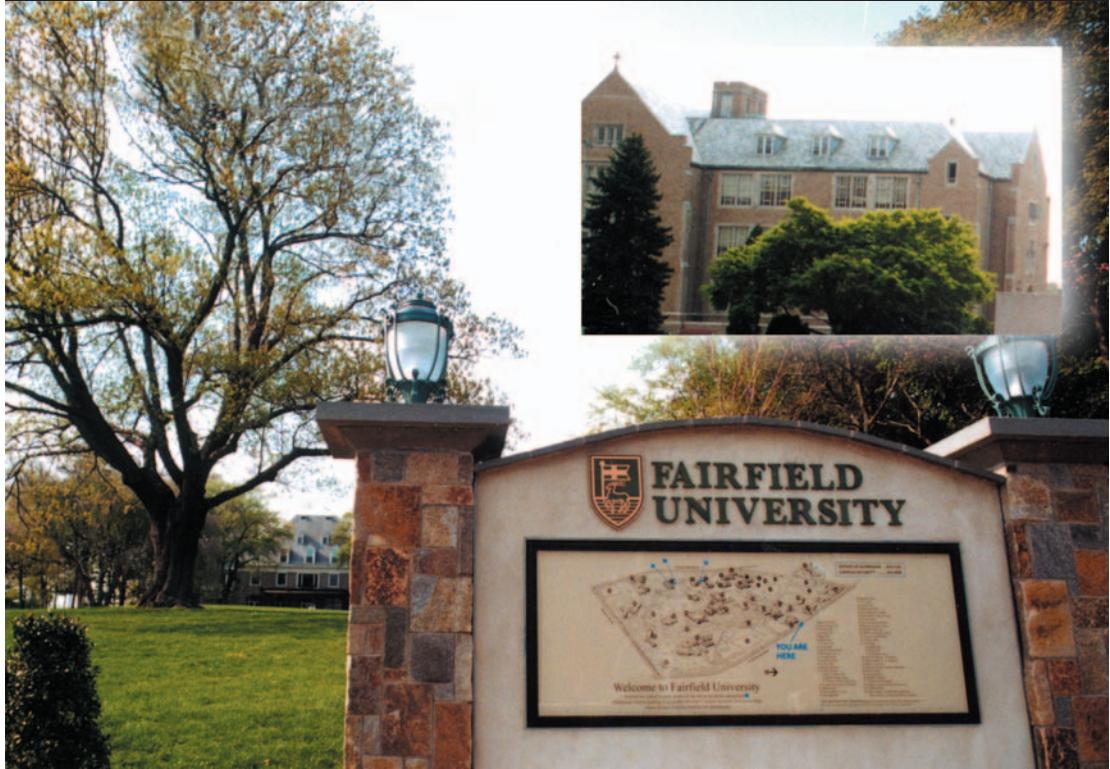




Turn to the Experts.<sup>SM</sup>

## Case Study – Fairfield University

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



### Smart Strategy Saves University \$179,000 Annually with Infrastructure Upgrades

#### Project Objectives

At Fairfield University, one of New England's most prestigious educational institutions, growth and renovations had pushed air conditioning requirements up dramatically, by more than 200%. In addition to increasing cooling capacity, managers required improved efficiencies that would save energy and contain operating costs. And space was at a premium — the University wanted to accomplish the major chilled water expansion without increasing the existing chiller plant footprint.

#### Solution

Carrier's Strategic Partnership Group teamed up with university personnel to design a fully automated chilled water production and distribution plant that would maximize equipment life cycle savings and return on investment. With three Carrier Evergreen® chillers, cooling capacity was increased from 600 to 2,000 tons. Coupled with Carrier controls and upgraded ancillary equipment, the chillers' high efficiency operation will save the University \$179,000 in annual operating costs, and also earned a utility rebate of more than \$82,000. The project was completed within the existing chiller plant square footage.



*The project gave Fairfield University more than a three-fold increase in cooling capacity, while slashing operating costs and recouping an \$82,000 utility rebate.*



Turn to the Experts.<sup>SM</sup>

AIRSIDE / APPLIED / CONTROLS / SERVICE / SPECIAL SOLUTION / TOTAL SYSTEM / UNITARY

## Case Study – Fairfield University continued

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



*"The strategic partnership with Carrier allowed us to make significant improvements to our campus utility systems, while reducing energy costs. Carrier made possible projects that could not have moved forward as quickly relying solely on our small, in-house technical staff."*

Richard Taylor, Jr.,  
assistant vice president  
Fairfield University Campus  
Planning and Operations

### Project Synopsis

Fairfield University, recognized as one of the top regional universities in the northern U.S., serves a growing student body on its 200-acre campus located in Fairfield, CT. Recent expansion and renovations had dramatically increased air conditioning requirements more than three-fold, from 600 to 2000 tons. The existing chillers were operating at reduced capacity because of inadequate electrical service to the chiller plant — and tower and pump configurations limited the system's backup capabilities.

In addition to meeting increased cooling demands, university managers wanted to upgrade the system, improve overall efficiencies and reduce operating costs. Carrier's Strategic Partnership Group and university personnel worked together closely to evaluate infrastructure upgrade and cost-saving opportunities. They designed a high efficiency solution that not only increased cooling capacity by 233%, but would also save the university \$179,000 per year. This translated into a self-funding rate for the project of 59%. In addition, the university earned a utility rebate of more than \$82,000.

The redesigned chilled water production and distribution system includes three high efficiency Carrier Evergreen® centrifugal chillers, which use the non-ozone depleting refrigerant HFC-134a. The plant is controlled for optimal performance with direct digital controls (DDC) and operates over the Carrier Comfort Network® (CCN) with ComfortWORKS® software for convenient, PC-based management.

The chillers reject heat to a three-cell induced draft cooling tower that uses 28% of the horsepower per ton of the two forced draft towers it replaced. Since each cell can operate with any of the chillers, plant operation is not disrupted during maintenance. Tower water pumps are piped to permit backup operation.

The system's primary pumps maintain a constant flow through the chillers and are piped to permit backup operation. The secondary pumps' variable frequency drives allow for adjustments in flow, in response to varying system needs. Electrical service to the chiller plant was upgraded to handle the expanded capacity.

All of this was accomplished using no more square footage than the old, much smaller system. This preserves valuable space should a heating plant expansion be necessary in the future.

"The university had infrastructure issues to address and wanted to ensure a good return on the investment," said Ward Strosser, manager of the Carrier Strategic Partnerships Group. "They depended on Carrier to pull together a complete package that would accomplish their objectives. Working as a team, we succeeded."

### Project Summary

**Location:** Fairfield, CT

**Building Age:** Various — circa 1950-2000

**Project Type:** Retrofit

**Building Type/Size:** Various — steel/glass, brick, block; 1 million+ sq. ft.

**Major Decision Drivers:** Cost savings, return on investment (ROI)

**Objectives:** Upgrade, improve efficiency, add cooling capacity, cut costs

**Building Usage:** Science center, classrooms, auditoriums, dormitories

**Design Considerations:** Expand cooling capacity by 233% within existing chiller plant footprint

**Total Cooling (tons):** 2,000

**HVAC Equipment:** Two 750-ton & one 500-ton model 19XR Evergreen chillers with HFC-134a refrigerant, manufactured in Charlotte, NC; CCN with ComfortWORKS; all ancillary equipment

**Unique Features:** Project was 59% self-funding; expanded cooling capacity within existing envelope, preserving square footage for future heating expansion needs

**Project Cost Range:** \$1 million to 5 million

**Installation Date:** June, 2000

For more information, contact your nearest Carrier Representative, call 1.800.CARRIER or visit our web site at [www.carrier.com](http://www.carrier.com)