



## **PERSONNEL & EQUIPMENT PROTECTION**

### **FOR CEMS SHELTERS**

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Based on EPA regulations many Industries are required to provide Continuous Emission Monitoring Systems (CEMS). The CEMS are considered critical equipment and continuously sample stack gas to ensure compliance with the various emission limits listed in the facility's Title V Air Permit. Many CEMS enclosures are pre-fabricated, self-contained shelters installed near the monitored process to perform their function, typically without considering equipment or personnel protection.

#### **EXISTING RISKS TO PERSONNEL:**

- By design, CEMS units analyze stack gases with the use of various gases, analytical and electrical equipment, all within an enclosed shelter.
- Nitrogen and other inert gases are used for instrumentation and analyzers, which can leak within the enclosure and displace oxygen, making the space hazardous to personnel.
- Toxic gas leaks, such as hydrogen sulfide and other gasses, emitted from the process, pose additional threats to personnel working inside.
- Combustible gas threats are present due to petroleum vapors emitted from process units, methane or hydrogen used for calibration, and carrier-gas cylinders which all are capable of leakage. Not only do these pose a fire threat, but are also an explosion threat with an ignition source.
- Test and monitoring equipment used in the CEMS process have inherent heat producing characteristics for a fire source. And any electrical equipment failures can produce a fire giving off toxic gases and creating increased safety concerns with the presence of combustible gas cylinders.

Based on the recognition of the CEMS potential hazards, Electric Scientific has created a set of scalable options to deal with them. Protection of personnel to the unseen presence of gases, fire detection at the incipient stage, and automatic fire suppression that is safe for your personnel and equipment.

### **PROVEN SOLUTIONS TO THE RISKS:**

- The CEMS process introduces multiple gases that can create various hazards which can be sensed with Multiple Gas Monitoring Sensors. Various gas alarm levels and control functions can be incorporated, such as, personnel notification, ventilation control, process shutdown, remote signaling and other user defined actions.
- Early Warning Air Sampling Smoke Detection Technology. Air sampling smoke detection senses a fire at its incipient stages, with the goal of providing a warning as early as possible before an actual fire event. Various smoke alarm levels can be programmed to control functions such as personnel notification, process shutdown, remote signaling, automatic fire suppression and other user defined actions.
- Automatic Fire Suppression. Incorporating the Air Sampling Smoke Detection with a fire control panel and possible other fire detection devices to automatically initiate release of a clean agent gas to suppress the fire. Various clean agent gases are available that suppress the fire immediately and are safe to personnel and assets. The fire suppression system would also incorporate personnel notification, ventilation control, process shutdown, remote signaling and other user defined actions.
- The above mentioned solutions can be incorporated into an intelligent fire control system to provide the user with specific gas, smoke and fire information locally, as well as, to a central control room. There are many benefits that an intelligent system provides, as well as future flexibility.

CEMS shelters do pose various risks that personnel can enter without warning, these solutions offer comprehensive safety improvements. The process integrity has much less risk with the fire detection and suppression options outlined. These solutions along with a good emergency response plan will ensure your safety and business continuity. Electric Scientific Company works closely with their customers to create a safe environment for both their personnel and assets.