

Boiler rooms must be monitored for the critical hazards of combustible and toxic gas conditions. The key gases of concern are Combustible gases and Carbon Monoxide.

As boilers have been modernized to burn natural gas or a combination of fuels that are less expensive and more flexible than coal and oil there are significant risks of leaks occurring in the gas plumbing and also from the burners at the front of the boiler. Such leaks create the hazardous condition of a potential explosion. Fixed point combustible gas sensor modules are used to monitor boiler fronts and associated natural gas supply lines. The gas sensor modules are connected to controllers that provide relays to enable activation of visual and audible alarms for warning conditions and for boiler shutdown at emergency levels. Typical set points are 40% LEL for warning and 60% LEL for emergency.



While natural gas can cause explosive conditions, an additional hazard can occur due to the production and leakage of Carbon Monoxide (CO) resulting from incomplete combustion. Incomplete combustion occurs when there is not enough oxygen mixed with the fuel. All boilers have the potential to produce CO in varying concentrations. The danger can result from improperly vented boilers or malfunctioning boiler controls. Leakage of CO, a deadly gas, can cause a danger to occupants of a boiler room. CO is inhaled in the lungs and bonds with hemoglobin to form carboxyhemoglobin, limiting the ability of the blood to carry oxygen leading to unconsciousness, brain damage or death. OSHA requirements state that the average exposure over an eight hour work day cannot exceed 50 PPM. Levels above 400 PPM can be lethal in less than three hours. Fixed point toxic gas sensor modules are used to monitor for CO leaks in boiler rooms. The sensor modules can be connected to the same controllers used for combustible gas creating a complete hazard detection system.

In large installations which represent the highest potential for hazardous conditions, it is necessary to utilize plant-wide monitoring systems that provide constant monitoring and data collection even when humans are not present. Personal gas monitors cannot detect build-up of combustible gases in a non-occupied area that could cause a hazard to the facility.

The [Sentry Gas Detection System](#) is designed for monitoring these hazardous conditions. The system provides the necessary information efficiently and in a comprehensive manner so that operators can quickly make decisions to protect the plant and personnel. Sentry's unique data communications capabilities enable users to deliver important hazardous gas information to operators, managers and safety authorities who need to make the decisions to protect the plant and the personnel.

Where the possibility of combustible gas exists, it is also important to monitor for flames that could ignite that gas. Sierra Monitor [Flame Detectors](#) are designed to provide rapid notification of the existence of flame, yet have extensive false alarm avoidance algorithms to prevent costly false alarms.

Where extensive multipoint monitoring is not required [Analog Gas Sensor Modules](#) or lower function Gas Alarm Monitors can be applied.

The [FieldServer Gateway](#) provides a powerful interface for safety devices, process equipment and facility controls so that these various individual systems and devices can communicate to the centralized control systems or building automation systems in the buildings operating on BACnet, LonWorks, Modbus, ControlNet, EtherNet/IP or other protocols.