

Ask the Experts

Although certain principles of gas detection require less maintenance than others, the calibration and servicing frequency of gas detection equipment is largely dependent on the environment and application where it is being used. Weather conditions, dust, dirt, water and even the types of compounds being used nearby can have an effect on the performance of equipment and influence the frequency of maintenance activities.

In addition to the impact of the device's use, the actual equipment design itself also plays an important part in ongoing maintenance requirements; for example, 'flameproof' equipment will use coarse sinters to enable gas to pass to the sensor, whereas optical devices can be designed "open to air", removing the possibility of sinters becoming blocked; this can reduce maintenance demands in 'dirty' environments. Equipment design itself is often driven by approvals and



certification requirements, meaning that a variety of factors must be taken into account when considering ongoing maintenance.

The following information provides a general guide to servicing equipment; please take into consideration additional factors and variables within your own application.

Catalytic Bead Devices

These types of device have a life of **5-7 years**. In poison-free environments, typical maintenance frequency is twice yearly and this has been extended to annually at those sites tracking historical adjustments. Catalytic beads are susceptible to poisoning from various compounds including Halogens (Cl_2 , F_2 , Br_2), low molecular weight Silicones and polymerising compounds such as Propylene Oxide and Ethylene Oxide. The presence of such inhibitors can severely limit the life of a catalytic bead and create the need for frequent bump testing/re-calibration on a **monthly or even bi-weekly** basis.



Exception to the rule

Cleaning Cupboard: An industrial cleaning cupboard may contain a build-up of Silicone as well as flammable gases from polishing products. Typical maintenance frequency is every **2 to 4 weeks**.

Electrochemical Cell Devices

These types of devices require regular gassing to ensure ongoing performance. Like catalytic bead devices, some ECCs can be poisoned by compounds such as alcohols and they can also react with electrolytes and catalysts; the most common mode of failure for this type of device is electrolyte/electrode contamination over time. ECCs have a life of **1-3 years**. Typical maintenance frequency is **6 months to once yearly**.

Exception to the rule

Plant producing Ethanol fuel (a bio-fuel alternative to gasoline):

In this type of application, the presence of Ethanol can compromise the life of some ECCs and inhibit their performance. Typical maintenance frequency is every **3-6 months**.

Metal Oxide Semiconductor Devices (MOS)

As with electrochemical cells, these types of devices need to be gassed regularly to ensure ongoing performance. The filter can become blocked in harsh environments due to ingress from dust, dirt and water. In their un-powered state these devices are susceptible to damage from moisture and their slow response to gas may vary excessively over time, demanding more regular attention. Typical maintenance frequency is every **3 months**.

Exception to the rule

Given the variation in output over a short time - sometimes as much as 10% per month - some sites with a high risk of exposure from target gases like H_2S , operate **monthly or bi-weekly** functional testing and calibration. Also in areas that experience lightning and possible outages of power, such as a refinery located in the Middle East, special care should be taken to ensure that in their un-powered state protective covers are fitted.



Disclaimer:

The information provided in this article is for guide purposes only. For more detailed information about the maintenance and servicing of equipment at your location, please contact an expert engineer today on: 00800 333 222 44



Point Infrared/ Open Path Infrared

Point IR and Open Path IR devices require less maintenance than other detection principles and have a life of **5 to 10 years**. Dual or even triple compensated optics provide additional stability, meaning that these types of devices only require re-calibration when a test indicates a gross deviation; typically every **3-5 years**. Regular performance tests should be undertaken (in line with site procedures), typically every **6-12 months**.

Exception to the rule (Point IR)
Sludge Pit on an Oil Platform: "Dirty optics" or beam obstructions are automatically



detected and indicated at control equipment. Such devices are designed to be typically fail-to-safe in nature. However, in a sludge pit excess dirt will build up on weatherproof baffles and need to be cleaned. Typical frequency could be **once a week** to ensure that the housings remain clear enabling gas to enter the optical chamber freely.

Exception to the rule (Open Path)

Open Path detectors are designed to operate in vibrating environments; for example, equipment may be mounted to superstructures (FPSO, well head production platforms etc), causing the device to experience vibrations routinely. Gross misalignment can result in reduced signal to noise, causing possible false alarms. Devices using 'coaxial optical alignment' (where a telescope is used to view the exact path taken by the infrared beam of light), optimise alignment to maximise signals and increase time between adjustments; sometimes as infrequently as **once every 3 years**.

Guidance on Equipment Maintenance

Check your sounders, beacons and alarms regularly!

As well as checking your gas detectors, it is also essential to ensure that your alarms and beacons are working properly; otherwise your detection system won't be able to alert you to an issue, should one arise. Water, dust and dirt can all affect the performance of these types of devices, so twice yearly checks are essential as a minimum.

