

Hospital Receives Healthy Dose of Fire Protection From Consolidated Gamewell-FCI System

Life safety is extremely important in hospital environments due to the large majority of occupants who may not be able to fend for themselves in an evacuation situation. This is especially true of large multiple-building campuses where the lives of hundreds of patients could be in jeopardy if a fire were to go unnoticed for even a small period of time.

St. Joseph's Hospital Health Center in Syracuse, New York is one of the area's largest health care providers. The downtown campus is comprised of a six-story facility, connected to eight other structures using either climate-controlled tunnels or overhead enclosed bridges.

This 140-year old institution has grown to occupy six city blocks. Other facilities contained within this complex are a four-story office and administration building; a ten-story garage and medical office building; an eight-story college of nursing facility, equipped with a six-story dorm and classrooms; a two-story special services facility; and a ten story medical office center.

Old Systems Laid to Rest

"Our fire alarm systems were made up of FCI, Mirtone, and Simplex equipment," said Matthew Auwae, St. Joseph's Manager of Building Services. "Each system was of various ages. Some components had become antiquated and no longer available on the market when service or modification was needed."

Considering the complex was protected by eight different fire alarm systems, hospital officials were eager to consolidate all using a single integrated fire alarm platform. "The numerous systems made maintenance difficult and costly," said John R. Urciuoli, President and CEO of ST&A (Syracuse Time & Alarm Co. Inc.) of Syracuse, New York. To make the systems operate satisfactorily, with the facility's growth over the last 20 years, has been a real challenge."

According to Urciuoli, every time there was an expansion project at the hospital, confusion among the systems grew. The only means of integration required ingenuity and on the spot engineering to comply with code requirements.

Looking ahead, the hospital was contemplating several more expansion projects. Given the current state of integrated systems, key personnel decided it was time to consolidate all systems into one.

New Solution Revives Hospital Protection

Working cooperatively with the hospital, ST&A, a Gamewell-FCI Engineered Systems Distributor, suggested the hospital look at an integrated fire alarm solution. The hospital hired an independent consultant, RobsonWoese, Inc. Consulting Engineers, to design a technically advanced, sole-source integrated system for the complex.

The consultant's main task was to design a horizontal evacuation plan that complies with current NFPA standards. Defining fire zones and smoke and fire barriers was the first step. Next was the conception of a voice alarm system that indicates fire 'zone' origins to all occupants while providing evacuation instructions to relevant areas.

The new design called for Gamewell-FCI's most versatile fire alarm platform. The 7100 NetSOLO™ fire alarm control integrated with the E3 Series® voice evacuation system completed the new network.

According to Mark Simpson, a Vice President with ST&A and NICET Level IV Certified Electrical Technician, "We had two custom cabinets built to house all the ASM-16's (addressable switch modules). Firefighter phones are installed throughout the complex and ring only to the pertinent command centers. The command centers are configurable to fit 40 of the ASM-16's. These 16-button modules have three colored LEDs associated with each button to provide feedback on the status of each button."

As one of the E3 Series' addressable modules, the ASM-16 is programmable via software. Each ASM-16 pushbutton switch can be utilized for an assort-



(continued on back page)



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ment of functions, including fire zone speaker circuit switch, firefighter phone switch, auxiliary control switch or any number of applications that pertain to system functionality, such as device reset.

“With the new system we installed, just the push of a button will take a zone out of operation. This allows hospital management to do whatever they need to with regard to maintenance or testing. No one can believe how easy it is now,” said Simpson.

The new system is made up of 54 nodes on a 100 percent fiber backbone. A great deal of planning was done, relative to conduit routes and firewall patching. The installation used CI (circuit integrity) cable in conduit to provide two-hour fire NAC (notification appliance circuit) survival with one terminal box in each fire zone. All wires are labeled, tagged and archived on CAD (computer-aided drawing) files. The result is an amazingly serviceable and expandable installation.

Technology Breakthroughs Expand System Welfare

The E3 Series' EVAC (emergency voice/alarm communication) capabilities delivered on one of the project's most important specifications. Its ability to provide custom announcements on a zone-by-zone, floor-by-floor basis assured hospital personnel of a more organized and safe evacuation during any number of emergency situations. “We can sync audio messages from multiple sources being outputted by multiple amps and still maintain sync across the network,” states Aldrich, Gamewell-FCI Project Engineer. “We have messages stored in nodes near each area they protect so if one or two areas go into alarm, the messages that those occupants hear come from the nearest network node.”

Another breakthrough in the design of today's fire alarm systems is survivability. A distributed architecture design allows the E3 Series to continue operating when portions of the network are severed from the head-end during a fire or other disaster incident. “I call this a self-correcting, fault-tolerant system, because if part of the network is severed in one or more places, each fragment will still perform according to information contained in a node within that area,” said Aldrich. “And then, once the problem is corrected and the network restored, the system will synchronize within as little as 4 seconds.”

The use of network technology to transport signals from fire alarm control center to each NGA (network graphic annunciator) was another important feature to hospital officials.

The E3 Series' NGA offers better command and control due to its user-friendly, intuitive touch screen human interface, which is as easy to use as a common ATM. In instances where the operator may not be familiar with system operation, the NGA provides immediate communications and easy-to-follow instructions through the use of layered menu screens.

High-Speed, Low-Cost Treatment

The E3 Series system features a high-speed data network called ARCnet™ over which control and sensor data and audio communication travels. With ARCnet, each pair of wires can be isolated on a node-to-node basis, facilitating system survivability during catastrophic events.

Behind the St. Joseph's Hospital Health Center's E3 Series' ARCnet data connection are intelligent SLC (signaling line circuit) controller boards, containing a 32-bit “reduced instruction set computer” processor. The processors boost overall reliability during day-to-day use.

Each intelligent interface board provides two SLCs. Each SLC has a potential capacity of 159 addressable detectors and 159 addressable modules. In addition, each dual-SLC processor board contains two NACs, a local energy city box output, auxiliary relay functions and an auxiliary power supply output.

To ensure the system continues operating in a code-compliant manner, the same intelligent dual-SLC/NAC processor board offers a number of relay outputs, such as alarm, supervisory and system trouble.

The E3 Series is the first of its kind to offer complete integration using just a twisted-pair metallic wires or one dual fiber-optic cable. By minimizing the number of wires installed by ST&A, the new system reduced the overall cost of on-site labor. Moreover, the installation's impact on the physical appearance of buildings throughout the complex was minimal. “There was extensive work involved with the selection of this system,” said Auwae. “And if we had to do it all over again, we'd pick the same company and the same system.”



E3 Series® Fire Alarm System

Part No. 9020-60315 1007 2K