

Minnesota State University Moorhead Saves Energy and Labor

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Jeff Goebel, Physical Plant Manager at Minnesota State University at Moorhead (MSUM), knew there had to be an easier way for his employees to control HVAC equipment across campus. In May 2010, MSUM became a beta test site for Events2HVAC™ which works as a bridge between Dean Evans EMS® and various HVAC and building control systems to automatically control equipment based on scheduled events. The results have been impressive.

Energy Savings

There are currently 17 buildings at MSUM that are integrated with Events2HVAC and Dean Evans EMS for automatic HVAC scheduling and control. Based on the average room occupancy rate of 12% in the previous year, the energy savings will be significant. For example, for a sample of 66 rooms (58,622 square feet total) that have dedicated VAV boxes, early results indicate that the university will save 45 to 55 cents per square foot annually for heating, cooling, and ventilation, with historical expenses at \$1.75 per square foot annually.*

“My reduction in the last calendar year of electricity usage was 13%,” Goebel said, “and that is especially remarkable because we added 43,000 square feet to our campus.” Goebel said he expects the savings to be even more significant as winter progresses since heating is a major expense in Minnesota.

Labor Savings

But energy conservation is not the only story. Labor was the initial driver for Goebel to look for a solution, and the labor savings are significant too. MSUM is saving 10-15 man-hours per week with the new system. “It frees us up to take care of other repairs,” said Kim Owen, Information Technology Specialist, who is overseeing the project.

As Goebel and his employees previously experienced, it takes tremendous effort to manually schedule HVAC systems down to the room level in order to save energy. Goebel said, “I actually sat and counted the number of mouse clicks. In one case, in one system, it took 11 mouse clicks to make one change. And in another system, it took 17 mouse clicks. And those didn’t seem terribly significant if you’re the supplier of the software because you’re thinking in terms of making a single change. But we have over 13,000 events per year; that’s a lot of mouse clicking to do. So I was really looking for a solution for the redundant data entry.”

ENERGY SAVINGS

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LABOR SAVINGS

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FLEXIBILITY

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Before using Events2HVAC, MSUM had to strike a balance between energy use and labor expense. Most of their equipment was scheduled with a common building-occupied schedule. If a building opened at 7 am and closed at 8 pm, all of the rooms operated in occupied mode for 13 hrs each day; though a typical classroom or auditorium might only have three hours of occupied time in that 13-hour period.

At MSUM today, several people schedule special events using Dean Evans EMS, and the regular class schedules are batch loaded into the system by the Registrar’s office. Then, Events2HVAC automatically schedules HVAC equipment for each room that is assigned to the system.

Cross-Platform Flexibility

MSUM uses Dean Evans EMS Enterprise for scheduling rooms on campus. Their HVAC systems include various legacy Honeywell systems, integrated into a front-end product called Honeywell Enterprise Buildings Integrator™. All of the different types of HVAC controllers are brought back to the EBI, and the information is served out in the BACnet/IP protocol so that Events2HVAC can communicate with it over the campus network. MSUM also has a Johnson Controls Metasys MSEA™ HVAC system serving another building and a JCI P2000 security system for door access control.

Because Events2HVAC is a cross-platform solution that works with all versions of Dean Evans EMS and multiple types of HVAC systems, MSUM is making extensive use of it across campus without purchasing new equipment.

“As long as we can utilize BACnet® to control the points,” said Goebel, “it can be across any kind of platform, so it really opens the world to me of having a variety of brands and equipment out there. And it kind of increases the ability of us to have competition on bidding projects because as long as they are BACnet compatible we don’t have to go to a sole brand.”

One way that MSUM is expanding its use of Events2HVAC is by using it to control door locks. Owen has set up the system to control both Honeywell and Johnson Controls door lock systems so that classrooms will unlock 10 minutes before each class, and lock 10 minutes after each class. Only a few classrooms are set up this way currently, but Owen plans to expand this control to additional rooms and buildings.

“We’re able to use that same idea and have it do doors,” Owen said, “and so it’s kind of a little unlimited as what you can tackle with it—which is very good. Usually the biggest problem with the door system here is having them open when they’re supposed to be because it used to take a full time person just to make sure that worked right.”

Notes on Calculations:

- MSUM provided a building operation time schedule for the previous year; room occupancy rates were actual values from the previous year in MSUM’s Dean Evans EMS.
- Ventilation savings were calculated based on minimum air flow at VAV boxes. Actual savings could be more if VAV boxes run above minimum levels or supplemental heating is used.

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