

Applications Case Study

Plant-wide LEL Monitor for VCM

The Challenge

The existing combustible gas detection system at a large Houston-based PVC manufacturer was outdated and unreliable. The customer could not obtain support or replacement components. The existing system was tied directly into the plant emergency deluge system through a series of relays, and the customer wanted to minimize changes to the overall system. In addition, there were several detectors for a series of spherical tanks that needed to be mounted at some distance to the control room.



The Solution

As one of the primary costs of replacement would be wiring, the customer chose to reuse the existing sensor wiring and junction boxes but replace the sensors and controllers with GDS Corp equipment.

For sensors, the customer chose a GDS Corp 10-0247-3W sensor head with integrated catalytic bead sensor and three-wire bridge-style output. Unlike most combustible applications, the target gas in this case was Vinyl Chloride monomers, or VCM. VCM gas is both toxic and combustible and contains components that can affect the response of catalytic bead sensors. GDS Corp developed a specialized calibration procedure that allowed the use of methane in place of VCM, eliminating the need to expose employees to VCM and extending the life of the catalytic bead sensors.



In order to tie the new sensors into the existing deluge system, GDS Corp and the customer co-designed a custom cabinet with twelve C1 *Protector* controllers, sensor input boards, channel relay output boards and interposing relays that eventually controlled the field-mounted deluge valves. As a result of the modular design of the C1, the input modules, output modules and display could be mounted separately, simplifying wiring and construction.

The installation included a remote loading facility with single C1 controller and eight combustible gas sensors. In place of direct wiring, the customer installed a fixed wireless system using industry standard MODBUS protocol to communicate with the company DCS. Originally configured for 900Mhz, the link was eventually replaced with 2.4GHz radios as a result of ongoing interference from the many existing 900Mhz radio modems present in the area.

