly from the same month last year, but we have already seen a \$7,000 savings in electrical costs.”

Finally, the 23XRV uses chlorine-free R-134a, a refrigerant that is unaffected by refrigerant phase-out, providing a safe and environmentally sound choice without compromising efficiency.

Project Summary

Location: Cherry Hill, NJ

Building Age: 1974

Project Type: Design
Build/Replacement

Building Size:
17-story facility

Building Usage: Hotel
and conference center

Project Cost: \$280,000

Major Decision Drivers:

New chillers were required to provide efficient year-round cooling to a diverse facility including guest rooms and busy conference facilities; to demonstrate energy efficiency standards that qualified them for a state incentive program; and to operate quietly.

HVAC Equipment:

Two Carrier 23XRV
Evergreen® Chillers

Design Considerations:

Seventeenth-floor chiller room location directly above guest rooms underscored the need for quiet operation and vibration control. Variable speed drive delivered efficient cooling, even in low-load conditions such as cooling one crowded ballroom during a winter wedding.

Unique Features:

Highly efficient chillers qualified for a state energy incentive program. Variable speed drive enables facility to provide efficient year-round cooling to conference facilities.

Objectives: Replace aging equipment with efficient, quiet chillers.

Installation Date: 2007

For more information, contact your nearest Carrier Representative, call 1.800.CARRIER or visit our web site at www.carrier.com