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Case Study – EMC Corporation

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



Carrier Part-Load Efficiency Nets EMC \$200,000 Rebate Plus Energy Savings

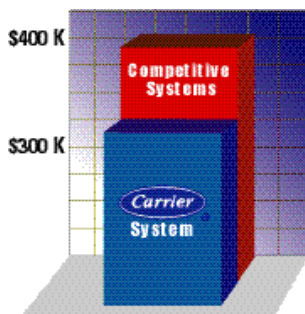
Project Objectives

Fortune 500 data storage giant EMC Corporation was building a new facility to house its research and development testing labs. It was essential that their ultra-sensitive equipment be kept cool 24/7/365 – putting a high load on the HVAC system. What's more, the prohibitive cost of laboratory downtime demanded extremely reliable equipment and responsive service capabilities. With the wide seasonal variations of the New England climate, a system that operated optimally at part-load conditions would mean significant energy savings for EMC, as well as qualify them for local utility rebates.

Solution

Carrier's 19XRV Evergreen® chillers with unit-mounted variable frequency drives (VFDs) delivered exceptional value. With a chiller part-load value (NPLV) less than .40 kW/ton, the Carrier system qualified for more than \$200,000 in utility rebates. Efficiency gains will reduce operating costs by 15% annually over competitive products, saving EMC an estimated \$50,000 to \$75,000 per year. Carrier's Racan air handling units provided flexibility, with a customized solution to varying rooftop dimensional requirements and properly sized coils.

Annual Operating Cost Comparison



The Carrier System, with superior part-load operation, will save 15% annually, compared to competitive equipment.



Case Study – EMC Corporation *continued*

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"The equipment came in on the dates promised, helping me to push through a fast-track project. To make schedule, I needed to know that the units coming in would be true to the drawings and that I'd have answers when I needed them – the Carrier support was excellent."

Phil Moran,
foreman,
J.C. Higgins

Project Synopsis

EMC, a world-leading provider of data storage systems, software and services was building a new research and development facility in Hopkinton, MA, to house their testing laboratories and engineering offices. EMC's unique application required four times the typical amount of wattage/sq. ft., placing a very heavy demand on the chillers and requiring a total of 950,000 cfm of air distribution from the rooftop air handlers.

The labs operate year-round and the sensitive testing equipment they contain must be under precise climate control around the clock. Failure of the building's HVAC equipment, causing downtime, could cost EMC tens of thousands of dollars per hour.

Carrier's system solution was reliable, and provided additional operating cost savings of up to \$75,000 per year, plus utility rebates totaling more than \$200,000. The Carrier solution measured system efficiency under part-load conditions, which occur much more frequently than full-load conditions in the building's New England location.

"Our approach on this job was to help the customer see the significant cost reductions that could be achieved with a system that had superior part-load efficiency," said Lucas Turton, Carrier Senior Sales Engineer. "Annual operating savings combined with the utility rebates added even more value to Carrier's quality and reliability advantages."

The system's five 19XRV Evergreen® chillers use unit-mounted VFDs to precisely match cooling to building load, maximizing system efficiency and preventing overcooling. The chiller plant operates at an impressive system part load value (SPLV) of .37 kW/ton or below, saving EMC 15% in operational costs over competitive equipment.

Carrier was also able to respond to EMC's need for customized dimensions on their rooftop air handling units. The Racan air handlers were configured to exactly fit the space and were easily adapted to changing requirements. This custom solution also allowed properly sized coils to be installed.

The Carrier team accomplished all this as a fast-track project, with a very tight timeframe. Quick delivery, installation and start-up were critical to EMC's business operations. With an emphasis on cooperation and customer focus, Carrier sales and service and J.C. Higgins mechanical contractors worked together for successful, on-time completion of the project.

Project Summary

Location: Hopkinton, MA

Project Type: New construction

Building Type/Size:

Steel construction, brick facade; four stories; 300,000 sq. ft.

Building Usage:

Testing laboratories, offices

Total Cooling (tons): 2,775

Objectives: System responsive to high wattage/sq. ft.; reliability to prevent downtime; part-load efficiency

Major Decision Drivers:

Equipment delivery time; system efficiency

Design Considerations:

Custom rooftop requirements for air handlers

HVAC Equipment: Five model 19XRV Evergreen chillers w/VFDs; 16 Racan air handlers (40,000 to 72,000 cfm); four 39T central station air handlers (10,000 to 15,000 cfm); ten 53-series ductless split systems with ten 42-series fan coil units (for telecommunications rooms)

Unique Features: Large cooling requirement/sq. foot; maximum annual operating hours

Project Cost Range: More than \$5 million

Installation Date:

First phase, December, 1999; second phase, November, 2000

Consulting Engineer: Symmes Maini & McKee Associates

Contractor: J.C. Higgins Refrigeration

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