The Future of Gas Detection

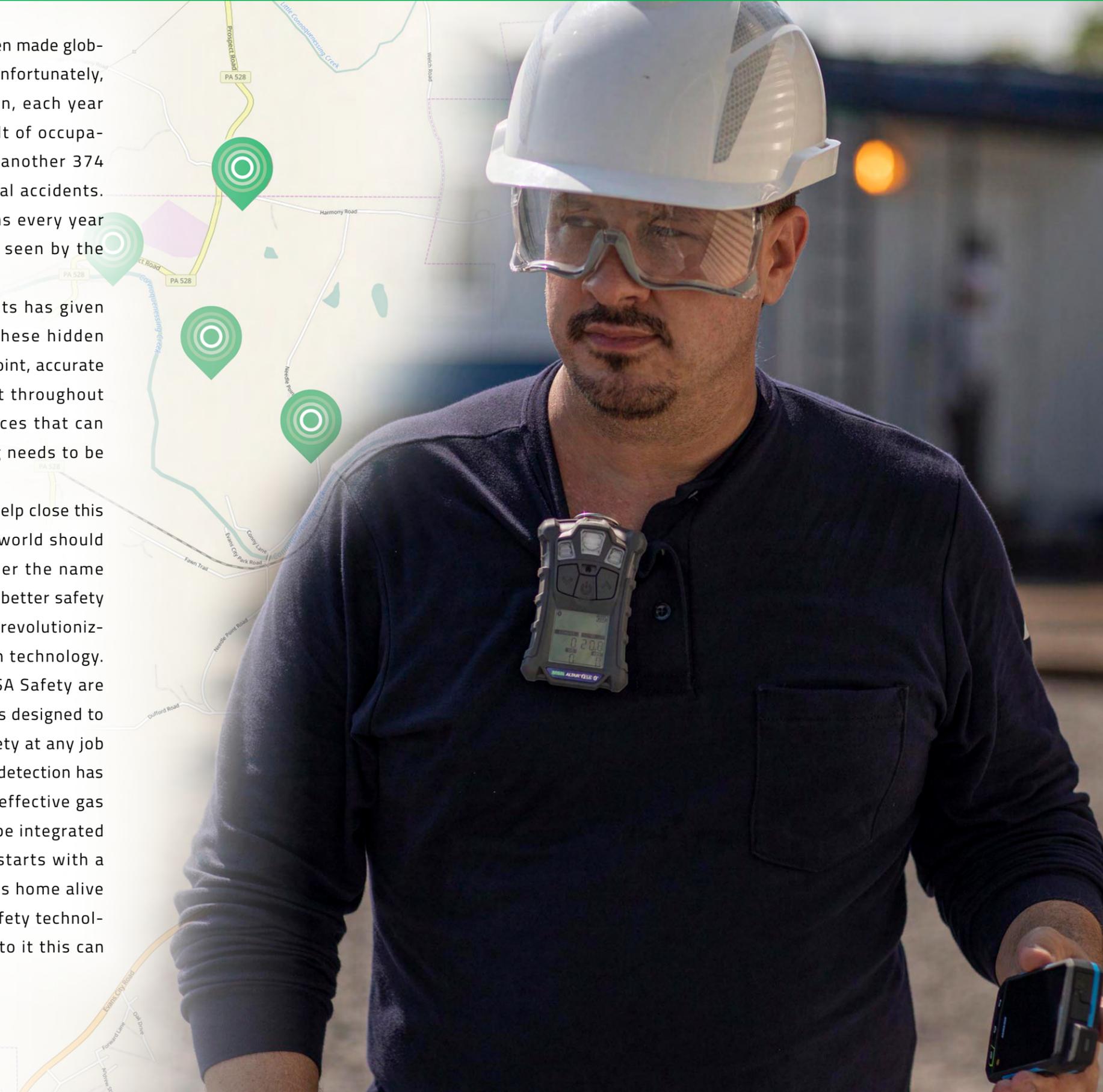SPONSORED BY

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EXECUTIVE SUMMARY

Over the past several years, global progress has been made globally related to industrial safety and fatality rates. Unfortunately, according to the International Labor Organization, each year approximately 2.78 million workers die as a result of occupational accidents and work-related diseases, and another 374 million workers suffer from non-fatal occupational accidents. Thousands of those workplace injuries and deaths every year involve hazardous gases- a threat that can't be seen by the naked eye.[1]

The development of portable gas detection units has given workers and employers the ability to mitigate these hidden risks and to proactively adjust tasks based on pinpoint, accurate readings. The evolution of this critical equipment throughout the years has resulted in small, convenient devices that can be carried virtually anywhere an accurate reading needs to be completed.

However, there is still room for improvement. To help close this safety gap, safety professionals in the industrial world should rely on new technologies, often categorized under the name "Industry 4.0," that can be combined to help deliver better safety outcomes. Cloud-based systems and software are revolutionizing gas detection, adding a layer of safety through technology.

The editors of EHS Today along with sponsor MSA Safety are pleased to provide you with a collection of resources designed to enhance your atmospheric testing efforts and safety at any job site. In the following pages, you'll discover how gas detection has progressed through the years, the critical keys to effective gas monitoring programs and best practices that can be integrated into your current processes. World-class safety starts with a commitment to ensure each and every worker goes home alive and well every day. Acquiring and using reliable safety technology such as gas monitoring equipment helps see to it this can be accomplished.

GAS DETECTION THEN AND NOW

We are currently in the midst of the fourth industrial revolution, often branded "Industry 4.0." In the last 30 years, tecological advancements have occurred at an incredible rate. What was state-of-the-art in the 80s would appear quite rudimentary today. Take your home, for example. The "antique" video game consoles and hard-wired phones have given way to fully-connected houses where owners can control everything from their smart phone. You can start your coffee in the morning and set your alarm at night without ever getting up. Fortunately, homes are not the only places to benefit from these advancements.

Like most technology new, digital technologies have revolutionized gas detection, helping to make the devices smarter, faster and safer. More importantly, they provide better insight and data, which enables safety managers to make better decisions.

Gas detection came a long way to be where it is today. In the 20th century, perched in a tiny wooden cage, canaries accompanied miners down the darkest shafts, serving as an early warning system against the invasion of toxic gases. Quite simply, if the bird stopped chirping, fainted or died, it was time for the miners to exit.

Of all the places you would expect to see a canary, one of the last would be in the dark, cool depths of a coal mine. Yet this habitat was commonplace for the bird until 1986. Before that, "more humane" gas detection methods predate the canary by nearly 100 years, but none seemed as reliable.

TODAY´S SAFETY CHALLENGES

Today, safety professionals face a host of challenges. Generational turnover, technology proliferation, budget constraints, regulatory changes, and other factors create distractions, interruptions, and frustration. On top of it all, these same professionals are under significant pressure from their organizations to achieve even more aggressive safety objectives.

Safety professionals must be focused on their biggest safety goal and cannot be dependent on a clipboard and worker accountability. With so many plates to spin at the same time, they must have full visibility into worker safety in order to be compliant with safety regulations. In this scenario, control is key and details matter.

In addition, compliance is more important than ever. Standards, and the penalties for not meeting them, can lead to immeasurable losses of time and revenue. A safety manager can easily get overwhelmed.

SO, WITH ALL THIS TECHNOLOGY, ISN'T THERE A WAY TO BETTER MANAGE THESE CHALLENGES?

Fortunately, the answer is YES. Safety professionals in today´s world can rely on new technologies, that can be combined to help deliver better safety outcomes.

Cloud-based systems are revolutionizing gas detection. In the last several years, more and more organizations are pushing items to the cloud. Within this cloud-hosted environment, the collected data can be compared in ways never before possible and then displayed in a friendly format so that managers can take action where it's needed.

Studies show that it takes around 23 minutes to get back on track after an interruption. These numbers add up during the course of a day, a week, or a year. Interruptions common to gas detection may include:

1. **Did everyone bump test their gas detection devices today?**

2. **What devices need maintenance?**

3. **Which devices are calibrated? Which are not?**

AS A MANAGER RESPONSIBLE FOR WORKER AND PLANT SAFETY, YOU SHOULD ASK YOURSELF THE FOLLOWING QUESTIONS:

- How important is it for me to be able to proactively mitigate risk and work to prevent injuries…before they happen?
- How beneficial will it be if I can evacuate individuals regardless of where they are…or where I am?
- How much time will I save if you can bump test and calibrate instantly?
- What would it mean if I could monitor and analyze trends in real time?
- How can I manage multiple sensors, on multiple workers at multiple locations without sacrificing safety or standards?

The answer is in the cloud. Cloud-based gas detection means that a device in Toronto can be monitored by a person in Texas. A responder can react instantly and accordingly when an alarm sounds. Faster reaction comes from better access to data, which helps those involved make better decisions.

Modern gas detectors and area monitors can automatically transfer their readings to the cloud, making data available quickly for immediate review and easy to access for historical reasons as well.

Better access allows you to pinpoint problem areas and identify trouble spots. You can use cloud-based information to create a safer work environment and proactively address worker accountability, from bump tests and calibration to worker locations and instant alert signaling. You can even identify opportunities for better training.

A FEW THINGS TO CONSIDER WHEN READYING FOR THE IMPLEMENTATION OF A NETWORKED GAS DETECTION SYSTEM.

1. Consider all connectivity options and obstacles before implementation. Who needs what and where? What challenges does location X face that location Y doesn't?
2. Get the IT teams involved early and often. They need to address cloud, security and other technical questions before implementation.
3. Stakeholder buy-in. Who else needs to be involved in the decision? Many times the boots on the ground see things differently than those writing the checks.
4. How are you going to train the end users so that the same message gets across language barriers and age groups?

5. Are you more concerned with seeing historical data, live data or both?
6. Does the solution store any PII (Personally Identifiable Information)?
7. How easy is it to exchange data with other applications?

Much to the delight of the canary, technology will continue to advance and evolve. Managers in today's workforce cannot be dependent on a clipboard and worker accountability. They must be able to proactively address issues and manage problems on-the-go.

EXPECT THE BEST

There is no doubt that technological advances are having huge impacts on the world as a whole. All things considered, the health and safety industry should embrace the opportunities new technologies provide to keep workers connected, thus providing an additional layer of safety through technology. ●

ELEMENTS OF A SUCCESSFUL GAS DETECTION PROGRAM

S afety professionals recognize that gas detection is a critical part of their safety program. Having a solution one can trust brings peace of mind that workers and worksites are safeguarded.

Importantly, creating a winning health and safety initiative requires alignment of three factors: subject matter expertise, technology that works and human-centered approach.

In this chapter we will discuss the importance of each of these elements and how combining them is essential for a successful gas detection program.

SUBJECT MATTER EXPERTISE

Portable gas detectors help to protect workers and worksites from invisible dangers. In order to have a safe, trusted gas detection program, safety professionals must ensure that workers have the tools and training they need to make safe, compliant choices aligned with corporate safety policies and government regulations.

But gas detectors require attention, administration, record-keeping, and more.

Therefore, a successful gas detection solution starts with full and deep understanding of the many challenges safety professionals face on a daily basis. By providing innovative solutions that allow simultaneous navigation of these multiple factors, companies can empower their safety professionals to achieve safety goals and improve safety outcomes.

MSA is a market leader in gas detection with over 100 years of technical expertise in worker and worksite safety. Today, MSA offers the market a gas detection solution that makes a significant, positive difference in safety programs. Enabled through technology, this advancement adds an additional layer of protection to gas detection.

TECHNOLOGY THAT WORKS

Having technology that works brings peace of mind. A successful gas detection program fulfills safety professionals' expectations and objectives, is easy to use and it improves safety outcomes. More specifically, when combining gas detection equipment and sensor technology with software technology, can result in outcomes such as:

- Safety process improvements
- Informed decision making
- Better worker compliance and accountability
- Maximized gas detector uptime
- Training opportunity identification
- Record keeping compliance
- Real- time alarm alerts

World-class MSA detection equipment combined with Safety io Grid services puts detection data to work for stakeholders in charge of safety. The Safety io Grid software has a user-friendly interface that helps create a comprehensive picture and streamline the gas detection program.
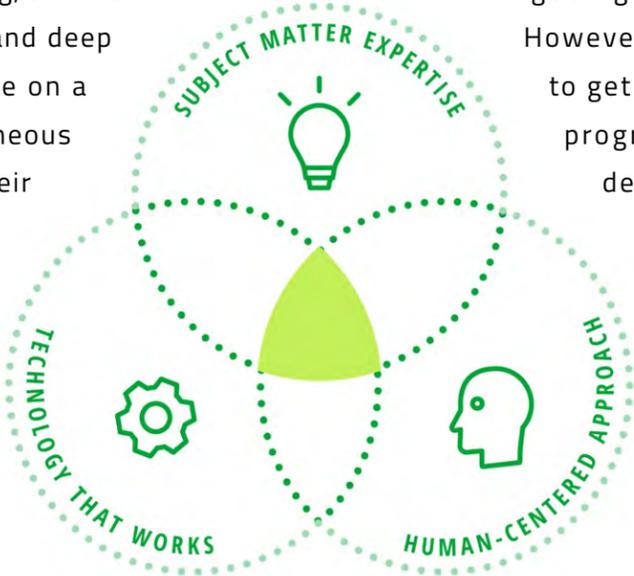
HUMAN-CENTERED APPROACH

A human-centric approach to safety product design and development begins with understanding both worker needs and expectations, then translating those understandings into beneficial product features — features that allow the worker to focus on the task at hand.

A good gas detection program is devised with human safety in mind. However, it's not just about safety; it's about giving workers the tools to get the job done effectively and efficiently. The right gas detection program uses data to help safety professionals to make informed decisions.

MSA and Safety io teams work closely with safety professionals and their peers to help transform their gas detection program into an empowering safety platform.

The triple alignment between these three elements- subject matter expertise, technology that works and human-centered approach-are the cornerstones of a successful gas detection program. With MSA + Safety io solution, you have it all. ●

Venn diagram: SUBJECT MATTER EXPERTISE, TECHNOLOGY THAT WORKS, HUMAN-CENTERED APPROACH

AREA MONITORING: EVERYTHING YOU NEED TO KNOW

Area monitoring is the use of gas detectors that merge elements from both portable and fixed gas detectors into one solution within a linked network. They are not considered personal protective equipment even though they are made to be transported from location to location. Instead, they are primarily designed to help safeguard groups of workers in a given industrial perimeter.

Area monitoring is frequently used as a temporary solution to help keep workers safe in industrial facilities where mid-term deployment occurs as well as for confined space entry and far-working locations such as oil and gas platforms.

10 AREA-MONITORING MUST-HAVES

Here is a list of 10 must-haves of an area-monitoring solution for a successful gas detection program:

1. Technologically Advanced Sensors

The main job of gas detectors is to help keep workers and worksites safe. For this reason, sensor sensitivity and quick response time are fundamental. The faster a sensor responds, the safer the workers and worksite should be.

Sensors should quickly and accurately detect the presence of multiple gases simultaneously and notify you when they need replacing to avoid a lapse in protection and minimize downtime. Detectors should have a long sensor life as well as other components built to last.

2. Robustness and Ruggedness

You work in tough environments. Your gas detectors need to work in them too. You need to trust that your gas detectors will run effectively with minimal downtime, even on the toughest worksites. That is why a detector's IP rating matters. IP ratings stand for ingress protection ratings and refer to an electronic device's ability to resist the entrance of dust, water, and other elements that may cause it to stop working. Devices that have been tested and rank IP68 are trusted to be rugged and resist sprays and submersions.

3. Durability

Look for equipment that passed a 10-foot drop test and has an Ingress Protection rating of IP68 for spray, dust, and submersion. These tests are a great indication of the ruggedness—and, thus, durability—of a device.

While an ability to function well in adverse conditions is critical to safety, durability also has a direct impact on the total cost of ownership, an aspect that can't be ignored when it comes to budgeting. Also, look for devices that have no external antennae or loose parts. That way you can transport, relocate, and hang or mount them without worrying about damaging them.

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4. Long Battery Life, Low Maintenance

Battery capacity is key to a device's ability to be on duty for longer hours without charging. The longer the field life of the battery, the less maintenance and attention from the safety department is needed — so you spend more time monitoring and less time and money maintaining.

You deserve to measure runtime in months, not just days or even hours, which is all some gas detectors' batteries last. Look for a device offering 60 days of battery life and notifications when batteries are nearing the end of their life so you can respond proactively to minimize downtime.

4-GAS · 60 DAY RUNTIME

5. Coverage for a Wide Range of Applications

In any high-risk area where a gas hazard might occur, including industrial facilities where mid-term deployment takes place, area monitoring is a temporary solution for helping to ensure workers and worksites are as safe as possible. Whether used in confined spaces, along fence lines, or in far-working locations like oil and gas platforms, the ideal product is equally effective in and designed to withstand the unique challenges of each environment. This is why durability matters.

What's more, the network scalability is also important so that the equipment can adapt to the size, scale, and location of any job. Whether onsite or remote, you want a solution that will work and get the alert out in case of an emergency.

6. Easy Mounting

Because gas detectors are portable and need to go where you go, they should be quick and easy to mount and relocate as needed. Choose one that is durable enough to transport yet not too cumbersome to carry around and mount or hang wherever you need it.

A good option is a combination of a 50-pound force magnet and a built-in D-ring for hanging, which facilitates installation in any part of an industrial facility as well as portability.

7. Quick Network Deployment

Solutions that provide a preconfigured, ready-to-go out of the box area monitoring network requiring no special IT skills or equipment needed for setup are the most end-user–friendly ones. The easier a solution is to set up, the more likely you are to avoid introducing errors into the system.

Look for a setup that is guided, intuitive, and secure. With easy-to-follow installation tips and real-time feedback, you can be confident that you got setup right the first time with no need for complex instructions and menu selections. This saves time and eliminates the need for additional staff.

After initial setup, you also want to make sure you can quickly and easily add more detectors to your network or reconfigure the entire network and each detector as your needs evolve.

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8. Seamless Connectivity

Your solution should alert you at the detector and remotely via computer or mobile device. Find one that simplifies system setup and connectivity.

Taking advantage of the digitization of manufacturing that is occurring in our latest industrial revolution, or Industry 4.0, the best type of gas detector connects and communicates with others in its network — even within large working perimeters — to share information, including any alarms triggered. Don't miss the article "How to Start Your Worker Safety Journey in the Industry 4.0," which explores the role of connected devices in industrial safety. Digitization offers an unparalleled opportunity to gather and analyze data to streamline processes and improve safety.

When you connect your gas detection equipment to web-based grid services, you can simultaneously monitor and manage equipment at all your sites; automatically gather, analyze, and securely store data; search for and filter information; and ultimately take action to improve safety. And this can be done locally or remotely.

9. Live Monitoring Capabilities

Network connectivity allows for live monitoring of sites both local and remote, from anywhere. Operators in a control room receive immediate notification when an alarm takes place; in real time, safety managers have necessary information at their fingertips. They can set a mass evacuation right from the control room, which gets shared, along with the alarm, to all connected devices.

Through this connectivity, the following occurs:

- An alarm goes off audibly and visually on the device itself when a detector identifies a hazard.
- If that device is enabled for "Shared Alarms," every connected detector will also sound and light up for evacuation. A safety manager can set the evacuation manually from a connected cloud monitoring platform or mobile application.
- Remote alerts notify anyone connected through the cloud monitoring platform or relevant app.

Be sure the system you select can properly display alerts even if the network goes offline.

Look for a system that allows remote monitoring of multiple networks within a worksite or across several worksites via cloud or mobile application.

10. Performance You Can Trust

You should not only look for durable gas detectors that feature the latest and greatest technology when it comes to sensor usage and battery life, seamless connectivity, and ease of use but also partner with a manufacturer that can back up its offerings with an excellent track record of safety and support.

Find all this in one solution. Meet MSA's ALTAIR® io360 Gas Detector, an industry-leading area monitoring solution that operates with the simplicity of a smart home device and delivers monitoring capabilities you can truly rely on. This breakthrough solution that represents the next generation of area monitoring features a compact yet rugged design, months of battery life, intuitive installation and setup, and seamless connectivity to other worksites. It can easily be secured anywhere within an industrial facility via 50-pound force magnet or built-in D-ring hanger.

Watch the video here and learn more about safe, easy, and smart area monitoring. ●
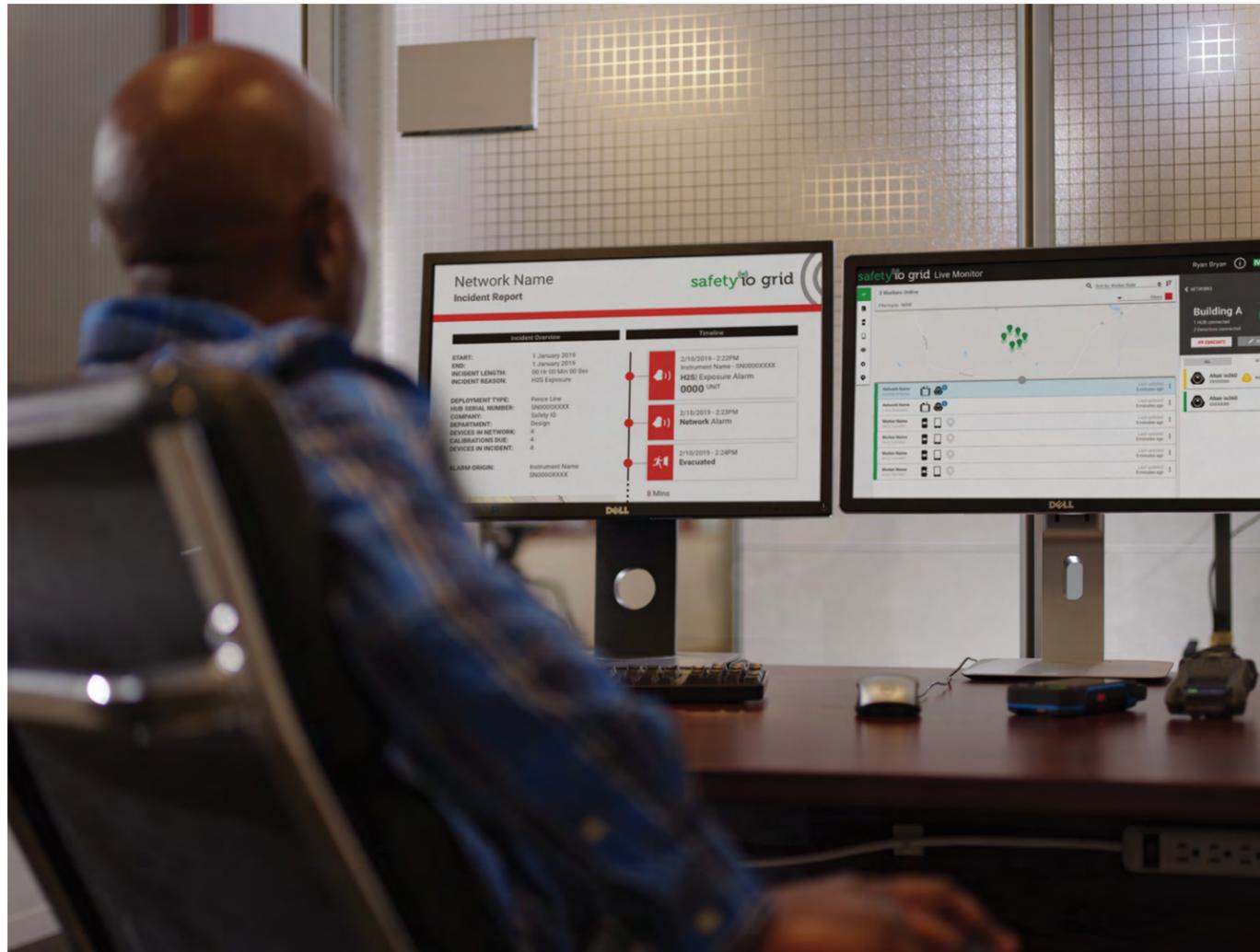
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GAS DETECTION BEST PRACTICES CHECK LIST

Here you'll find all the essential details you need to know on gas detection best practices. The aim of this list is to gain compliance across your fleet and to ensure you have an industry leading gas detection program. Answering YES to all means you passed! If you answered NO or I Don't Know you can feel confident that MSA and Safety io is here to support you on improving you safety program.

YOUR PORTABLES

#				
1	Are your portables equipped with fast responding sensors?	yes	no	I don´t know
2	Are your portables able to withstand significant drops of 10 feet or more?	yes	no	I don´t know
3	Do any of your portables meet the MIL-STD-810G 516.6 Standard Drop test?	yes	no	I don´t know

MAINTAINING YOUR PORTABLES

#				
4	Is your staff trained to bump test devices prior to use?	yes	no	I don´t know
5	Do have a fleet maintenance program in place?	yes	no	I don´t know
6	Do you have automated test stands for bump test and calibration?	yes	no	I don´t know
7	Are you able to predictably know if your calibration gas is about to end?	yes	no	I don´t know
8	Are you able to predictably know if your devices have sensor life warnings?	yes	no	I don´t know

THE USAGE OF YOUR PORTABLES

#				
9	Historically, do you know when your devices went into alarm?	yes	no	I don´t know
10	Do you have an automated system in place to see and analyze the readings of your devices?	yes	no	I don´t know
11	Do you know if your staff follow evacuation procedures or ignore alarms?	yes	no	I don´t know

RECORD KEEPING

#				
12	Do you have a record keeping system in place?	yes	no	I don´t know
13	If you answer yes to the previous question: Is your record keeping process automated?	yes	no	I don´t know

REAL-TIME MONITORING

#				
14	Do you have access to real-time incident awareness and gas readings?	yes	no	I don´t know
15	Do you have access to real-time worker location?	yes	no	I don´t know

REPORTING AND PREPARING FOR AUDITS

#				
16	Can you easily find the information you need to prepare for audits and report incidents?	yes	no	I don´t know

CONTINUOUS IMPROVEMENT

#				
17	Do you analyze the data of your portables to have insights and improve your safety program?	yes	no	I don´t know

WHAT DO I DO NOW?

Congratulate yourself for investing a few minutes on evaluating an important part of your safety program: your gas detection!

There's no need to worry if you did not pass. MSA and Safety io will support you in every aspect to improve your gas detection program and are always available to answer any questions you may have.

Visit www.safetyio.com for information.

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BUMP TESTING AND CALIBRATION:

The differences between them and why they are so important

If you work with direct-reading portable gas monitors (DRPGMs) to check oxygen levels and look for toxic or combustible gases, you're likely familiar with the concepts of bump testing and calibration. But if you were given an on-the-spot pop quiz on the subject, could you tell the difference between these terms?

The main difference between a bump test and calibration is that a bump test determines whether a DRPGM can detect if a possibly hazardous gas is present, while calibration checks that equipment is accurate.

But it's a little more complicated than that, and getting to know more about bump tests, the two types of calibration, and related best practices can help you keep these distinctions top of mind—and use them correctly.

DEFINING DIFFERENCES

Direct-reading portable gas monitors fall under the responsibilities of safety equipment trade organization the International Safety Equipment Association (ISEA), which released a statement to improve consistency in how people use, test, and maintain DRPGMs. In that statement, the organization was careful to flesh out the differences between a bump test, calibration check, and full calibration as well as advise how and when to test with each method.

So What's a Bump Test?

The ISEA defines a bump test as a:

"qualitative function check where a challenge gas is passed over the sensor(s) at a concentration and exposure time sufficient to activate all alarm indicators to present at least their lower alarm setting. [...] This is typically dependent on the response time of the sensor(s) or a minimum level of response achieved, such as 80% of gas concentration applied."

This checks whether sensors and alarms are working as intended, and failure might indicate that a blockage is present. In sum, bump testing assesses function, not accuracy.

How's Calibration Different?

Part of the confusion surrounding bump testing versus calibration lies in the fact that calibration checks and full calibration are two different things. Both of these types of calibration can test a DRPGM's accuracy, but they're used in different circumstances.

A calibration check, according to the ISEA, is a:

"quantitative test utilizing a known traceable concentration of test gas to demonstrate that the sensor(s) and alarms respond to the gas within manufacturer's acceptable limits."

Calibration checks start by "zeroing" a DRPGM (resetting it to a reference point determined by the manufacturer) and testing that alarms go off after applying a high enough concentration of test gas. The resulting sensor reading should match the concentration listed on the test gas container. The ISEA says that a device is accurate within an acceptable range

that's "typically ±10-20% of the test gas concentration applied unless otherwise specified by the manufacturer, internal company policy, or a regulatory agency."

The ISEA guideline describes full calibration as:

"[t]he adjustment of the sensor(s) response to match the desired value compared to a known traceable concentration of test gas."

This adjustment accounts for naturally occurring drifting and other environmental factors. Specially trained, qualified personnel are the only people permitted to perform full calibrations.

BUMP UP YOUR BUMP TEST KNOWLEDGE AND AVOID CALIBRATION FRUSTRATION

Now that you know the differences in definition, let's take a look at some tips and tricks for using both bump tests and calibration.

When to Test

Perform a bump test and calibration check every single day before anyone uses the DRPGM that day (and according to manufacturer's instructions).

The DRPGM's manufacturer's guidelines—plus internal policies and regulatory recommendations—determine exactly how and how often to fully calibrate that particular DRPGM. Full calibration is also necessary if a bump test or calibration check fails. You can perform a full calibration twice, but after two "fails," the device must be pulled from use. Full calibrations should also take place after the following types of exposures:

- Different operator or working environment
- Extreme environmental, storage, and operating conditions
- Highly concentrated target gases and vapors
- Solvent vapors and corrosive gases
- Poisons and inhibitors

Testing Best Practices

When testing a device, use the following guidelines:

- Perform the calibration in fresh air
- Choose a test environment with conditions that match your workplace
- Use a recommended gas mixture, which should meet the National Institute of Standards and Technology (NIST)

- Check the gas's expiration date
- Always refer to your product manual for specifics

Keep a Record

It's essential that you keep records of all device testing and maintenance. Should a user experience a reportable event with one of your devices, the Occupational Safety and Health Administration (OSHA) needs to see a history of all bumps and calibrations during the year prior to the incident. But even without an incident, testing and maintenance data can track other valuable information, and new technology makes record-keeping easier and more valuable than ever.

Digital tracking and remote monitoring are just some newer technologies that automatically track and allow you to manage your fleet's bump tests and calibrations from wherever you are. All this flexibility is possible because of the devices' connectivity to the cloud and software as service, where the portable information .

TAKE A PROACTIVE APPROACH: INSIGHTS TO PLAN AHEAD

Data analysis and proactive maintenance can help to streamline the day-to-day monitoring of equipment, eliminate potential risk of human error, and free up time for safety managers to concentrate on driving meaningful behavioral safety improvements. Automatic notifications, for instance, can highlight when equipment components are likely to require maintenance or replacement, allowing pre-emptive action. Worker safety is improved, and costly downtime or operational delays minimized. Gas detectors, for example, rely on sensors that have a finite lifetime. Analysis of usage data can automatically indicate that a sensor's end-of-life is approaching, and a replacement should be ordered. Similarly, bottle gas detectors can verify correct detector operation before use.

SIMPLIFYING THE MANAGEMENT OF YOUR GAS DETECTION FLEET WITH AUTOMATED CALIBRATION

Today, the best test systems calibrate and bump test gas detectors automatically. A test stand should be able to automatically correct the gas cylinder being used and should help you reduce gas volume usage. Test stands should also connect to cloud-based software as a service and provide updated information on bump test, calibrations, sensor life warnings and calibration gas availability. If the gas runs out, detectors cannot be tested. Safety protocol dictates that operatives cannot work. Yet by providing automated alerts about remaining capacity, spare cylinders can be ordered in good time. The ability to instantly track equipment and its location digitally, without resorting to lists on clipboards, also offers significant savings in time and loss of assets.●

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ALTAIR® io360

Gas Detector

One site or many, local or remote monitoring, the ALTAIR io360
Gas Detector effortlessly scales to meet your needs,
increasing safety on your jobsite and for your workers.

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WE KNOW WHAT'S AT STAKE.

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ABOUT MSA

Established in 1914, MSA Safety is the global leader in the development, manufacture and supply of safety products that protect people and facility infrastructures. Many MSA products integrate a combination of electronics, mechanical systems and advanced materials to protect users against hazardous or life-threatening situations.

MSA recently introduced the ALTAIR io360 Gas Detector for a constantly changing industry providing 60 days of continuous, 4-gas, battery life. New dangers and hazards are appearing and you need new technology and data to limit risk. The ALTAIR io360 provides connected worksites with the effortless setup of a smart-home product and local or remote alarms and notifications. Setup and deployment is guided, intuitive and secure; no special IT skills needed. The MSA quality and ruggedness you expect, with an IP68 and drop-tested design and long-lasting, fast-responding X-Cell® sensors. You care about the safety of your workers and your worksites, your gas detection program should to.

Along with gas detection, MSA also works to improve safety in unpredictable work environments that are often part of the job. That's why it's critically important to have the right safety equipment at the moment it matters most. MSA's complete lines of safety products and solutions help protect those workers at the heart of your operation. To learn more about gas detection solutions from MSA, visit MSAsafety.com/altair-io360.

Committed with the future of safety MSA launched Safety io, a software subsidiary of MSA The Safety Company. Safety io develops software services that can help improve safety outcomes by transforming MSA safety equipment data into meaningful safety insights.

RESOURCES

ALTAIR io360 Gas Detector
- The ALTAIR io360 is designed to operate with the simplicity of a smart home device. MSA did the hard work, so you don't have to.

Safety io
- Transform your detection program by combining best-in-class MSA detectors, test equipment and support with insights from web-based Safety io Grid services.

Portable Gas Detection
- Make tomorrow safer than today through advanced gas sensors and cloud-hosted software services.

Gas Detection Handbook
- Key concepts and reference material for gas monitoring systems.
- Find information on gas detectors, calibration and bump testing, test stations, sensor technology and much more.

Technical Bulletins - Gas Detection
- Find information on gas detectors, calibration and bump testing, test stations, sensor technology and much more.

MSA's Corporate Blog, Spotlight on Safety
- MSA puts a Spotlight on Safety! Check out our industrial blog dedicated to helping keep people and places safe.

Safety Evaluation
- MSA can support you with an on-site safety equipment evaluation—at no cost and zero strings attached.