IT Augments OT in Early Warning System Solution

The Client: Calif. Dept. of Public Health's Environmental Health Laboratory

The California Department of Public Health's Environmental Health Laboratory (EHL) is located on the department's Richmond, California campus. EHL is responsible for analyzing environmental and biological samples for the presence and quantities of toxic substances such as pesticides and lead, physical agents such as asbestos, and biologically derived airborne contaminants such as molds.

The Challenge

Sandwiched between the freeway and an industrial complex of refineries and factories, the Richmond lab is located within 200 yards of a sizable cold storage facility and the potential for a hazardous release of anhydrous ammonia refrigerant into the air. The lab operates highly sensitive ammonia and other gaseous analyzers, and a weather station on the roof and other locations around the campus. Their technology was incapable of real-time identification and notification of hazardous releases of refrigerant into the air. At best, historical data is all the lab had to work with.

If toxic material is released into the air, the EHL is responsible for ensuring that Facilities Management Section (FMS) personnel have the information they need to respond appropriately. Emergency responses can vary according to the specific situation; for example, whether the source is from a truck rolling over on the freeway, or from an incident at the neighboring industrial complex and refineries.

Using the weather station to detect wind speed and direction in combination with the air-quality analyzer, enunciation sensors (flashing lights) would ideally notify FMS the instant there's a hazardous release of refrigerant. Unfortunately, these systems were not integrated into one unified system.

Without a warning system, the FMS had no way of immediately knowing which of the building's air handlers to shut down in an emergency, putting the health of more than 1350 staff members at risk.

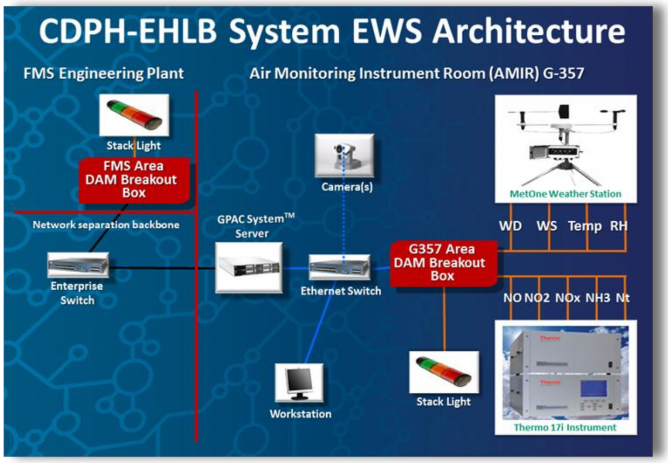
Integrating the functionalities of the weather station and analytical equipment with an IT system that could send out alerts in real-time provides FMS personal the response time they need to save lives.

The Smart Connect Solution

The SmartConnect Gateway™ enabled the integration of the different signals from the weather equipment and air quality analyzers out-of-the-box. The local area networked sensor system is a stand-alone data acquisition and storage solution that has conditional triggering capabilities for monitoring wind direction and the rate of change in ambient ammonia levels. A leak is detected when ambient levels transcend predetermined criteria, activating warning lights and sending a text message alert the FMS.

Simple Implementation

EHL Labs asked us to integrate sensor signals from their air quality analytical equipment and weather station. The SmartConnect Gateway™ software was installed on a server, the FMS electricians installed and connected the wiring, and the result was an innovative Early Warning system (EWS) solution. The SmartConnect Gateway™ made it easy to integrate existing systems, sub-units and various environmental sensors.



The commissioned EWS integrated a Model 17i Chemiluminescence NH3 Analyzer with a MetOne Weather Station and provides browser-based UI access to data, from anywhere, anytime. This integrated early warning solution is representative of both the promise and value of IoT technology and the value realized by true IT and OT convergence. The entire system can be controlled via the internet to retrieve data, set trigger alarms or provide scheduled data logging.

Effective Results

The SmartConnect Gateway™ immediately delivered equipment and subsystems integration at a very low cost of ownership, and provided instant web-based visibility to the sensors, enabling remote reconfiguration with corresponding flexibility and scalability.

Richmond Labs now pro-actively guards against the potential hazard of ammonia discharges and leaks.

- The Facilities Management personnel gained the ability to respond within seconds of an ammonia release.
- The health over 1350 staff are now safeguarded on campus.
- With text messaging delivering early warning communications, FMS staff are no longer tied to sitting in the control room; allowing for one less staff per shift.