*Case Study*

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# LEXUS DEALER PURSUES FIRE PROTECTION PERFECTION

Lexus of North Miami is a Florida-based, high-end auto retailer offering an assortment of elaborate amenities intended to support the lifestyle of the dealership's patrons. Built and owned by the Craig Zinn Automotive Group of Hollywood, Florida, the five-story, 1.2 million square-foot facility has an estimated construction value of more than $70 million.

To protect this massive complex, its occupants and costly inventory, Gamewell-FCI Engineered Systems Distributor, LifeSafety Management Inc. of Greenacres, Florida, was awarded the job of installing a fully-integrated fire alarm and emergency voice/alarm communication (EVAC) system.

"I'm told it's the largest Lexus dealership outside of Japan," says Nick Chaplin, director of sales and marketing with Life Safety Management. "There are thousands of high-end Lexus automobiles and fixtures to protect, including special service equipment stored in 116 service bays, as well as retail areas, offices, a spa and gym, and a business center."

## Easy and Cost-Conscious

At the center of the dealership's fire alarm protection is the E3 Series® Expandable Emergency Evacuation system, manufactured by Gamewell-FCI. Although not an initial prerequisite, ease-of-use became a desirable feature in the eyes of the general contractor and end user.

"The system itself is self explanatory and extremely user-friendly", says Doug Poff, general superintendent with Stiles Construction of Fort Lauderdale.

Tom Riley, facilities manager for the Craig Zinn Automotive Group, had the same comments to share about the system and service, “I like how easy it is to locate a device that is in trouble due to the way the (fire alarm control) panel is set up. And the response from the monitoring company (LifeSafety Management) is quick.”

With the GC keeping a close eye on time and monetary expenditures, any cost-saving measures were highly favored. While many current-day systems require installation of four or more conductors per signaling line circuit (SLC), the E3 Series requires only a single pair of wires. A single unshielded, twisted pair (UTP) of wires delivers addressability (location and identification), detection and supervision, as well as operating power for each sensor throughout the facility’s massive system.

**Sufficient, Synchronized Coverage**

Synchronization of the facility’s more than 600 horn and strobe devices throughout the complex was a major code issue that LifeSafety Management’s team had to overcome. “Due to the shear size of the Lexus facility, we had to make sure all of the NAC (notification appliance circuit) devices flashed at the same time,” says Chaplin.

“The challenge was synchronization and the creation of enough power to operate all of them at the same time.” To synchronize a large number of visual devices placed in an expansive, open facility and provide adequate power, the E3 Series’ SLCs supply supervisory control to an ample number of NAC boosters to operate the visual strobes. By adding two more conductors for the NAC output control, each NAC A/V device can be pulsed in unison per National Fire Protection Association (NFPA) code.

**Fast Talker**

The backbone of the auto dealership’s fire protection system employs a highspeed network communication protocol for fast data transfers. This protocol, called ARCnet, is the means by which intelligent, peer-to-peer connectivity occurs between the main alarm panel and the controllers, annunciators and other devices in the system.

The E3 Series’ ARCnet will support up to 64 nodes per fire alarm control panel on a UTP conductor or a single fiber-optic pair cable. To create a network capable of

protecting a multi-building campus, multiple E3 Series control panels can be interconnected, via UTP or fiber.

The metallic cable topology used in LifeSafety Management's fire protection system design is comparable to the traditional network technology of a common LAN (local area network), but with two significant distinctions:

First, the UTP that interconnects the controllers, amplifiers, annunciators and other core devices can run up to 3,000 feet — ten times the capacity of a typical computer network.

Second, the ARCnet communication protocol employed by the E3 Series system involves a high degree of redundancy and interoperability, which allows digital signals to be regenerated at each node, thus providing a high degree of survivability. This redundancy also enables E3 Series systems' transmissions to travel longer distances, therefore reducing the number of repeaters needed in the total system.

In terms of speed, many current-day fire alarm systems operate at 9.6 Kbaud or less. The data rate of the ARCnet backbone is 625 Kbaud, facilitating fast emergency response.

To ensure timely detection in a complex this size, high-speed polling technology is required. The E3 Series' Velociti™ polling format monitors the dealership's more than 200 addressable initiating devices, comprised mostly of photoelectric spot- and duct-type smoke detectors manufactured by System Sensor. Velociti polling interrogates devices in groups of ten, minimizing the polling time for the total number of devices on a loop to less than two seconds.

Clear, Constant Communications The system's voice gateway can deploy live voice paging or a variety of 16 pre-recorded messages to individual floors or locations throughout the Lexus of North Miami facility. Live voice announcing can be performed via the complex's two microphone assemblies strategically placed in the front entrance lobby and at the main fire alarm control panel.

According to Riley, the intelligibility of communications is noteworthy. "It compares well to other systems I've seen. All messages are clear and easy to understand."

When designing the system, LifeSafety Management gave careful consideration to the differences in the physical scale of departments and levels of ambient noise within

the facility (think garage versus office area). “I don’t think I’ve ever seen such a wide range of A/V devices on any single job,” says Chaplin.

Fire alarm systems generally utilize two types of amplification: decentralized and bulk. To enhance the survivability of system communications, Chaplin’s team utilized amplifiers that allow for a decentralized voice command structure. In the event a portion of the system is damaged, the distribution of all EVAC functions throughout the facility helps to ensure ongoing delivery of communications.

**Integrated Protection**

The fire alarm control panel installed by LifeSafety Management, combined with two Command Voice Gateway controllers, is capable of integrating fire detection and EVAC along with other facility subsystems. The latter includes door control for smoke spread prevention; the control of heating, ventilation and air conditioning (HVAC) systems; elevator recall and damper control. The system’s flexible, modular design and EVAC capabilities also pave the way for emergency communications (a.k.a. mass notification) functions in the future.

Integration became a critical component when designing a fire protection solution around the dealership’s unique three-level tire carousel – a major area of concern identified by the Authority Having Jurisdiction.

“This is an enclosed sprinkled concrete shaft with access openings on each level. These openings require fire doors that automatically close when there’s a fire, providing air-tight containment,” says Nick Scolaro, fire systems project manager for LifeSafety Management. “Upon fire initiation within and just outside the shaft, the fire door controller is programmed to release these doors within six to eight seconds.”

Automatic door closure in the tire carousel prevents smoke spread throughout the complex. The same method of integration was used where door holder closers and traditional magnetic door holders maintain fire doors in an open position throughout the complex.

In South Florida, sprinkler systems are typically “wet” in type, meaning water is present in the pipes at all times. The fire alarm system supervises all sprinkler tamper switches and water-flow devices to detect when water is turned on/off or is flowing

through the system in the event of sprinkler head activation. A fire pump is another integral part of the dealership's sprinkler system, also supervised by the fire alarm.

The myriad of fire protection challenges this expansive, multi-purpose facility poses can offer a lesson for practically any application. The Gamewell-FCI E3 Series' advanced capabilities delivers a scalable fire protection solution that is easy to operate and economically advantageous for new construction and retrofit applications of any size.

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