

Technical/Application Article 07

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Falco Fixed PID for Condensing Atmospheres

Introduction

The Falco is a fixed, continuous PID monitor for volatile organic compounds (VOCs). With response to many hydrocarbons, solvents, degreasers, paints, fumigants, etc., it can be used to monitor continuously for workplace safety from toxic vapors in applications such as refineries, paint booths, shipping fumigations, chemical waste storage areas, polymer manufacture, pharmaceutical labs, etc. It can also be used for chemical process control, such as for monitoring plastics curing processes, stack gases, and treatment effluents. The unit is available in four ranges from as low as of 0-10 ppm with 1 ppb resolution, up to 0-3000 ppm with 1 ppm resolution. Outputs include 4-20 mA DC, RS485 Modbus®, and two relays for alarms. The Falco has an externally located intrinsically safe sensor for quick and easy servicing without the need for a hot work permit, and can be serviced and calibrated in a hazardous environment without having to remove power.



Falco for use in highly humid environments

The Falco uses the same PID sensor as the Ion Science Tiger, which solved the problems other PID manufacturers have with quenching of response due to humidity in the ambient air. Figure 1 shows how the Ion Science PIDs are unaffected by humidity while other manufacturer's PIDs show a drop in response at high humidity. Attempts to compensate for humidity quenching using an RH sensor are inconsistent, resulting in this case in gross overcompensation when the compensation algorithm is turned on. Ion Science PIDs are inherently insensitive to humidity, don't require any compensation, and thus are more accurate at high RH.

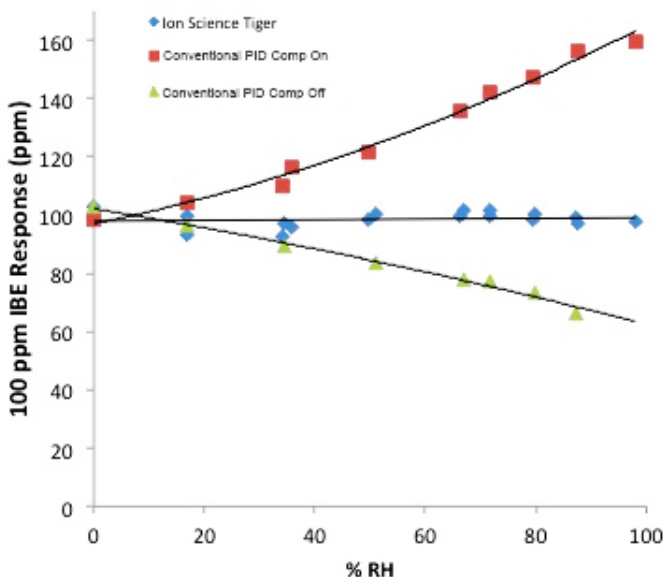


Figure 1. Effect of RH on Tiger V competing PID instrument.



Figure 2. Falco used in condensing environments.

Figure 2 shows that the Falco can even be used in condensing environments. The first and third Falco's have Ion Science's new Typhoon Technology that prevents condensation on the sensor and avoids operating faults and corrosion. The second and fourth units were operated in the conventional way without Typhoon design, showing the fault condition. This capability to operate in condensing conditions expands the Falco's applications to wet environments including outdoor use without the need for weather enclosures, monitoring the headspace of refinery wastewater streams for excessive hydrocarbon contamination, and monitoring the effluents of activated carbon systems used to treat contaminated water.

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