



Case Study – Georgia Tech



Carrier System Makes Energy Management Easy and Supports Sustainable Development

Project Objectives

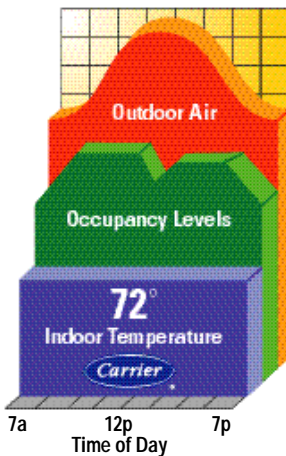
The Georgia Institute of Technology's School of Civil and Environmental Engineering sought an advanced HVAC system that embodied the principles of sustainable technology. From design to construction techniques, to displays and research, the Sustainable Education Building (SEB) would be an international focal point for sustainable infrastructure development. The HVAC system needed to be energy efficient and enable proactive energy management strategies that would make a positive environmental contribution.

Solution

Carrier provided a system that includes efficient equipment, and is centrally monitored to optimize preventive maintenance and maximize energy conservation. The system includes two high efficiency rooftop units with direct digital controls (DDC) and fan-powered mixing box units. In addition, three duct-free, split air conditioning systems cool the SEB's telecommunications equipment room. All of the HVAC equipment is tied together with the Carrier Comfort Network® (CCN) and monitored through a central computer terminal using Carrier's ComfortWORKS® software.

Direct digital control (DDC) enables precise temperature adjustment, maintaining consistent comfort under varying occupancy and outdoor temperature conditions.

Occupancy vs. Outdoor Temperature





Case Study – Georgia Tech continued

EDUCATION / HEALTH CARE / LODGING / MANUFACTURING / OFFICEBUILDING / RETAIL / SPECIAL

Project Synopsis

Georgia Tech's Sustainable Education Building (SEB) was designed to demonstrate technologies that enhance building longevity and conserve natural resources. Advanced materials and construction techniques were used, enabling students to learn first-hand about sustainable infrastructure, the focal point of the building's future teaching and research activities. In addition, the 30,000 sq. ft. building houses displays and hosts symposiums for students as well as practicing engineering professionals.

Along with the structure itself, the HVAC system inside the SEB needed to embody the principles of energy conservation and sustainability, to further showcase these technologies. Carrier provided an HVAC system that does just that, along with the state-of-the-art equipment the building's designers were looking for.

"Carrier's business is more than manufacturing climate control systems," said Rick Cannon, president, Carrier Complete Systems in Atlanta, GA. "We believe in protecting the environment, conserving natural resources and advancing the progress of sustainable building principles. Our connection with this project was a natural fit."

The new HVAC system is comprised of two Carrier high-efficiency 50E Series rooftop units with direct digital controls (DDC). DDC enables precise temperature adjustment according to varying occupancy levels and outdoor conditions, maintaining comfort while preventing overcooling and wasted energy. The system also includes 26 model 45SV fan-powered mixing boxes. Excess heat build-up from the electronics in the building's telecommunications equipment room is cooled by three duct-free, split air conditioning systems.

All system components communicate via the Carrier Comfort Network® (CCN). Carrier's ComfortWORKS® software, using Microsoft® Windows® NT, enables centralized system monitoring on a standard PC. ComfortWORKS increases management effectiveness – detecting alarm conditions to prevent downtime, and identifying operational trends to improve maintenance planning, maximize performance and save energy. ComfortWORKS turns data into valuable information, allowing the facilities managers to evaluate system-wide performance and make adjustments to reduce energy consumption.

Proactive planning and optimizing equipment to conserve energy are key themes in building for sustainability. "We're making sure that our students will leave Georgia Tech with an understanding that design in today's world and certainly in tomorrow's world includes more than drawing lines on paper," said Michael Meyer, department chair. "It includes understanding what their work means to people and what this means to future generations."

"Sustainable technologies are about giving consideration to resources consumed in a way that balances the needs of today with those of future generations. The energy management features of Carrier's system are in keeping with this ideal."

Nelson C. Baker, Ph.D.,
SEB project director

Project Summary

Location: Atlanta, GA

Project Type: New construction

Building Type/Size: Hebel aerated autoclaved concrete / Three-story, 30,000 sq. ft.

Building Usage: University classrooms, technology display, multimedia theater, conference room, electronic library, offices

Objectives: Install new HVAC system that would demonstrate sustainable energy technologies

Major Decision Drivers: Energy efficiency; energy management capabilities; forward thinking design

Design Considerations: Sustainable energy technology

Total Cooling (tons): 56.25

HVAC Equipment: Two model 50E rooftops; direct digital controls (DDC); 26 model 45SV fan-powered mixing boxes; three duct-free split air conditioning systems; CCN with ComfortWORKS

Unique Features: Increased management capability and effectiveness with ComfortWORKS

Project Cost Range: \$100,000 to \$500,000

Installation Date: Fall, 1998

Consulting Engineer: Spurlock & Associates

Contractor: Paacson, Inc.