



Project Profile

East Maine School District 63 Students Get a Cool Reception in the New School Year



East Maine School District 63 students got a cool reception upon their return to school in the fall of 2002. After years of having no air conditioning systems in five of their seven schools, students and teachers alike were excited to be in rooms that were comfortable during late August's unpredictable temperatures, which on occasion can be exceedingly hot.

East Maine Consolidated School District is a public school district located in Cook County, Illinois, an affluent metropolitan area just 20 miles northwest of Chicago. Serving more than 5,375,000 residents, the school district encompasses portions of five different communities - unincorporated Des Plaines, Niles, Glenview, Park Ridge, and Morton Grove. This K-8 district consists of six elementary schools (K-6), one junior high school (7-8) and the district head office with a student enrollment of approximately 3600 students and growing.

Case Study Summary

Benefits

- Anticipated \$140,000 yearly energy savings
- Measurably improved comfort levels for students and staff
- Easy for all custodial staff to use and manage

Challenges

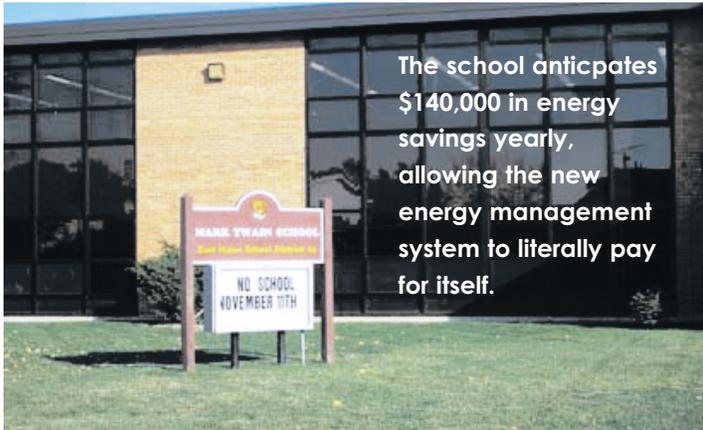
- Tight schedule due to school year and regulations
- No systems engineer on staff to oversee system

Solutions

- Complete retrofit program with energy management measures
- Internet-based monitoring and graphical user interface allows for remote access and ease-of-use for staff

“**The biggest advantage is the remote access that the new system provides from even outside the district. To be able to monitor and correct the system, as needed, from any browser window has been nothing short of a huge benefit.**”

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Energy management and systems integration create the ideal partnership

Local Teletrol Systems' Integrator, Control Engineering Corp. (CEC) of Oak Brook, Illinois, and District 63 had an initial venture to service the existing controls system located within the seven buildings. Obsolete (new parts for the controls system were simply no longer available) and inefficient, the existing system led the District to make the decision to consider a new BAS rather than to service the existing one. At the same time District 63 was busy negotiating with an energy management solutions provider who offers facility improvement services and turn-key integrated solutions to help commercial, industrial and institutional customers manage their construction costs, operating costs, and facility needs related to energy and building systems. District 63 entered into a performance contract with the group to retrofit their existing system with a solution that would ultimately pay for itself through energy savings.

Together, CEC and the energy management solutions provider created a new partnership to transition District 63 into this complete retrofit program for the school system with energy management measures that included internet-based monitoring, a new BAS, and overall HVAC improvements. Other measures, such as new building envelope systems (windows, doors, etc.), were also incorporated into the

retrofit. The primary goal was to update five of the buildings to include air conditioning systems, replace chillers, boilers and other HVAC components, and to install a new internet-enabled controls system that would allow the school to easily manage each of the buildings from one central location as well as from each specific building.

When interior comfort is critical

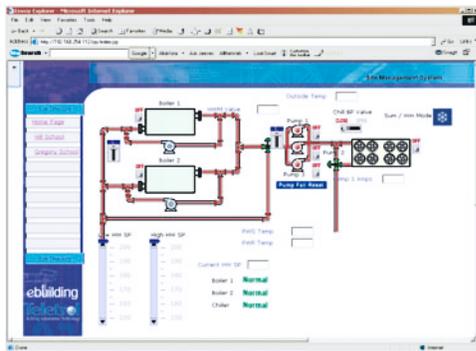
The largest challenge faced was the exacting control of interior comfort levels. Should these comfort levels not be properly maintained (say, for example, being unable to keep rooms warm during colder Chicago weather), the schools are mandated to close. Despite the fact that most kids would jump at the chance to have a day off from school, should schools close, kids actually lose out in more ways than you might imagine in the long run. The State of Illinois's funding is tied to how many days per school year the school is open. Therefore, closed schools equal a loss of funding – clearly not a situation that any public school system can afford.



The system also had to be installed on a very strict schedule – all work was to be completed before the start of the new school year in fall. Like the above scenario, if the retrofits were not completed and functioning on time it could potentially require school closings and loss of funding.

Technology made ready for the future

The performance contract required that BAS products be used which met District 63's requirements. CEC chose to use Teletrol's eBuilding internet-powered BAS, which would allow the district to take advantage of their existing WAN to control each school. Facility maintenance staff are now able to monitor the buildings with the new IT-friendly controls system



Easy-to-use graphical interface allows the custodial staff at District 63 to easily monitor and make changes themselves

using Envoy, the facility site server that automatically communicates with network controllers to collect data, manage alarms and provide remote Internet access. The server software includes the Apache web server to provide web access to point data, system information and graphical operator information pages. As a result, one PC workstation in each school now has access to a total of nine new



The eBuilding Network Controller, one of nine installed at District 63

eBuilding Network Controllers residing on the district's WAN, approximately 641 I/O points, 40 unitary controllers, the boiler/heating plant, chiller plant, roof top systems, frequency drives, fan powered boxes, DX system staging, electric heat staging, unit ventilators (full control, economizer, face & bypass, OA code ventilation), multi-zone fans, constant volume fans, CO & CO2 alarming.

"It's an understatement to say that the new controls system is making life easier," says District 63's maintenance supervisor, Carlos Vega. "It has improved working conditions for all of my custodial staff, as well as for the teachers and students who are now enjoying new, consistent air conditioning during hot days. The biggest advantage, however, is the remote access that the new system provides from even outside the district. To be able to monitor and correct the system, as needed, from any browser window has been nothing short of a huge benefit."

Controls system software schemes to meet the energy management requirements include summer/winter changeover, economizer, night setback, HW reset, discharge and mixed air reset, roof top sequence, and occupied/unoccupied modes. Only moderate special programming was required for the eBuilding



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interface during the retrofit. Staging boilers to maintain building comfort and manage energy consumption, while also taking advantage of the new high-efficiency boilers was a key requirement. The ultimate marriage of algorithms and boiler sequences was handled successfully by CEC to meet both the performance contract and District 63's needs.

East Maine School District 63 learns new lessons in energy management and savings

With no special systems engineers on staff, District 63 now has a complete system that is easily managed and controlled by the custodians on staff in each building or by the school district staff located in the head office. The buildings (and the kids) are more comfortable than they've ever been and are thrilled to have A/C where they previously had none – with the bonus “behind the scenes” being a system that is much more easily managed. High-tech and up-to-date, District 63 enjoys the ease of remote alarms and multiple PC stations with a real-time graphical interface utilizing a standard web browser. One quick glance at the browser window indicates if the building is operating as smoothly, as anticipated, or if adjustments might need to be made.

Energy management measures are being implemented now that the system is up and running with a new semester under the district's belt and an anticipated \$1.4 million in savings over the next ten years. Working with school principals in each school to evaluate energy usage and comfort issues, District 63 now has a high-tech, efficient and successful energy management program underway that will pay for itself both in dollars and in happy young faces. Well, at least happy that they have A/C during hot days – we can't account for how happy they are to be in school!



Complex boiler sequences were easily managed to take advantage of new, high-tech energy efficient equipment



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