



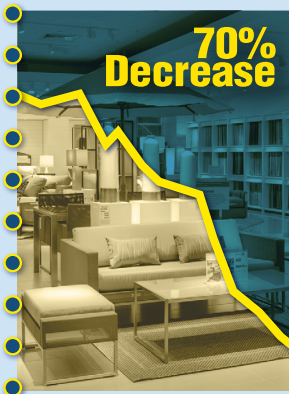
CASE STUDY



Crate&Barrel

I-VU® CONTROL SYSTEM REDUCES ENERGY COSTS AND KEEPS CRATE&BARREL CUSTOMERS COMFORTABLE, PRODUCT-FOCUSED

STORE HVAC COSTS WITH I-VU® OPEN CONTROL SYSTEM



Thanks to a new lighting design and integrated lighting/HVAC control system using the i-Vu Open web user interface, Crate&Barrel's Durham, NC store returns a 70 percent decrease in HVAC costs over previous stores.

Project Objectives

Crate&Barrel's goal is to keep customers comfortable in the store so they can maximize their exposure to the many houseware and furniture products found in each store. Crate&Barrel stores typically use 12 W/ft² for lighting to create their target product environment, four times the average for a retail space. Consequently, the store's thermal load from lighting is considerable—potentially impacting customers, employees and products. Store personnel must be able to control both lighting and heating, ventilation and air conditioning (HVAC) systems in a precise, flexible manner to preserve customer comfort and suitable humidity levels for optimum product quality. For their facility in Durham, NC, Crate&Barrel needed a controls solution which would deliver a fully integrated solution. To accomplish this, they consulted with the controls specialists at Carrier's Melrose Park-based distributor, Temperature Equipment Corporation (TEC).

"It is rare to find someone (like TEC's Dominic Eorio) who can design a solution based on our needs, rather than from a set of requirements."

— John Moebes,
Director of Construction for
Euromarket Designs (the parent
company of Crate&Barrel)

The Solution

TEC designed a control system that integrated Crate & Barrel's extensive lighting—more than a mile of track lighting incorporating some 1,000 fixtures—with its HVAC components, including 120 tons of cooling from rooftop units. BACnet® controls were installed on all the equipment in the store, from exhaust fans to lighting zones, plus sensors from BAPI®, Carrier and Veris for a total of 29 devices and 2,715 points. The i-Vu® Open control system by Carrier integrated all components and provided a user-friendly web interface which enabled fluid scheduling of both lighting and HVAC systems, providing store personnel with the capacity to maximize conditions for customers and products alike.



Synopsis

Crate&Barrel's mission is People, Product, and Presentation. The Northbrook, IL-based company's goal is to keep customers comfortable in the store to maximize their contact with the store's many housewares and furniture products, which are displayed in a vignette style, simulating actual rooms in the home. This approach requires intensive lighting to maximize the products' visual appeal. Consequently, Crate&Barrel stores traditionally use 12W/ft² for lighting, four times the average for a retail space, and the stores' thermal load from lighting is significant, potentially impacting customers, employees and products. To manage these conditions, store personnel must be able to control both lighting and HVAC systems in a precise, flexible manner to preserve customer comfort and suitable humidity levels for optimum product quality. Previous stores utilized separate control systems for lighting and HVAC, which proved cumbersome and expensive. Therefore, prior to building a new facility in Durham, NC, Crate& Barrel consulted with the controls specialists at Carrier's Melrose Park-based distributor, TEC, to discuss an integrated solution.

TEC designed a control system that integrated Crate&Barrel's extensive lighting — more than a mile of track lighting incorporating some 1,000 fixtures — with its HVAC components, including 120 tons of cooling from seven rooftop units. BACnet® controls were installed on all the equipment in the store, including three exhaust fans, eight lighting zones and a gas-fired unit heater in the warehouse, plus BAPI® wireless temperature sensors, CO₂ sensors and Veris BACnet power meters for a total of 29 devices and 2,715 points. The i-Vu® Open control system by Carrier

integrated all components and provided a user-friendly web interface which enabled powerful and fluid scheduling of both lighting and HVAC systems from a single user interface, providing store personnel with the capacity to maximize conditions for customers and products alike with a minimum of training time before the store opened.

The control system in place at the Durham store, in combination with a lighting re-design, has reduced usage from Crate&Barrel's previous average of 12 W/ft² to 6W/ ft² while maintaining the company's preferred levels of comfort and product display. The store has also returned a 70 percent reduction in HVAC costs over earlier stores. Dominic Eorio, Manager of the TEC Controls Division and the designer of the Crate&Barrel control system, said, "Most controls companies only focus on 90 percent of the equipment in the building. We focus on 100 percent. You have to control everything if you want to maximize energy savings."

John Moebe, Director of Construction for Euromarket Designs (the parent company of Crate&Barrel), said, "It is rare to find someone who can design a solution based on our needs, rather than from a set of requirements." The i-Vu system and the BACnet protocol have performed so well that TEC and Crate& Barrel are currently working together toward a standardized control package that can deliver the same exceptional results in comfort, control and energy savings in the company's other new and existing stores.

Project Summary

LOCATION: Durham, NC

PROJECT TYPE: Controls and building automation

BUILDING SIZE: One-story, 25,000 ft² (19,000 ft² retail, 6,000 ft² office/warehouse)

BUILDING USAGE: Retail store

UNIQUE FEATURES: Over 1,000 track lights to be controlled in tandem with HVAC system. Durham store is Crate&Barrel's first building to attain LEED® (Leadership in Energy and Environmental Design) Gold Certification.

MAJOR DECISION DRIVERS: Customer and employee comfort; products must be well-lighted; HVAC must be able to handle high heat load.

OBJECTIVES: Customer comfort to increase time in store; humidity control to maintain product quality; integration of lighting control into building automation system.

DESIGN CONSIDERATIONS: Control of high heat-load lighting system must be precise and flexible.

CONTROLS: i-Vu® Open Plus web user interface; RTU Open controllers; UC Open and UC Open XP controllers for lighting zones, exhaust fans, gas-fired heater; BAPI® wireless space temperature sensors; Carrier CO₂ sensors; i-Vu® Open Link for Veris® BACnet® kWh meter.

INSTALLATION DATE: 2010

For more information, contact your Carrier representative, call 1.800.CARRIER or visit carrier.com/commercial

