Detecting VOCs with the New PID Sensor for Ventis Pro5: Q&A with Gavin Boorman

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Gavin Boorman, managing director and general manager of Industrial Scientific's Europe, Middle East, and Africa (EMEA) regions, answered some questions about our newest sensor for the Ventis Pro5—a photoionization detector (PID) for identifying volatile organic compounds (VOCs).

Q: What is the Ventis Pro5 with a PID VOC sensor?

A: The Ventis Pro5 with a PID VOC sensor is the smallest, most durable, most compact, most comfortable, most reliable PID detector on the market. It's going to be a game changer for industrial hygienists around the world.

The Ventis Pro5 Multi-Gas Monitor is already a super product—tens of thousands of people around the world use Ventis Pros every day for all sorts of difficult applications. There's no other platform for a PID sensor that gives what we give. Aside from the hardware itself, there's a variety of connectivity solutions: BLE, wi-fi, and cellular. The Ventis Pro5 with PID can also connect to our iNet platform, which allows for live monitoring, data management, and end-to-end maintenance services. It's a complete package for VOC monitoring.

Q: Why are PID sensors so important for detecting VOCs?

A: PID sensors have become more prevalent in the past few years as we've discovered some of the long-term health risks associated with exposure to toxic hydrocarbons. The basic issue is that a lot of these organic vapors are toxic before they become flammable.

For many years, it's been standard to measure the lower explosive limits (LEL), or the flammable level of these different gases like methane, pentane, butane, and petrol. (This is the level at which they can explode and cause fires.) But many of the heavier organics, like diesel or jet fuel, are toxic *before* they become flammable. Even if there is risk of explosion, repeated exposure to those substances can also increase the risk of serious health conditions, like respiratory problems or cancer.

Q: What industries should be particularly interested in this new PID sensor?

A: The applicable industries are broad: anywhere where VOCs are present. Some of the common verticals include:

- refineries
- chemicals
- fuel storage & transmission
- hazmat
- surveyors
- water treatment
- food & beverage
- plastics & polymers

This list isn't exhaustive—there are more applications than you might think.

Q: Who will benefit from using the PID VOC sensor?

A: Occupational and industrial hygienists will find the sensor beneficial because they're concerned with health risks as opposed to just safety. Another role is environmental protection officer, particularly as take-action thresholds of these gases continue to decrease.

Because people are recognizing that VOCs are dangerous even in small quantities, monitoring for them is becoming mainstream in health, safety, and environment (HSE) management, too.

Q: In what ways does the performance of the PID sensor for the Ventis Pro5 improve upon traditional PIDs?

A: The big one is humidity response. One of the issues with all PID sensors traditionally is that they suffer from response to humidity.

My favorite demonstration of this is the coffee cup test. If you take most of the PIDs on the market and wave them over a warm cup of coffee, the sensors will drift and give you false alarms. This is a huge challenge because in many industrial applications, as you walk around a work site you will see changes in temperature, humidity, and pressure. That's normal, but traditional PID sensors were very sensitive to those shifts and would give you false data. This can lead to workers taking countermeasures for a gas exposure that never occurred.

The PID sensor for the Ventis Pro5 uses a unique patented technology called fence electrode. They have an extra electrode built into the stack of the sensor, which compensates for some of the drift due to changes in temperature or humidity. If you hold the Ventis Pro5 with PID over a hot cup of coffee, it's stable. This is a huge advantage for workers—they won't have to deal with false alarms.

Another performance improvement is a longer battery runtime. Our new PID requires less power than traditional sensors.

Overall, the PID sensor for Ventis Pro5 is more stable, robust, and gives better long-term performance than older generations.

Q: How does the Ventis Pro5 with a PID sensor compare to a sampling monitor for VOCs, like the MX6 iBrid?

A: The main differences are the sensor and the monitor itself. Sensor technology has evolved over time, which means that the PID sensor for the Ventis Pro5 has significant performance advantages over the PID sensor used in the MX6 iBrid.

Secondly, while the MX6 iBrid is a fantastic product, it's heavy—if you have to wear the detector all day, size becomes an issue. On the other hand, the Ventis Pro5 is something you can clip on your uniform and forget about. It's comfortable, small, and lightweight. The Ventis Pro5 is truly a personal monitor.

The Ventis Pro5 also opens up an entirely new option for connected VOC detection. Before, readings were logged on the monitor and couldn't be accessed until after the job was done and the user returned the monitor to a dock. Now, real-time gas readings from the monitor transmit directly to the cloud, where stakeholders can see what's happening in the field.

Q: With the way the PID sensor works, users have to replace the LEL sensor. Are there trade-offs when you decide to use a PID sensor?

A: There is no trade-off because they're complementary technologies. Before VOCs become flammable, the PID detects the toxic substance in parts per million (PPM) to protect the user. Both readings are valuable, so 90% of the time you're using LEL and PID together in the same device.

Q: PID sensors obviously present serious benefits for users. Why are they not more common?

A: In the past, PID sensors were complicated, expensive, and hard to maintain. With new advances, the cost of ownership has decreased, and you don't need to be a specialist to use it. You can use the Ventis Pro5 with a PID VOC sensor just like any other gas detector—there's nothing fancy or difficult about it.

Q: What excites you the most about this product?

The Ventis Pro5 with PID sensor helps to further our vision: to eliminate death on the job by the year 2050. Right now there are tens, even hundreds of thousands of workers who are exposed to toxic hydrocarbons every one of their work days. Nobody's managing it. Nobody's controlling it. Those people are at risk, and while it might not be an immediate danger to health, there's the threat of long-term health issues. Our goal is to protect people from these hazardous substances and give them warning much earlier so that the employers can take counter measures.

Learn more about the Ventis Pro5 with PID VOC Sensor.