

## Centralized Lighting Control Streamlines Solutions

By Jack Sine

The University of California at Davis Medical Center in Sacramento is a nationally respected teaching hospital with an impressive assortment of facilities. There is increased difficulty and challenges in running and maintaining these facilities because of the variety of usages, and even more difficult by California's strict building codes and its Title 24 energy regulations. Put in place in 1978, Title 24 is the mandate to reduce California's energy consumption, with periodic updates to adapt to new technological advances.

No one is more familiar with the strict regulations than Mike Avakian, account executive for Johnson Controls.

"We have been supplying, maintaining, and upgrading building management systems (BMS) at the Center for more than 20 years and we have met a lot of challenges," he explains. "Title 24 makes it tougher than in other states. They have very strict regulations, but in 2002 we saw an opportunity to get a little ahead of them."

### Controlling Lights

In 2002, the UC Davis Medical Center started work on their MIND (Medical Investigation of Neurological Disorders) building, and wanted Johnson Controls to look at a new GE lighting control system that the BMS was supposed to connect to control. Historically, lighting control systems had been stand alone with their own control software that had to be programmed separately.

"We had already been looking for a way to integrate lighting control into our BMS," Avakian says. "Because they asked us, we looked at the GE system and found it would not interface with our BMS without a ton of code writing, and even then there was no guarantee it would work. We also looked at the other lighting systems available, but most were designed for office buildings with a set schedule of eight to five. They were incapable of dealing with the anomalies we encounter at the Center, but we were able to identify a solution that would provide the flexibility to adapt to changes without having to go to the building and making adjustments on-site."

That solution was from a company called Blue Ridge Technologies, formerly Lumisys.

### Automation Connection

"Even today, most lighting control systems are stand-alone with their own servers and protocols, and those that do claim BMS compatibility need a lot of infrastructure to make it work," says Dennis Swoboda, district manager for Blue Ridge Technologies. "The added infrastructure is in the form of separate proprietary networks, gateways, and a second front-end computer; all of which add to the cost and complexity of the system. With the Blue Ridge solution, none of that extra infrastructure is required, making it much easier.

"We designed our system specifically to be integrated with the Building Automations System," Swoboda adds. "In addition to incorporating Johnson Controls N2 protocol into our panels, we have also integrated the BACnet protocol, so our lighting controllers will work with any BMS controller that is BACnet MSTP compatible.

"It is all about BACnet," Swoboda explains. "We embraced BACnet when it first came out and designed our lighting control systems around it. We adopted the protocol earlier than other lighting control companies did, and when you install one of our panels, it is truly native BACnet. You can put it directly on the HVAC network and there is no requirement for any front-end software because you utilize the existing building management system."



The MIND facility was the Center's first experience installing a BMS controlled lighting system and not only did the installation go well, they met and exceeded the demands of Title 24.

"Since Blue Ridge offered a communication panel with our N2 protocol, and N2 is the native language our controllers speak, our BMS could seamlessly communicate with the lighting controls," Avakian says. "We put in these panels so that the BMS could schedule the lights, and we installed local override switches in the common areas where they could be turned on for a two-hour override if someone needed to use them after scheduled hours. The Center uses occupancy sensors inside offices because of a Title 24 energy code requirement, but for the larger areas, the BMS has control to conserve energy and ensure lights are not left on. It also controls the parking lot lights with light level sensors. Under Title 24, every building in our facilities had to have some kind of controlled lighting, and the Blue Ridge system put us way ahead of those requirements."

### Complex Needs

"Now our operators can schedule the lights on and off dependent on the activities in the building," Avakian states. "They can easily override programming when needed because the BMS is operated 24/7 and an operator can be reached at any time. So if someone has specialized lighting needs, they can easily be accommodated."

The next challenge for Johnson Controls came in 2004, and ended last year, with some new advantages that gave the Medical Center even tighter financial control over their lighting.

"The next project was the new Surgery and Emergency Services Pavilion," Avakian says. "The old one was undersized for our needs and no longer met California's strict earthquake codes. Therefore, the state gave the school two options: retrofit it or tear it down and build a new one. Since the Center was already cramped for space in the old one, they opted to build a new pavilion. It would be a four-story 470,000 sq ft facility housing emergency rooms, operating rooms, surgical special care units, cardiology, cafeteria, topology laboratories, radiology services, a burn unit, and office space. All of these would have their unique lighting needs, but our experience with the MIND complex gave us confidence we could handle them.

"But there was something new that we are considering putting in – smart meters that tie into the BMS and will allow us to track energy usage much more precisely. Everything could be tracked by individual ID/access cards – HVAC control, lighting control, and security. If you come in on the weekend, you can swipe your card and automatically turn on the lights headed to your office, the lights in your office, and the HVAC for your office. We will be seeing the lighting, security, and controls all tied together with the power



monitoring. Where the Center used to bill tenants by the square foot, now they can do it much more accurately using the BMS to track individual usage and bill the tenants for the true amount of energy they actually use.

"Not only will this be fairer to the tenants," Avakian says. "It will also enable the Center to precisely track energy usage and identify areas that are not performing as efficiently as they should. Then, they can correct the problem by repairs, retrofit, or replacement. So, they are not only saving significant money on their lighting and HVAC, they are accurately identifying areas that need immediate attention."

#### About the Author

Jack Sine is a freelance writer specializing in energy and HVAC marketplaces.

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