



## Case Study – Pratt & Whitney

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



### Technical Experts Partner to Save \$778,000 Annually and Help the Environment

#### Project Objectives

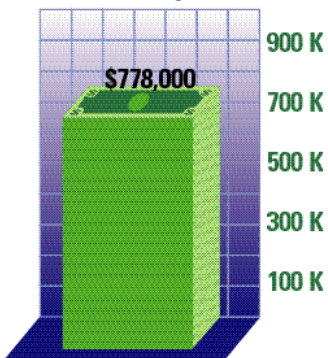
Pratt & Whitney needed a new chilled water system for its jet engine manufacturing facility in Middletown, CT. The 1,100-acre site had factory and office space in 34 major buildings, with 3,500 employees working on three shifts. An integrated HVAC system was needed to replace older equipment with an efficient system that would help the company meet its aggressive cost reduction goals and environmental initiatives. Pratt was seeking an HVAC expert to collaborate with on system design and equipment selection.

#### Solution

Carrier experts teamed up with Pratt & Whitney to design a system combining efficient, chlorine-free chillers with system automation, for optimized performance and energy savings. Three Evergreen® centrifugal chillers with HFC-134a refrigerant and three absorption chillers with water as the refrigerant met environmental goals and delivered immediate operating cost reductions. The Carrier Comfort Network® (CCN) with ComfortWORKS®, plus remote monitoring enabled proactive management and maintenance to maximize the equipment investment. The result? Expected annual operating cost savings of \$778,000 with an impressive 20% internal rate of return (IRR) and payback in less than five years – and a utility rebate of \$157,000 for chiller operating efficiencies.

Carrier's high efficiency chilled water plant delivered superior performance, resulting in substantial operating cost savings.

#### Operating Cost Savings





## Case Study – Pratt & Whitney continued

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### Project Synopsis

Building on a long-term service relationship, Pratt & Whitney turned to Carrier for their ability to provide components engineered for efficiency, advanced monitoring and control capabilities and a team approach to system solutions.

A major consideration for the project was supporting Pratt & Whitney's corporate goal of a 40% reduction in operating costs by 2002. Since cost containment was a major objective, the system needed to operate at maximum efficiency. Not only was it important to choose high efficiency equipment, but the system needed to be automated to optimize performance and minimize wasted energy. In addition, Pratt & Whitney parent United Technologies (UTC) had recently implemented environmental initiatives for all its companies, so the project required careful consideration of energy conservation and refrigerant issues.

The installation included three model 19XR Evergreen® centrifugal chillers, which use the chlorine-free, non-ozone depleting refrigerant HFC-134a; and three model 16JB absorption chillers, which use water as the refrigerant and steam from oil fired boilers as an energy source.

The system is linked through the Carrier Comfort Network® (CCN) and is remotely monitored from Carrier's Farmington, CT site. In addition, by using Carrier's ComfortWORKS® software interface, Pratt & Whitney technicians on site can monitor and control all parts of the system. This allows them to be proactive, responding before problems become critical and reducing maintenance costs. The system's automated startup, shutdown, sequencing and staging functions allow for precise control, maximizing efficiency and saving substantially on operating costs.

The new system is expected to save \$778,000 in operating costs annually – \$637,800 of that in energy savings – with a 20% internal rate of return (IRR) and payback in less than five years.

The new chilled water plant was just the first phase in the Middletown site upgrade, which included lighting retrofits, high efficiency motors and a compressed air retrofit, and earned Pratt & Whitney UTC's Energy Conservation Award and Carrier's Environmental Leadership Award. More than \$900,000 in total rebates were received from the local utility company, \$157,000 of this from the chiller plant. The rebates were based on new efficiencies from the newly-upgraded systems. And the Middletown project is the first of six Pratt & Whitney sites covered by the innovative partnership agreement with Carrier. Like Middletown, subsequent projects will help Pratt & Whitney achieve its cost reduction goals.

"We saw results and benefits from this partnership in the first cooling season after the new system was installed. As a matter of fact, we have received a \$157,000 incentive check from our local utility as a result of the higher operating efficiency of these chillers."

Mark Kopera, site manager,  
Pratt & Whitney  
Middletown Operations.

### Project Summary

**Location:** Middletown, CT

**Building Age:** 44 years

**Project Type:** Replacement and upgrade

**Building Type/Size:** Chiller plant serves two one-story, high-bay steel manufacturing buildings/1.2 million sq. ft. total

**Building Usage:** Manufacturing and office space

**Objectives:** Upgrade chilled water system; reduce operating costs; save energy

**Major Decision Drivers:** Efficiency gains; cost reductions; environmental compliance

**Design Considerations:** Environmental impact of equipment

**Total Cooling (tons):** 6,000

**HVAC Equipment:** Three model 19XR Evergreen centrifugal chillers; three model 16JB absorption chillers; CCN with ComfortWORKS; remote monitoring contract

**Unique Features:** Supplier-customer partnership; non-ozone depleting refrigerants; on-site, system-wide monitoring and control with ComfortWORKS, remote monitoring for proactive maintenance and response

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

**Installation Date:** Spring, 1999

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)