

Université Laval Receives High Marks in Fire Protection

Network Offers Campus-Wide System Control and Preparation for Future Emergency Communications Systems

Established in 1852 in the City of Quebec, Canada, Université Laval was the first French-speaking University in North America. In 1950, construction began on its main campus in Sainte-Foy, which was then on the outskirts of the city. It has grown into what is now referred to as a city within a city.

The university's statistics are impressive: the 300-acre campus has over 32 buildings, which are linked by 10 kilometers of underground pedestrian and service tunnels designed to cope with harsh Canadian winters. The Université Laval hosts a sizeable community of approximately 44,000 students and 8,000 employees within an urban/rural setting of dense woods, grasslands and sports fields covering more than half the campus.

Unified Solution

A few years ago, the University's Board of Governors decided to allocate funds for a new state-of-the-art, code-compliant fire protection network spanning all 32 buildings campus-wide. The old fire alarm systems were an aging conglomeration of different makes and models. Moving forward, the University sought bids for a standardized system from a single supplier for a true proprietary fire alarm solution. The ONYX Series® addressable fire protection system manufactured by NOTIFIER® by Honeywell won the bid, which involved replacing every alarm panel, detector and supervisory device.

"I'm from the insurance industry and I've never seen a system quite as big as this. It has 35 panels and more than 20,000 supervisory and detection devices," says Pierre Paquin, Fire Prevention Coordinator for Université Laval.

The old systems presented a series of faults on a regular basis that could have resulted in serious problems. Moreover, the mixture of equipment throughout the campus made it difficult for the university's security personnel to deal with all of the individual systems. "Each time someone new joined the staff they had to be trained in how to use all of the different panels. That's one of the main reasons we decided to standardize," says Paquin.

Network Management

Each building is protected by its own stand-alone fire alarm control panel, each functioning as a node on the network. The campus' network of 35 panels is a combination of NOTIFIER AM-2020 and ONYX Series NFS-3030 panels connected via 42 kilometers (26 miles) of multi-mode fiber optic cable run in conduit installed throughout the school's network of tunnels.



"We have a building about 50 miles away in the Laurentians, in the woods, says Paquin, "That building is also part of our network and is linked in by IT over a commercial phone line."

Each node on the system acts as a repeater to reshape and regenerate data signals. Therefore any damage incurred by one or more nodes, due to fire, tampering, etc., will not effect operations and communication among the surviving nodes.

For added redundancy, the university installed Style 7 (DCLC) circuits in which the cable carrying all incoming and outgoing signals are looped through the system in separate conduits. According to Paquin, this type of integration helps to ensure a single line break does not interrupt the transmission of alarm communications.

The University's new fire alarm performs as one solitary system supported by NOTI-FIRE-NET™, a high-speed (312,500 BPS) data communications network. NOTI-FIRE-NET allows each control panel to maintain its own area of protection while providing monitoring and control capabilities for all other network nodes.

Two NCSs (Network Control Stations), one at the school's main 911 command center and another at an emergency back-up location, provide immediate monitoring and control of the entire fire alarm network. The NCS is a rack mounted computer customized with detailed, full-color graphics of the University campus down to individual building floor plans.

CASE STUDY



During an event, the NCS automatically zeroes-in on the area displaying an alarm while the cursor changes to indicate any on-screen alarm activity. With an operating environment similar to Windows®, authorized personnel can easily navigate through the screens using simple mouse-clicks.

The NCS houses an unlimited history of system information, including operator logins, events and response data, all stamped with time and date. A hard copy of each event is also generated by a network printer.

Ease of system maintenance is another NCS highlight. "One of the uses of the NCS is that it allows us to individually deactivate any detectors or supervisory devices, for renovation or testing. We can even deactivate the alarms in an entire building when we perform required testing on fire pumps or sprinkler systems," says Paquin.

As a back-up to the NCS, a remote annunciator is also connected to the network. The Network Control Annunciator features an LCD display and operator keypad offering the University's security and facilities staff an alternative means of monitoring and control functions for the entire network.

High Standards

Local building codes and standards set by the ULC (Underwriters Laboratories of Canada) dictated the majority of the University's fire alarm design. Acting as its own AHJ (Authority Having Jurisdiction), the Université Laval decided to exceed these requirements in certain areas.

For example, many of the classrooms have now been wired for students to plug-in laptops, which raised concern that this would increase the probability of electrical fires. Although code only requires rate-of-rise heat detectors in classrooms, the University decided to install the more expensive combination heat and smoke detectors to provide more thorough detection and faster response.

Although detectors are not required in most locations protected by sprinklers, the University decided to install detectors anyway, considering the detectors would respond more quickly than the sprinklers. These added precautions not only increased the level of protection, but also enabled the school to receive more favorable terms from its insurance carrier.

Test and Tune-Up

Paquin indicates the insurance industry typically pays more attention to sprinklering and not detectors because they are usually poorly maintained. To assist in the regular maintenance and testing of detectors, the school's ONYX Series system's detectors and supervisory devices are simple plug-in appliances with built-in dials for easy addressability – no software interventions are necessary. The University emphasizes that all smoke detectors are tested annually using the prescribed methods for this process.

Protection Evolution

The Université Laval soon plans to migrate from the NCS to NOTIFIER's latest graphic workstation, ONYXWorks™. This state-of-the-art desktop system will provide the school's security and facilities personnel with a single point of control for the entire fire alarm network as well as security, access control and video systems. ONYXWorks can also support live voice paging for mass notification—a key reason for this upgrade.

To upgrade its fire alarm network to also serve as an emergency communications system, the University will add DVC (Digital Voice Command) to each NFS-3030 control panel. The DVC can deliver prerecorded, event-driven messages as well as live-voice paging by microphone to specific areas or the entire campus.

The University is part of the International Association of Campus Law Enforcement Administrators (IACLEA). "Although our crime rate in Quebec City is virtually nil, we know something could happen. There could be dangerous snowstorms, hazardous waste spills and campus-wide lockdowns. We also have to consider that we have students and faculty from over 90 different countries around the world. An emergency communications system would make a vital contribution to our life safety," Paquin declares.

Today the Université Laval understands the significance of a standardized fire alarm system that is easy to monitor and maintain. However the ultimate reward is the fast response and advanced protection provided to all whom walk the halls of this historic school.

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