BACnet® Is Lifeline For Trauma Center


Generator sync gear.

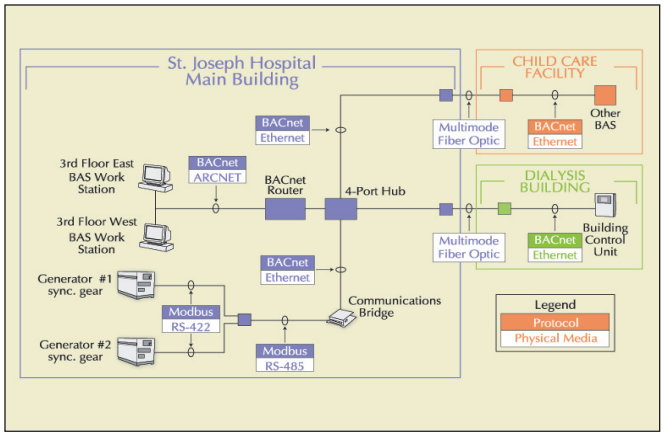
By Randy Amborn and **Carrie Eppelheimer**

As a Level II trauma center for central Wisconsin, and the site of more than 700 heart surgeries a year, Saint Joseph's Hospital epitomizes a 24/7 health-care environment. Electrical power is critical to medical technology essential for patient care. BACnet® provides a key link to manage emergency backup power. BACnet also ties a staff child care facility into the hospital's building automation system (BAS).

"I want a building automation system that's open-ended to talk to anything," says Dick Lange, facilities manager at Saint Joseph's in Marshfield, Wis. BACnet helps provide the connections Lange requires in the 1.3 million ft^2 (120 770 m^2) building. Named one of the top 100 U.S. cardiovascular teaching hospitals in 2002 and 2003, the hospital has more than 500 beds and is part of the Ministry Health Care network.

BACnet (along with other open protocol standards) plays a key role in maintaining the comfort and safety of staff and patients, controling utility costs, and complying with regulations such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). The JCAHO is an independent, not-for-profit organization that evaluates and accredits more than 15,000 U.S. health-care organizations and programs.

Backup power is a critical part of emergency preparedness in a hospital. BACnet links the building automation system to Woodward generator sync gear, which synchronizes the startup



At left, BACnet architecture for healthcare campus. At right, users control the system through a BACnet workstation.

sequence when city power fails. The hospital plant's Waukesha generators only provide the most critical electrical needs. So, the building automation software is programmed to shed less essential loads while maintaining power crucial to patient care and security.

Dick Lange and Trane are determining how BACnet can help the hospital staff operate their facilities with maximum productivity, aided with Lange's know-how and realism gained in 24 years with the hospital. "The ultimate goal would be for the BAS to monitor everything," says Lange, "but sometimes you can't get there." His approach is to focus on integrating energy management, and leave lighting, fire, nurse call, and blood systems as independently controlled or monitored-only subsystems.

At a nearby child care center provided for the staff, BACnet links the system with a BAS and rooftop units. The BACnet protocol enables a direct link with no gateway, accomplished over a fiberoptic connection between the center and main hospital two blocks away. Lange and his staff are able to monitor and troubleshoot the building from the primary BAS workstations in the hospital.

Another remote facility across town, which houses dialysis and therapy for outpatients, is also tied into the hospital BAS. This building uses controls from the supplier of the hospital BAS, so while no multivendor integration is involved, BACnet is still the system's native system-level communications protocol linking the facilities.

Health-care facilities face some specific challenges, which open building automation systems can help overcome. "Don't think for a minute building automation doesn't have an impact on health-care costs," said Lange, who manages an annual utility budget of more than $2 million.

Variable frequency drives are tied into the BAS via open standard protocol.

Saint Joseph's uses energy-efficient variable frequency drives (VFDs) for applications, including pump, fan, and cooling tower control. A number of these are tied into the BAS via open standard protocol.

Another example of a cost-saving strategy is using motion sensors tied to the BAS to control HVAC for an auditorium. Frequent, short-notice use made scheduling problematic for Lange's staff. Occupancy sensing provided an energy saving solution in which systems operate only when needed, without reducing comfort.

"In patient satisfaction surveys that we do, comfort complaints have never been an issue," notes Lange.

Lange's Trane building automation system also is linked to a range of specialized health-care applications such an isolation rooms, cryogenic pharmaceutical storage, and food service refrigeration for monitoring and, in some cases, control.

The open building automation system also provides data useful for regulatory compliance that hospitals are subject to, such as the Joint Commission and state Department of Natural Resources. Reports from the system help verify emissions for clean air and discharge limits.

Open systems and protocols are especially critical in the health-care/hospital market segment, where legacy systems, mission-critical operation, cost pressure and technology advances are hallmarks. "We're always building, always in flux," said Lange.

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