

Visual detection of leaks with Optical Gas Imaging cameras

THE EU DIRECTIVE ON INDUSTRIAL EMISSIONS CAME INTO FORCE UNDER UK LEGISLATION AT THE BEGINNING OF THIS YEAR. THE DIRECTIVE MEANS THAT COMPANIES MUST CONFORM WITH THE APPLICATION OF BEST AVAILABLE TECHNIQUES FOR POLLUTION PREVENTION AND CONTROL AND OPTICAL GAS IMAGING (OGI) CAMERAS ARE HIGHLIGHTED IN THE DIRECTIVE FOR THEIR EFFECTIVENESS.



Dave Manning-Ohren
Condition Monitoring Manager, ERIKS

Until now, methods for detecting leaks had not moved on far from simply sniffing. The only difference is that now the sniffing doesn't depend on a sensitive nose but a mechanical 'sniffer', which detects and counts the parts per million of gases in the local atmosphere. On a calm day this can

work, but in windy conditions it's far less effective, and even in ideal conditions it can't accurately detect the source of the leak.

Since research shows that 84% of leaks take place in just 1% of plant, being able to pinpoint the source of the leak not only minimises the amount of plant which has to be shut down, but also the amount of downtime for even the affected part. Or as the EU puts it in its Best Available Techniques draft reference documents:

"Direct visualisation of leaks is of great value to improve the efficiency of maintenance on equipment as only the leaking equipment is repaired. Another advantage...is the possibility to detect leaks under insulation and to screen from a distance, so that...emissions from components not accessible for sniffing can be located and repaired.



"OGI cameras should be introduced...for easier and faster identification of significant leaking components."

Optical Gas Imaging cameras use thermographic technology to detect leaks. Gases are opaque in the infrared wavelength, and each gas has its own distinctive wavelength, making it possible not only to see the leak but also to identify which gas is leaking.

Of course thermographic cameras have long been used in the electro-mechanical environment, but these cameras usually operate only at long or short wave, whereas gases are generally found in the medium wavelength, and are only visible to the high-end OGI thermographic cameras.

In addition, any camera is only as good as the person behind the lens. *ERIKS*, for example, who offer gas leak detection with OGI cameras as part of their Condition Monitoring service, are the only operators of these cameras in the UK with Level 2 technicians. These are the most highly trained in interpreting the data presented visually on screen by the cameras.

Using the high-end imaging system of the FLIR GF320 OGI camera, *ERIKS*' technicians can detect Volatile Organic Compounds – in fact, more than 20 different toxic, explosive and flammable gases. Some gases such as carbon monoxide may also be visible in the right atmospheric conditions. The FLIR camera makes it possible to scan thousands of components per shift, with no interruption to processes. It's also far safer than a traditional sniffer, since potentially dangerous leaks can be detected and monitored from several metres away.

The camera measures temperatures from -40°C to +350°C, with ±1°C accuracy, and its High Sensitivity Mode (<25mK) means it can provide real-time visualisation of even small gas leaks.

Gas leak detection from *ERIKS* Condition Monitoring team can be built into customers' Preventative Maintenance scheduling, with a survey carried out every 3 or 6 months.

If a leak is detected during one of these scheduled visits, the ability to pinpoint the exact source allows for less disruption to production, a faster repair, and a quicker return to normal operation.

Gas leak detection should also be incorporated as part of the standard routine after a shutdown, or after major changes to the plant have been commissioned and completed, to ensure there are no leaks in the newly-operational or newly-built system.

***ERIKS*' technicians will produce a comprehensive report based on their findings, fully documenting any leaks discovered, detailing the exact source of the leak, with images to back-up their findings. Videos of the gas imaging are also made available to customers on a secure server.**

Once a leak has been detected, *ERIKS* will offer totally impartial advice on repair or replacement. However, *ERIKS*' wide range of expertise and core competencies means that if the issue involves sealing, gasket, valve or flexible hose technology, they can offer a quick, effective solution backed by years of experience.

When a gas leak has an impact on plant safety, production and the environment, early detection and a fast resolution are critical. Utilising the latest Optical Gas Imaging cameras operated by highly-trained technicians is clearly best practice.

Gases detected by ERIKS

Using the FLIR GF320 OGI camera, *ERIKS* trained technicians can detect:

- Benzene
- Butane
- Ethane
- Ethanol
- Ethylbenzene
- Ethylene
- Heptane
- Hexane
- Isoprene
- Methane
- Methanol
- MEK
- MIBK
- Octane
- Pentane
- Propane
- Propylene
- 1-Pentene
- Toluene
- Xylene

This is a sample of detected gases. For more information or a comprehensive list, contact eriks.co.uk/knowhow