



Southeastern Louisiana University's focus on energy management generates high marks and huge savings

Southeastern Louisiana University in the city of Hammond is the third largest university in the state and home to more than 15,000 students from more than 40 states and 50 foreign countries. Founded in 1925, Southeastern Louisiana University sits on a 365-acre campus filled with moss-draped oak trees, towering pines, and building architectures that range from historical art deco to contemporary.

For years the Southeastern Louisiana University (Southeastern) physical plant staff struggled to control temperatures and energy consumption by the heating, ventilating and air conditioning (HVAC) equipment on campus. The control system was a hodge-podge of systems; many buildings on campus were completely pneumatic while others were a mix of pneumatics and energy management system (EMS) start/stop.



DDC-based controllers enable SLU staff to precisely monitor and control energy consumption in more than 30 buildings across the 365-acre campus.

Additionally, multiple vendors had systems or equipment on campus, so any time an alarm occurred, technicians with four or five different computers wheeled them back and forth to figure out what was happening in each building.

Another problem the university faced was loose specifications with no overall direction, which led to systems being installed in individual new buildings that would not fit together seamlessly into one EMS. For example, in Southeastern's Science Building Annex, the vendor installed a LonWorks control system that was already 10 to 15 years old at the time. The manufacturer also failed to satisfactorily complete commissioning; as a result, the building never operated efficiently, variable air volume (VAV) boxes failed, and mold grew out of control. In addition, the vendor was unresponsive to calls and stingy with information that would allow the physical plant staff to troubleshoot and fix any issues.

In 2002, the backbone of a new campus-wide EMS was installed by a previous Alerton dealer under a performance contract. The system was largely start/stop with a majority of the pneumatic controls still operating on the local level in each building.

In 2005, Byron Patterson, director of physical plant, and Chris Asprion, associate director of facility maintenance realized the campus required more from the system and decided to build on the inherent value of the Alerton product with a series of upgrades to the EMS and changes to the facilities department.

Patterson and Asprion established an energy management department and clarified roles for their staff. Dawson Kinchen, Southeastern's supervisor of controls, was tapped to lead the new energy management office and find areas where improvements in the control systems would enhance cost savings and improve temperature control throughout the campus. Southeastern also

We set out to build a consistent energy management system that our guys could learn and develop, to get proficient and be consistent. We're doing everything we can to save money and be a good steward for the money we're given.

Chris Asprion, Associate Director of Facility Maintenance, Southeastern Louisiana University

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Establishing an energy management department and updating its controls generated substantial savings of more than \$675,000 in the first year.

turned to Systems Integration, the local Alerton dealer, to install a series of system upgrades to also enhance control and savings.

Working with Systems Integration, the university converted outdated pneumatic controls to direct digital controls (DDC)

in the Charles E. Cate Teacher Education Center, Lucius McGehee Hall, Jay W. McClimans Hall, the Science Building Annex, and the Ralph R. Pottle Music Building. System Integration installed the BACnet®-based Alerton Building Suite to update and consolidate the Southeastern buildings with a single EMS that monitors and controls all of the HVAC.

As part of the university's own energy management program, the update enables the physical plant staff to now control temperatures within half a degree and stop expensive leakage. Using DDC enables technicians to shut off air compressors in the mechanical room to avoid running them 24/7, which stops more air leaks and further reduces energy consumption.

The Alerton Building Suite runs on a virtual environment, which enables the university's physical plant staff to execute demand limiting through the school's website. Technicians can monitor the system and equipment from anywhere on campus they have an Internet connection, and adjust or shut down areas according to building use and occupancy. As a virtual environment, the Building Suite is also a simple software upgrade that is fast to implement, easy to support and scalable to any installation, regardless of size.

Other programming changes Patterson and Asprion made included creating more accurate schedules in terms of occupancy and equipment operation. Located 55 miles northwest of New Orleans and 50 miles east of state capital Baton Rouge, Southeastern experiences some of the highest humidity in the country. With the updated EMS, physical plant staff can now take advantage of unoccupied setpoints and raise temperatures, while monitoring

humidity levels, to delay the length of time before the control system kicks on and reduce the time it takes to cool the area.

During moderate times of the year—spring and fall—the control system, based on outside air temperature, provides cooling early in the morning hours to offset temperature gain throughout the day. This in turn provides a tremendous savings by delaying the start of all the chillers in the mornings and staggering the chiller start-ups mitigating demand cost.

Another change was to move to a 4/10 summer schedule—four days a week, 10 hours a day—and consolidate classrooms into fewer buildings to avoid over-conditioning unoccupied buildings.

The university also converted outdated pneumatic controls to direct digital controls (DDC) in the Charles E. Cate Teacher Education Center, Lucius McGehee Hall, Jay W. McClimans Hall, the Science Building Annex, and the Ralph R. Pottle Music Building. This enables the physical plant staff to now control temperatures within half a degree and stop expensive leakage. Using DDC enables technicians to shut off air compressors in the mechanical room to avoid running them 24/7, which stops more air leaks and further reduces energy consumption.

The university was also able to save on equipment costs. For example, one engineer submitted a design for four motors to run two exhaust systems on all the hoods. The Alerton system enabled the university to cut it down to two motors for the entire hood system and keep the energy use entirely within operational parameters.

With its new, open-protocol EMS in place, Southeastern Louisiana University saved more than \$1.2 million and reduced electrical consumption by more than 4 million kWh last fiscal year, allowing Patterson and Asprion to reinvest the substantial savings in more projects to improve the campus-wide building efficiency. All told, the new EMS and updated controls enabled the school to add more than 200,000 square feet of space without compromising comfort or adding to energy bill cost.

The university's physical plant staff also received comprehensive factory training so that they know everything they needed to know about operating, maintaining and programming their control system was available to them. Now Southeastern physical plant technicians can do their own commissioning on an annual basis.



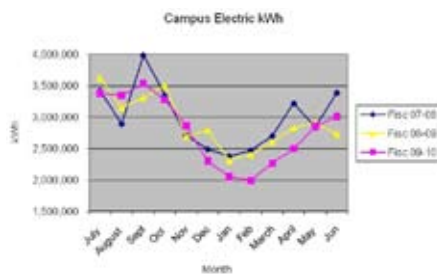
The Ralph R. Pottle Music Building, originally built in 1939, was one of several on the Southeastern campus with archaic controls that was upgraded with the Alerton system to provide more accurate and comfortable temperatures for students, faculty and visitors.

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"We've enforced the rule that when a building is commissioned, we go through 100% point verification," Patterson said. "Normally a company will do 5% and call it standard. Alerton was the only company willing to do 100% for us."

The BACnet interface enables the Alerton EMS to centralize control of 35 of the 54 buildings on campus as well as integrate the lighting system, exhaust system and kilowatt-hour (KWh) metering.

A big-screen television in the controls department office provides several displays of the control system, energy use and savings so



The Alerton system has generated significant year-to-year energy savings by greatly reducing the energy consumption of the Southeastern campus—even during the chillier winter months.

that staff, students and visitors can see for themselves the payoffs of making energy management a campus-wide priority. After researching how other colleges and universities run their physical plants, collaborating with their EMS vendor and

adding that knowledge to their own ideas, Patterson and Asprion feel they've created an extraordinary environment that generates much more than cash.

"We want to make this an incredible learning environment," Patterson said. "We tell people we're actually in the business of student retention, because if students are happy, their parents understand we're here to take care of their children."

The new system enables the staff to manage every aspect of energy consumption and generate significant savings they can subsequently use for even more building projects. In making energy management a priority, Patterson and Asprion gained program buy-in from their support staff, who are as fervent as their bosses about identifying and implementing different ways to save energy and money through the EMS.

"It makes them feel valued," Patterson said. "They understand that we're taking the time to train them and make them the best in their department."

"One mechanic watching and tweaking temperatures can save his salary times ten," Asprion added.

