Project Profile GM Powertrain Plant



GENERAL MOTORS ENGINE TESTING FACILITIES IN INDIANAPOLIS, IN

Recently General Motors (GM) needed to expand their engine testing facilities in Indianapolis, Indiana. To house an additional nine test cells, GM made use of an adjacent 45,000 square-foot facility, formerly a tool shop. Safety is an overriding priority for GM. In keeping with this precedent, GM Indianapolis decided to approach their fire protection needs using the latest network technology. Instead of specifying individual systems for fire alarm, engine test cell fire suppression, hazardous gas detection, medical emergencies, digital voice command (DVC) and emergency weather monitoring, the decision was made to tie everything together into one central network.

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The GM plant expects efficiencies and streamlined notification with its new fire protection and emergency communications network. Bob Downey, GM's General Supervisor of Engineering Lab Support, explains, "The new networked system will enhance GM's ability to monitor the conditions and status of the facility, which is consistent with the rest of the safety culture at our facility."

SYSTEM CAPABILITIES

A NOTIFIER NFS-3030 fire alarm panel serves as the central control unit of the facility's fire and emergency notification network. This master control is housed inside a sealed, NEMA type 12 enclosure measuring 7 feet tall and 6 feet wide.

"You could literally spray a hose on the cabinet and nothing would happen to the equipment," reports Matt Euson, President, 3S Incorporated, Harrison, Ohio. A fire protection and security systems integrator, Euson's company designed and built the entire system for GM.

Throughout the building, blue, wall-mounted LEDs indicate the location of medical emergency pushbuttons. When a button is depressed because of an emergency, blue strobe lights actuate throughout the building, and a pre-programmed voice announcement is made over the network's speakers, indicating a medical emergency and its location. At the same time, the system automatically summons an ambulance via a telephone call to a third-party central monitoring station.

The test cells are equipped with a water mist system, activated by flame and heat detection, that can be discharged immediately. Test cells are also equipped with an automatic sprinkler system. Its flow and tamper switches are monitored by the NOTIFIER NFS-3030 fire alarm control panel.

Gasoline and diesel engines are operated within some of the test cells. To protect operators from abnormal emissions, hazardous gas detection systems from Honeywell Analytics are another integral part of the facility's life safety systems network. Used to sense Carbon Monoxide (CO), gaseous hydrocarbons and refrigerants, these detectors are installed on the mezzanine level of the two-story facility as well as in the test cells and control rooms. The fire protection system also monitors critical exhaust ventilation systems to ensure they remain in operation.

An additional system capability is emergency weather alerts. The weather monitoring is outsourced, and when the vendor spots a major weather event within seven miles of the facility, they simply call a number which triggers the main control panel to declare a weather emergency. Amber strobe lights will be activated while a digitally recorded voice announcement goes through the system's speakers, telling plant personnel to take shelter.

Considering the GM plant's network includes an array of speakers set up throughout the facility, authorized users can also utilize the DVC in a public address capacity. Using fiber optic cables, which are almost impervious to damage caused by power surges, lightening strikes and other weather-related events, Euson's 3S team was able to extend the network's DVC, weather system and emergency medical stations to two other buildings on the GM campus.

With the system being fully automated, multiple workstations can be tied into the network, allowing monitoring and control capabilities at numerous points. The GM Indianapolis plant has three NOTIFIER ONYXWorks graphic displays – in the mezzanine, lobby and break room – that report the entire network's status and all events.

The ONYXWorks systems also include monitored point-of-use bypass switches to be used when a system requires maintenance. Other instances that require the fire suppression to be temporarily inhibited, such as when welding needs to be done in one of the test cells, can be easily accommodated through an ONYXWorks workstation.

WHY CENTRALIZE?

Although GM could have shopped around and purchased different equipment from assorted manufacturers, the resulting maintenance requirements and expandability options would have added quite a layer of complexity.

"I can certainly go out and put together standalone systems," acknowledges Downey, "but let's say I want to add voice annunciation. Then, I have to put a set of speakers in for each system and that becomes expensive and complicated."

"Any time you can design a central system, that's the best way to go," agrees Euson. "If you have several different systems, the interconnection is a nightmare. The centralized platform is just great for delivering a uniform message and I think that's what this site was really going for. Also, it would be incredibly simple to expand the system as it's just a fiber optic connection to another node."

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