

EPA Science & Technology Center

Control Service Co. / Automated Logic Corporation

WebCTRL® Helps Lab Set Energy Savings Record, Earn LEED® Gold

The Challenge

- Implement easy-to-manage control strategy for model lab facility
- Qualify for LEED® Version 2 Gold certification
- Integrate multiple subsystems including complex variable air volume fume hoods
- Reduce energy consumption by at least 24% compared to EPA baseline
- Provide single interface for monitoring complex network of systems

The Players

The U.S. Environmental Protection Agency's Science & Technology Center in Kansas City, Kansas is itself an example of environmental protection. Opened in 2003, this former brownfield site now hosts modern laboratories for environmental testing, research and analysis. The facility was designed to preserve natural resources, provide a healthy work environment and serve as a model for future laboratory development.

The center features a number of green technologies including low-e windows, recycled flooring, carpet and ceiling tiles, and a unique rooftop rainwater recovery system for the building's cooling towers. Energy-efficient mechanical systems designed by The Clark Enersen Partners feature Automated Logic's WebCTRL® to manage a number of subsystems. These include variable air volume (VAV) fume hoods, VAV office ventilation, zoned carbon dioxide sensors, plate and frame heat exchange recovery, and a combination of variable frequency drive and conventional chillers.

"Programming all of these systems would have been very difficult without WebCTRL," said Ed Brown, president of Control Service Co., the Automated Logic dealer responsible for the building control solution. "But WebCTRL made it easy to program for all levels of the system."

The Solution

"It's a great system," added Brian Campbell, P.E., of CB Richard Ellis. The on-site facility engineer has used WebCTRL at other facilities and claims its software is "ten times easier" to manage than other control systems. Campbell cited the single-pass ventilation system and WebCTRL's graphics as particularly unique to the Kansas City laboratory.

Clark Enersen's mechanical design, along with Control Service Co.'s building control strategy, enabled the design/build team to reduce energy consumption by more than 24% over a typical EPA VAV laboratory. Those results earned the facility a LEED Version 2 Gold certification in 2003. In fact, energy data for 2003-2004 reveals that the facility is the top performing new EPA lab in the country. Actual building efficiency has exceeded original projections.



Going green, earning gold: the EPA lab in Kansas City reduced energy use 28% over the agency lab average.



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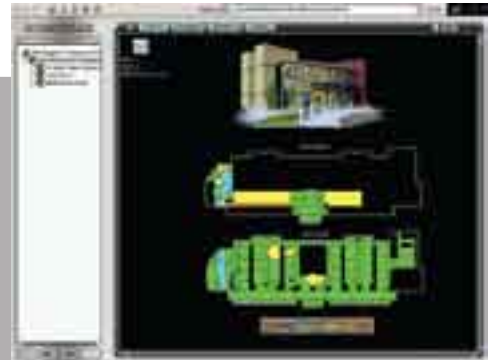
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Despite its complexity, the lab's control system design was fairly straightforward, Brown said. "Initially, we were going to try something a little more elaborate, but the customer didn't want any experimental or unusual control solutions."

Brown added that integrating the lab's Phoenix Controls fume hood system was one of the biggest challenges on the project. Successfully completed, "the integration allows us to use WebCTRL to monitor conditions in the lab. The system can adjust air flow into the zone using variable cfm regulation." Careful monitoring is essential since most of the facility is dedicated lab space, areas which must be supplied with

100% outdoor air ventilation 24 hours a day.

Tying all the systems together through WebCTRL greatly simplifies building management, Brown continued. "WebCTRL gives the operators a uniform view. As far as they're concerned, it looks like one system." WebCTRL also monitors the four process chillers and non-energy systems including fire suppression, eyewash stations, power supplies, acid neutralization, bottled gas and back-up generation. The system emails or prompts alarms if any system is deactivated or operates outside normal parameters.



Project Summary

Savings:	28% lower energy consumption than EPA lab average
Location:	Kansas City, Kansas
Project Type:	New construction design/build
Building Size:	71,955 square feet
Building Usage:	Environmental testing, research and analysis
Objectives:	Receive LEED certification while preserving natural resources, providing healthy work environment and serving as a model for future laboratory development
Design Considerations:	Interoperability with multiple vendors' systems including HVAC, carbon dioxide sensors, heat recovery units, variable frequency drive chillers, security, lighting and environmental monitoring
Major Decision Drivers:	Programming flexibility, browser-based graphic user interface and native BACnet® open protocol
Controls Contractor:	Control Service Co., Inc.
Installation Date:	2003



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