



Incorporating Newer Technologies into Your Gas Detection Program

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As a new Safety Specialist at a large refinery, I was responsible for improving the crew's portable gas detection program. Upon my first few days on the job, I observed that much of their gas detection equipment had not only suffered the wear and tear of daily use in a refinery, but was sorely aging. Secondly, I observed that the maintenance of the instruments was completely manual, requiring a lot of time and leaving room for employee error and/or disregard. Lastly, I noticed that there was a lack of proper documentation of things like equipment maintenance history or worker exposure history.

Though the refinery's safety record, to this point, had been fairly clean of gas-related incidents, it seemed as if the safety of the crew was at risk given their current gas detection program. I was glad to have the opportunity to implement a new program that would ultimately keep the crew safer when conducting work. The workers required both multi-gas and single gas instruments. The multi-gas detectors would need to be capable of sampling confined spaces. The single gas instruments would need to monitor for H₂S – the most commonly found gas in the refinery.

With this opportunity, I began extensive research on the latest in portable gas detection. I came across a study on bump testing practices, which was conducted by a leading gas detection manufacturer. Given my prior experience and in my discussions with the plant management and crew about the inability to conduct daily bump tests, I was not surprised by the findings. The study showed that about 20% of users bump tested their monitors prior to each day's use; 15% never bump tested. The rest of the users' practices fell somewhere in between.

I soon learned that there was a perfect, cost-effective solution to this problem. A revolutionary single gas monitor had just been introduced to the market. This instrument uses two like sensors for the detection of a single gas. The two sensor readings are processed through an algorithm and displayed as a single reading to the user. This technology was developed to address the major challenge of making sure workers are always using fully functioning, reliable instruments in the field. Previously, that required a functional bump test of the instrument before each day's use.

With this new technology, regardless of bump test frequency, my crew would be significantly safer with the new instrument than with any other single gas instrument on the market today. This made for an easy decision regarding which single gas instrument to implement.

Next, I had to consider the accessories needed to support my gas detector fleet. I started with confined space sampling accessories. Fortunately, some key accessories have been developed over the years that are attached to, or integrated into, a typical portable instrument to improve its performance when sampling for confined spaces such as pumps (external and internal), tubing, filters, and probes. Specifically, there is an external slide-on pump and probe that allows the gas detector to function as a personal monitor, but can quickly be converted for confined space sampling applications. The slide-on pump provides excellent instrument flexibility with the extendable probe, allowing users to distance themselves from the confined space.

I also needed to consider calibration gas. A true gas detection professional recognizes the importance of quality calibration gas and manages its supply accordingly. I consulted with several gas detection manufacturers to ensure they could provide the necessary calibration gas concentrations and stability to achieve accurate calibrations.



Another important accessory I needed to consider was a docking station. It seems that since their introduction to the market, docking stations have quickly grown in popularity as they go beyond simply charging and automating the bump testing and calibration of an instrument. Docking stations store every calibration, bump test, data event, and alarm that the instrument has ever recorded, as well as provide a single user interface for fleet-wide instrument management and visibility.

Docking stations have been a game changing accessory by ensuring proper instrument maintenance and providing unique insight into user habits. They enable companies to thoroughly root cause incidents and increase the overall safety of their gas detection program. To me, it seems that our gas detection program simply cannot go without a docking station.

One of the last, but arguably most important, decisions that I needed to make was whether or not a "Gas Detection as a Service" solution would be beneficial to our program. Gas Detection as a Service is a software-based solution that provides visibility into gas detector alarms, exposure and usage. By subscribing to such a service, your gas detection fleet and data is managed for you. When a unit is malfunctioning, a sensor is losing life, calibration gas is running low; a true service-based gas detection program can automatically send you a new instrument, new sensors and/or replacement calibration gas cylinders. This happens with no additional charges and before you even know that these things are requiring attention. This eliminates instrument down time by having equipment that is always running at peak performance.

Beyond knowing when a unit is malfunctioning, a sensor is losing life, or calibration gas is running low, a gas detection service solution can answer the following questions in real time – Do your gas detectors work properly? Are your gas detectors used properly? What gas hazards are your people exposed to?

Upon reviewing Gas Detection as a Service, it seemed to have the potential to not only keep workers immensely safer, but in relation to my role – it would save me time, money and would allow me to focus on other critical areas in worker safety.

Gas Detection as a Service seemed to be the perfect solution to the challenges faced by this gas detection program. It would provide me and my crew with reliable equipment, painless servicing, and visibility into the field to ensure safe behavior in using the equipment. To me – it was a no brainer.

3 Months Later...

Today, the crew is using the single gas monitors with the redundant sensor technology. I have peace of mind in knowing the crew goes into the field each day using the safest single gas monitor available. We've added several new instrument accessories to our fleet that save both time and money while ensuring the workers are kept safe no matter what kind of work they are conducting within the refinery on any given day. Lastly, Gas Detection as a Service has proven invaluable to our program. From the "in-the-cloud" dashboard that provides us visibility into our program 24 hours a day, to the automated instrument maintenance and reporting, it is a service that we simply could not do without.

Looking ahead, I hope to continually improve our program using the latest technologies that are both reliable and affordable, and above all else, are capable of keeping 100% of our crew safe from hazardous gases 100% of the time.

**The Safety Specialist is a fictional character created for the purpose of this article.*

