



**4 CRITICAL LAYERS
OF FLAMMABLE
FIXED GAS
DETECTION**

Honeywell

Flammable gas leaks continue to pose a real threat to workers and assets across the process industry. Gas and flame detection provide an early warning against this risk. But no single detection technology alone is 100 percent effective, which is where a layered approach comes in. By integrating the following four layers of protection, you can minimize the risk of flammable gas leaks going undetected.

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LAYER 1: ACTIVE LISTENER

Detecting a gas leak early is key to preventing major disruption to plant operations. This is where ultrasonic gas detection technology is superior. This technology can 'hear' the ultrasounds emitted by escaping gas at the speed of sound. Even a small and low-pressure leak within a 20 m range* can be identified, buying you critical time to respond.

However, ultrasonic detection alone isn't enough. Only pressurized gas can cause an ultrasonic detector to activate, meaning non-pressurized leaks will never be heard. Interference from other ultrasonic noise sources present in the application can be louder than a small leak. Finally, ultrasonic gas leak detection will alert you to a leak but won't provide any indication of the gas type or concentration.



LAYER 2: YOUR PATH TO SAFETY

Open path infrared (IR) detection offers an extra layer of protection against flammable gases that may not have been heard by the ultrasonic layer. It can detect flammable hydrocarbons up to a 330 meter range, even at low concentrations, greatly increasing the chances of finding a leak. Unlike ultrasonic detection, it also provides critical data on threat levels based on gas concentration/size, enabling you to make informed decisions.

But even open path IR detection isn't a one-size-fits-all solution. Since the gas must physically pass between the transmitter/receiver pair to activate an alarm, gas leaks may go undetected under windy conditions. Open path IR is also unsuitable for confined spaces.



LAYER 3: POINT TO THE RISK

Point IR detection is often the basic option when it comes to flammable gas monitoring. Unlike open path IR, it can be deployed in small areas and confined spaces, especially near potential leak sources such as valves, flanges, and pumps, offering a basic layer of protection. A key advantage of deploying point detectors is that they measure actual gas concentrations at a point in space and time. By installing multiple devices, you can gain an accurate map of a gas release event.

Similar to ultrasonic and open path IR detection, point IR detection has its limitations, which is why it should be a part of a layered approach. Its main downsides are its limited range and the fact that the gas may never reach the sensor in windy conditions like open path IR.



LAYER 4: TAME THE FLAME

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Flame detection is the final, critical layer of protection when working around flammable gases. It quickly detects the radiant energy produced by a fire's flames, giving you time to intervene before things escalate into a disaster. There are different technologies to choose from, but multi-spectrum triple IR flame detection is generally recommended for process industry applications.

It can detect hydrocarbon and non-hydrocarbon fuel fires under most environmental conditions. Even a small 0.09 m² Heptane reference fire can be detected from a distance of over 60 m.



Ultimately, the use of multiple layers of detection significantly increases your chances of detecting flammable gas leaks before they escalate into catastrophic fires and explosions.

For more information download the white paper **Ultrasonic Gas Leak Detection: A Critical Component of a Layered Flammable Gas Detection Strategy.**

* Range of the Searchzone Sonik is dependent on the level of ultrasonic background noise in the application and the type of gas. It is recommended to set an alarm level 6 dB above the expected level of background noise to avoid nuisance alarms. In general, lighter-than-air gases produce more ultrasonic noise during a leak versus heavier-than-air gases. Consult Honeywell for more details.

For More Information
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