

Managing Fugitive Emissions at Compressor Stations using Clear Imagery

Introduction

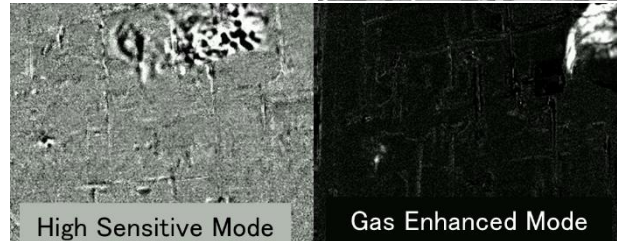
Over the past several years, studies have been conducted on emissions sources from the oil and gas industry by the federal EPA, state level DEP's and other private. The studies confirmed pneumatic devices as a major source of emissions, compared to other activities and components. Since then, additional focus has been placed on these components with stricter regulation considered and enacted. As of this year, 2021, Colorado state regulators now require the replacement of pneumatics to non-emitting type devices. New Mexico has adopted rules which would curb emissions from oil & gas operators so that 98% of natural gas waste would be captured by the end of 2026. With all of this in mind, now is the time to recognize and understand gas emissions/leaks and how they can grow into major problems for operators. Konica Minolta believes that clearer imagery from our OGI camera system, GMP 01, helps both to detect and manage fugitive emissions.

Thesis Question

In an ideal world, fugitive emissions would be best eliminated entirely, however small interval emission releases do occur. Oil and Gas operators typically monitor and control emissions within a certain limit. However, a compressor station environment is very loud, and as a result, hearing the emitting sounds is out of the question. The practical approach is to use an OGI camera as the best option of detecting gas visually, or you can also rely on scent as a last resort.

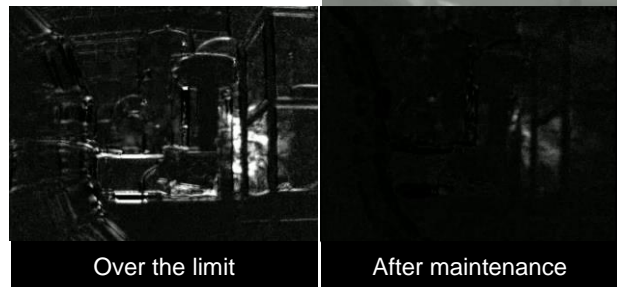
Typical OGI technology uses the time difference emphasis method, which is commonly known as the High-Sensitivity-Mode (HSM), in order to detect gases and to visually display them. With the HSM, it is easy to recognize "something" there, but without proper training and experience, it leads to the potential to miss a leak completely.

On the other hand, with clearer imagery such as can be seen with our Gas Enhanced Mode, it helps for better recognizing and interpreting a gas emission.



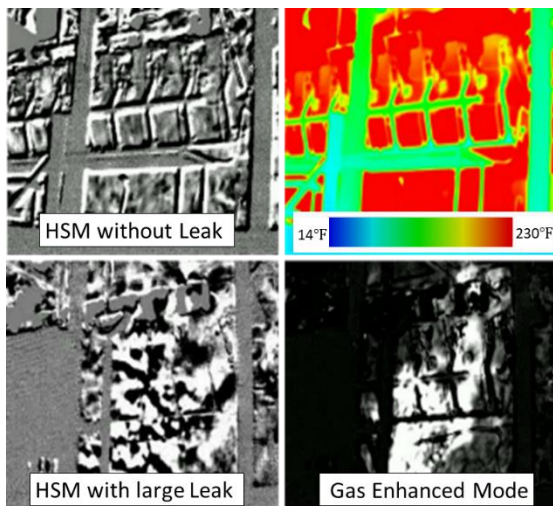
Why Is It Important?

When an inspector finds an emission leak over the limit, a maintenance technician may be sent in to fix or adjust it back within the limit. Afterwards, Konica Minolta recommends saving and storing the imagery for the required maintenance that has been carried out. It becomes a reference for the control level that operations may want to maintain. When an overflow of emissions is detected on a pneumatic device, they may adjust or minimize the flowrate during maintenance. Afterwards, storing and saving the imagery allows maintenance to refer to it for future issues questioning the flow rate tolerance.



Additional Advantage

Even though OGI camera use ultra-high sensitive infrared detectors, compressors are in very difficult environments, where components can reach very high temperatures, and end up appearing over illuminated in the infrared mode. As a result heat saturation is experienced and it masks fugitive emissions. With Konica Minolta's GMP01, heat saturation can be avoided by altering the sensitivity level, which increases the detectable temperature range for the OGI camera.



This is a prime example of how altering the sensitivity level really does the trick in clarifying an image. Once the heat saturation has been removed, the noise from the heat can be confirmed on the surface of high heated parts, which causes interference with the gas plume in the HSM. The Gas Enhanced mode assists with this aspect, and makes the emissions brighter and more visible than the surrounding background.

In such situations, the key is to be able to clearly distinguish between heat noise and gases, otherwise, you will miss the gas emission completely.

Outcome

The outcome for using our technology is a capability of recognizing the status of gas emission happening in real time, and comparing it to past and future leaks. What's more, heat saturation can be avoided by selecting the best available sensitivity level when surveying a compressor station. Also, with our camera, it is easy to differentiate fugitive emissions from thermal heat.

As a result, our Gas Enhanced Mode can be useful for reliable early detection and early response that requires repair and adjustment. Afterwards, storing the video images of the leaks prior, and after maintenance allows for the buildup of a video imagery reference to refer to and compare leaks from the same equipment, in subsequent inspections.

Product Info: Konica Minolta Inspection Support Solution

Our camera, also known by its model name GMP 01 is controlled by the included tablet, from which all of the displays are viewable, and the inspections can be played back on.

The GMP 01 has been tested by a third party and deemed as meeting the requirements of the NSPS OOOOa. It is certified as an approved instrument monitoring method (AIMM) by the CDPHE, Colorado Department of Public Health & Environment, as well.



It is also worth mentioning that when using our camera systems tablet, multiple image modes are simultaneously available to the inspector, literally “at their fingertips”.

However, our solution is not just limited to the camera and tablet but our cloud service (officially called the Inspection Data Manager), which serves the purpose of storing and managing all of the inspection data that accumulates over time.

Our Inspection Data Manager allows you to access past inspection records, analyze and predict future system issues, and construct a planned timeline for maintenance in order to avoid future system problems. The Inspection Data Manager offers two display modes:

The first is very similar to the tablet, with a main display window as well as the three smaller windows available for viewing. The second offers a comparison mode where several videos can be played simultaneously and compared to different pieces of equipment from different times.



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