



Handheld to autonomous OGI solutions, a side-by-side comparison

How to choose the OGI solution that's right for you



Introduction

Ice cream melts, concrete cracks and gas leaks. Fugitive emissions pose a major challenge to the Oil & Gas industry. Ensuring compliance with regulatory measures, reducing the carbon footprint, and handling safety concerns are all issues that must be addressed with an intelligent cost-effective solution.

Implementing a directed inspection and maintenance program has proven to be a cost-effective way to cut down on emissions by detecting, prioritizing, and then repairing leaks. So much so that it's now required by regulators.

The industry has definitely come a long way from the days of soap and bubbles, when a soap solution was sprayed onto components to check for loose fittings or small leaks. Later, small electronic handheld gas detectors, known as 'sniffers,' could be used to detect the presence of specific gasses in areas that were less accessible or involved larger leaks

In recent years, optical gas imaging (OGI) infrared cameras that can detect even minute amounts of fugitive gas have revolutionized inspections when it comes to ease and accuracy.

The cameras identify gas emissions by converting the scanned area into an image in which gas plumes absorb the infrared light, making them visible to the human eye. High-end OGI cameras have made reducing carbon footprints more and more tangible for industry giants. Moreover, detecting gas emissions via handheld OGI cameras is many times faster than manual inspections. This speedup is possible because inspectors save time by covering more items per hour.

One available solution is new and ultra-convenient autonomous drone-in-a-box solutions.

The drone-in-a-box model works by having a fully autonomous unmanned drone leave its base, conduct a complete inspection while collecting and processing data—and then return to its box. All this is powered by sophisticated AI-software that is designed to eliminate the need for human intervention. What's more, it will automatically send the relevant data to the appropriate stakeholder so the data goes to the person responsible.

All this is done without human intervention—reducing safety concerns and freeing employees for other critical tasks.

Similar to the way OGI cameras changed the O&G inspection landscape over the last decade, new autonomous drone inspection solutions are set to transform the industry now and in the coming years. Inspection time can be tremendously accelerated by using the OGI camera as payload for a drone. Although using an OGI handheld camera is 9x faster than previous methods, an autonomous drone is considerably faster and more thorough than a person with a handheld OGI.

Using drone technology for inspection also has the obvious advantage of being able to inspect hard-to-reach areas, along with increased safety because employees are not required to be close to potentially toxic and explosive material.

Limitations of using handheld OGI cameras



Handheld camera inspections expose the operator to danger when emissions exist or when the inspection requires going into hard-to-reach spots.



These inspections can be costly, tedious, and time consuming—but most of all, dangerous.

This means they are conducted periodically but not frequently.

What to look for in an OGI solution

There are three main options for OGI inspections



Handheld

OGI cameras used in manual inspections



Piloted drones

with OGI payload that inspect for leaks



Autonomous drones

automatically conduct gas leak inspections

01

Does it boost employee safety?

Handheld

No By nature, these cameras do not really improve the safety of inspections because an employee still needs to get close enough for the camera to detect and evaluate leaks. In these situations, not all areas are operational or safe to enter. Protective gear is not always used, and often the locations require employees to climb to high places or dangerous positions to get the correct readings and angles.

Piloted

Somewhat Piloted drones allow the inspection to be performed from a more remote distance and eliminate the danger posed for employees in high, cramped, or hard to reach places. However, being on site means the pilot is still exposed to any hazardous conditions—including weather, natural disasters, or gas emissions.

Autonomous

Yes Autonomous drones equipped with OGI cameras can capture videos from a safe distance. Leaks can be safely spotted while employees are protected since they will not be exposed to emissions. A drone can easily, safely and quickly navigate high or hard-to-reach areas. The software then analyzes the data to offer insight pointing out the location of any problems. Meanwhile, the facility and assets can continue to operate safely, allowing workforce activities to be performed in a secure environment. And, because the drone is ready to go at any time, facilities can run inspections more frequently and catch emissions before things get out of hand.

02

Can it offer added value during emergency response?

Handheld

No

Any employee holding the OGI camera is exposed to danger, making this an impractical option for collecting data during an emergency. Moreover, a human inspector will not have the vantage point available to drones.

Piloted

Mostly

Drones can be operated from a more remote distance and prevent the exposure of employees to toxic emissions or dangerous areas. Nevertheless, there still needs to be a pilot on site to operate the drone, which can mean exposure under certain circumstances.

Autonomous

Yes

The drone is on site, weatherproof, and always ready to go. Autonomous drones can track and monitor emergencies to provide responders with real-time situational awareness, without putting anyone in harm's way.

03

Can it help meet your ESG goals?

Handheld

Somewhat

Manual inspections are helpful, depending on how often inspections are carried out, the size of the leak, and how fast you catch it. Generally, these inspections are time-consuming, costly, and usually take place at spaced intervals, making it easy to miss leaks that occur between inspection.

Piloted

Somewhat

Under the right circumstances. However, because these inspections require a licensed pilot who is familiar with the correct protocols and flight plan, they tend to be costly, limited in frequency, and still dependant on the human factor. Different drone operators may not be able to ensure that OGI inspections are done under consistent conditions that optimize the temperatures, angles, light, and distance needed for the differential detection.

Autonomous

Yes

Because inspections can easily be done more frequently, any leaks are caught before they get too big. This translates directly to less pollution and a cleaner environment. An autonomous drone takes the exact same efficient flight path on each mission, which produces more focused data that allows better comparisons to past data and faster detection of emissions.

04 Will it help you reduce product loss?

Handheld

No But limited. Handheld OGI cameras are subject to human error. OGI is an effective tool but it's only as good as the technicians operating the equipment. These experts must have in depth experience and knowledge of the processes and equipment to plan the survey path being scanned. Moreover, pinpointing the location of leaks is difficult and subject to human error, in addition to being time consuming to the point where certain areas may be left out, causing leaks to go undetected.

Piloted

Somewhat But it depends on the frequency and the pilot's expertise. Using a piloted drone with OGI payload can cover a greater area and many more components. It can also safely inspect hazardous areas without endangering staff. Here too, there is a certain amount of human error involved. Similar to handheld, the pilot conducting the scan must be a trained expert capable of maintaining the correct speed and angles such that no leaks, components, or areas will be missed.

Autonomous

Yes Autonomous inspections are neither limited in frequency nor dependent on human expertise. These fully automated inspections offer complete facility coverage with reduced overhead to allow more frequent inspection. With pre-planned missions and high quality audits, autonomous drones have proven to discover 'hard-to-find' leaks in a fraction of the time.

Autonomous inspection
saved expenses in the
order of \$15M.



At one site, this advantage enabled a customer to discover a leak in the roof of a tank. This inspection alone eliminated the need to empty the tank.

05

Will it help you meet regulatory standards?

Handheld

Yes

As long as a practical method is in place for keeping track of the data and breadcrumbs. Complying with regulations requires reporting all data, including the exact times, locations and issues for each specific asset being inspected. It also means reporting leaks and conducting repairs quickly.

Piloted

Yes

Similar to the handheld OGI, provided a practical method is in place for managing the data and breadcrumbs collected by the drone. This includes recording the exact inspection times, locations, and any data associated with each asset. The challenge lies in reporting leaks and repairs, and managing the large amount of data collected so it can be recorded and reported accurately.

Autonomous

Yes

Autonomous inspection and data collection easily streamlines compliance. For example, with Percepto's Autonomous Inspection and Monitoring (AIM) all data is managed, archived, and stored in the cloud—in addition to maintaining all mandated historical timelines. As such, the data is available at any time for regulatory reports and can be easily shared with stakeholders—including all breadcrumbs collected by the drone. The drone can also verify when the leak started and record when the leak repairs were executed, to further comply with new standards such as OOOOa.

With autonomous inspection & data collection, data is managed, archived, and stored in the cloud, available at any time for regulatory reports and can be easily shared with stakeholders.





Fully autonomous
unmanned drone
OGI inspection



Improve
facility safety



Increase
inspection
frequency



Streamline
compliance

06

Will it reduce expenses and increase efficiency?

Handheld

No Even after purchase, an acceptable OGI camera will require a technical expert to conduct the inspection by manually surveying the entire site. When considering that a typical small industrial site can have as many as 15K assets to inspect, this translates into a costly and inefficient process. If the site is large or there are multiple sites to inspect, this problem is further aggravated.

Piloted

Somewhat A piloted drone can inspect large areas much faster than a handheld OGI. However, pilots experienced in quality inspections are typically hired through third-party vendors. This implies that different vendors and pilots must be managed so they know what to inspect, but it also means that the pilots' skills and inspection routes will not always be consistent.

Autonomous

Yes Autonomous drones have a proven ROI for early detection of leaks. It also ensures that inspections are performed on the same routes, at the same time of day, at consistent angles and elevations. These capabilities help efficiently pinpoint the exact location of any leaks and enable the right team to be sent with the correct tools to effect repairs immediately. This dramatically cuts down the time, manpower, and resources for any special scaffolding or equipment needed for inspections. It can also go a long way towards ensuring all safety regulations are addressed and in place to reduce the risk of fines. For example, just this year, Colorado's energy regulator lodged a fine of more than \$2 million against a major oil and gas operator for a series of violations, spills, and leaks.

Conclusion

OGI inspection is clearly a must for any player in the Oil & Gas industry.

Autonomous drones equipped with OGI cameras deliver significant advantages when it comes to conducting recurring, high-quality inspections that are fully automated.

Beyond increasing safety, reducing product loss, cutting expenses, and ramping up compliance - these drones will reduce your carbon footprint and help meet ESG commitments by detecting fugitive emissions as soon as they happen.



Increasing
Safety



Reducing
costs



Ramping up
compliance



ESG
commitments



OGI inspection solutions comparison

	 Handheld	 Piloted	 Autonomous
Boosting employee safety	—		
Added value during emergency response	—		
Helping meet ESG goals			
Helping reduce product loss	—		
Helping meet regulatory standards			
Reduce expenses and increase efficiency	—		

Contact Us

Learn about the many benefits of autonomous OGI drones equipped with software and how they can help your facility by scheduling a demo.

To schedule a demo or speak to one of our experts, contact us:

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www.percepto.co



About Percepto

Percepto is at the forefront of redefining how industrial sites are inspected and monitored. We do this by harnessing remote robotics to autonomously collect, aggregate, and analyze visual data. Our flagship robot, the Air Max, is the most deployed drone-in-a-box on the market.

- Automated data collection
- Unified visual data
- Automatic insights
- Democratize visual data
- Remote operations