

ONE-STOP TESTING AND GLOBAL CERTIFICATION OF GAS DETECTION SYSTEMS

Gas detection technology is widely used in industry to protect facilities, processes and personnel from unexpected leaks and discharges of combustible or potentially harmful or toxic gases and vapors. Gas detectors can trigger alarms, record events, provide time for intervention or evacuation, activate ventilation, or even release protection systems to suppress ignition if a gas cloud is forming.

Fixed point and open path (line of sight) gas detection systems are typically used by oil, gas, power generation, chemical process, and waste facilities to create layered protection. Gas detection technologies include catalytic or electrocatalytic, electrochemical cell, solid state sensors, ultraviolet or infrared (IR) detectors.

Fixed point detectors are typically used to protect selected, high risk areas and may be deployed in multiples or in a grid pattern. This type of detector may also be deployed in handheld variations for spot checking or use by crews entering high risk zones. Open path or line of sight detectors—IR, laser, ultraviolet—are most often used to monitor open spaces above rows of valves, tanks, or pipelines.

When monitoring for combustible gases, detector measurements are referenced to the target gas's lower flammable limit or LFL. This is the minimum concentration of gas needed to burn in ambient air. This number is expressed in a percent by volume. For example, when the ambient air is at least 5% methane, a spark could cause an ignition. The LFL varies depending on the gas. For instance, propane has an LFL of 2.1% while ammonia is 15%.

Gas detectors used to monitor toxic gases or vapors must measure gas concentrations at very low levels, usually parts per million (ppm). There are many different units of measure and ranges because exposure levels (threshold limit values) vary depending on the gas. In addition, many gases are both toxic and combustible. Ammonia, for instance, has a toxic level that is far below its LFL and therefore a combustible gas detector can never be used as a toxic gas detector.

Third-party certification is critical

It is critically important to choose a gas detection system that has been certified by a laboratory with global recognition by regulatory authorities. When it comes to important safety and property protection systems such as gas detectors, not all certification organizations are created equally.

FM Approvals, for instance, has been evaluating products and systems for nearly 135 years. As a globally recognized testing and certification organization, FM Approvals has extensive resources involved in standards development, research, committee work and testing and certification of Hazardous Location Products such as Motors, Submersible Pumps, Mixers, Actuators, Paint Robots, Sensors, and Gas Detection Products.

FM Approvals is recognized globally as a leader in gas detector certifications by such organizations as Occupation Health & Safety Administration (OSHA), Standards Council of Canada (SCC), Irish National Accreditation Board (INAB), United Kingdom Accreditation Service (UKAS), International Electrotechnical Commission System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEx System) and United Arab Emirates Ministry of Interior Civil Defense G.H.Q.

For over 40 years, FM Approvals has mandated electrical safety and performance testing for all types of gas detection (i.e., combustible,



Approval Standards Spotlight

Gas Detection Systems

Approval Standard 6320, Combustible Gas Detectors

ANSI/FM 6325, Performance Requirements for Open Path Combustible Gas Detectors

Approval Standard 6340, Toxic Gas and Oxygen Depletion Detectors



toxics, and oxygen depletion) as a requirement to earn the FM Diamond. Until recently, FM Approvals was the only certification organization in the world to do this. In addition to validating that the gas detection equipment will not present a shock, fire or explosion risk, it is also imperative that the system detects the gas when it is called upon to do so. Because of this, many end users specify FM Approved gas detectors for their facilities.

FM Approvals recently opened the new Electrical Hazards and Gas Detection Laboratories in West Glocester, Rhode Island, USA. Designed specifically for testing industrial grade electrical and gas detection equipment with greater precision and certifying those

products which are explosionproof, flameproof and suitable for use in hazardous locations under extreme conditions. The new facility now allows the certification of gas detector systems for 47 gases. The test gases can be classified as 20 toxic-only gases, 10 combustible-only gases and 17 gases which are classified as both toxic and combustible.

FM Approvals helps manufacturers worldwide save time and costs by providing certification to Approval Standards as well as ANSI/ISA, CAN/CSA, EN, ATEX, and IEC standards. The new laboratory more than doubles FM Approvals' gas detection testing capacity and enables the testing of a far greater range of combustible and toxic gases.

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