

EMS Case Study *Minnesota State University at Moorhead*



Moorhead Saves Labor, Energy and Money with an EMS-HVAC Integration

Integration Equals Savings

Jeff Goebel, Physical Plant Manager at Minnesota State University at Moorhead (MSUM), knew there had to be a better way for his employees to control HVAC equipment across campus. He heard about a software solution called Events2HVAC at a conference and looked it up online. In May 2010, MSUM became a beta test site for the software which works as a bridge between Event Management Systems (EMS) software and various HVAC and building control systems to automatically control equipment based on scheduled events. The results have been impressive.

There are currently 17 buildings at the University that are integrated with Events2HVAC and EMS for automatic HVAC scheduling and control. Based on the average room occupancy rate of 12 percent 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 variable air volume 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 percent, and that is especially remarkable because we added 43,000 square feet to our campus.”

Goebel expects the savings to be even more significant as winter progresses, since heating is a major expense in “The Land of 10,000 Lakes.”

“Of course it is not just electricity,” Goebel explained, “It’s also conserving heating fuel as well, because when space is not scheduled, it becomes unoccupied in the system and air flows are either reduced or cut off to the those spaces. So we are saving not just the electricity of running fans or cooling systems,” in addition to the energy involved in heating extra space in the winter.

Fast Facts

- **15 hours** in labor saved per week
- Savings of **45 to 55 cents** per square foot
- Reduced electricity usage by **13 percent**

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More Results, Less Labor

Labor was the initial driver for Goebel to look for a solution, and he's pleased with the results; 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. "I find it easy to use and dependable." Owen has introduced several other employees to Events2HVAC, and he said they are learning the system quickly.

The University uses EMS to schedule activities and events in rooms across campus. As Goebel and his employees previously experienced, it takes tremendous effort to manually schedule HVAC systems down to the room level.

"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, Goebel said. "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."

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

Owen said MSUM tries to educate people at the university about conserving energy.



"But the only way that we can get people to do it is to automate it," he said. "We can tell people to turn the thermostat down or turn the lights off, but chances of it happening for a long period of time are pretty slim."

At MSUM, several people schedule special events using 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.

Because Events2HVAC is a cross-platform solution that works with all versions of EMS software and multiple types of HVAC systems, the University can make extensive use of it across campus without purchasing new equipment.

The school's HVAC systems include various legacy Honeywell systems, integrated into a front-end product called Honeywell Enterprise Buildings Integrator™ (EBI). 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.

"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

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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."

Lock It, Light It - Automatically

One way that the University 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, "It's kind of unlimited as to 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."

Owen said they are also considering expanding the system to lighting, which is another capability

of the Events2HVAC software. Goebel added that now that the University is using Events2HVAC to automatically command equipment in campus spaces, other energy-saving equipment is becoming more attractive.

"Both in terms of any kind of control systems whether its energy management control, door access control, or even lighting control now become more attractive to me because we would not have to work hard to manage them," Goebel explained. "They'll be managed seamlessly by a single person scheduling the use of the space. Where I previously would have been opposed to adding those systems simply because of the requirement of operating them, now I'm actually attracted to putting in more access controls and lighting controls that are centrally managed just because I won't have to work harder to keep it operational."

For more information about Events2HVAC, visit www.events2hvac.com

For more information on Dean Evans & Associates, and the company's event management, master calendaring, online registration and survey software products, go to www.dea.com or contact the Sales department at sales@dea.com or 1.800.440.3994 ext. 863.

* Notes on calculations:

1. MSUM provided an average building operation rate for the previous year; room occupancy rates were actual values from the previous year in MSUM's Dean Evans EMS.

2. Ventilation savings were calculated based on minimum air flow at the VAV box. Actual savings could be more if VAV boxes run above minimum levels or supplemental heating is used.

