

Application Note

HF Fenceline monitoring



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A gas leak of HF (Hydrogen Fluoride) gas is dangerous to both humans and the environment. It is critical to detect an HF gas leak as early as possible to protect human health, warn of equipment or plant failure and to execute a process shutdown. The NEO Monitors OP (open path) HF detector is an excellent tool for early warning, because of its low detection limit of HF gas and short response time. NEO Monitors detectors can provide a detection barrier at the borderline of any area that contains HF gas. Therefore, it is well suited for fence line monitoring of an industrial plant, process or storage area.

PROCESS:

Fence line monitoring by OP HF detectors is well suited as a safety measure and detection barrier around a production facility at alkylation plants. Detectors are normally installed around and above the areas with potential HF leakage. It is recommended to place detectors above and in close proximity to equipment that poses a real risk of a gas leak: e.g. pump sets, pressure reducers, valves and pipe flanges. Detector placement is critical, as HF gas is lighter than air and will rise up into the air or into the facility's roof/ upper levels.

TYPICAL FENCE-LINE MONITORING INSTALLATION:

4 or more LaserGas™ III HF OP detectors.
Detect ppm level of HF
Path Lengths up to 100 meter

Note: Shorter Optical path lengths helps identifying actual leakage points.

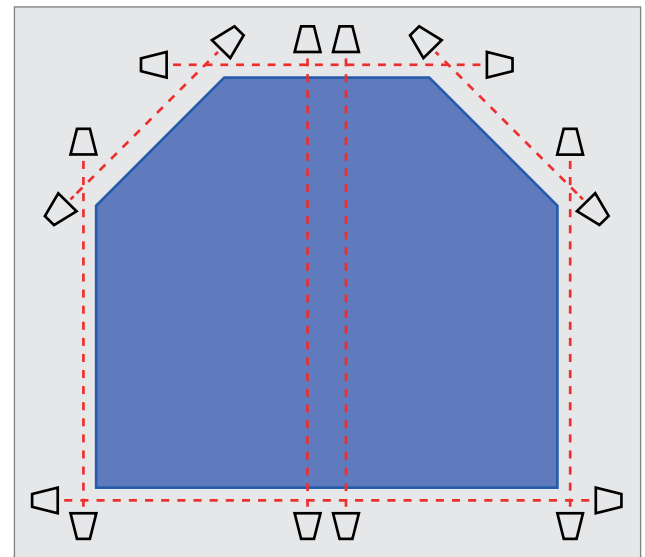


Fig 1: Typical fence line monitoring with additional detectors, above and in close proximity to equipment that poses a risk of HF gas leak.

MOTIVATION:

HF gas leak detection is critical to:

- Achieve early warning of HF gas leaks
- Protect human health and environment
- Protect equipment and plant failure

SOLUTION:

The LaserGas™ III HF OP detector can detect very low concentrations of HF gas. The detector's short response time ensures fast detection of an HF gas leak, and thus provides an early warning to the plant operators. The LaserGas™ III HF OP detector is certified for use in hazardous area Zone 1/ Ex-d. It is designed with safety in mind and is suitable for use in SIL2 applications.

In addition, the detector is fitted with a built-in Continuous "Health check" to make sure the detector is operational. This unique feature does not require the use of an internal reference cell (filled with HF gas), and ensures safe operation.

BENEFITS:

- High sensitivity (detects low concentrations) for early detection of any leakage
- All detectors operate independently and have their own laser and signal processor
- No single point of fault failure
- Low maintenance cost
- Uses standard cabling (No special cables like optical fibre-cables, coax cables or multiplexers)
- Easy to install and operate
- Well proven measurement technique

LaserGas™ III HF OP

- Very low detection limits
- Automatic gain control
- Continuous Health check
- Short response time
- No interference from background gases
- Stable calibration
- No zero drift
- No moving parts, no consumables, turnkey instrument
- Provides a warning alarm for blockages, like for example cars and people
- Compact design
- Heated optics avoids condensation issues
- SIL2 suitable
- ATEX Ex-d (Zone 1) certified

