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Why an Annual Calibration of Your Gas Detection System Is Not Enough

The standard and frequency of calibrations of commercial gas detection systems vary, but one thing is clear. One calibration a year is not enough.

It's now known that extreme temperature differentiation (a daily reality in Canada), humidity, harsh operating conditions, high concentrations of target gases due to high traffic loads, and gradual chemical degradation of the sensor all contribute to what is called "calibration drift."

An Occupational Safety and Health Administration bulletin explains that when an "instrument's reference point has shifted, the reading will be unreliable. Regular calibration with a certified standard gas concentration will update the instrument's reference point, ensuring that the instrument will produce continued, accurate readings."ⁱ

Alberta Fire Code (AFC) 6.7.1.1 and Alberta's Occupational Health and Safety Code (OHSC) 720-44 indicate that calibration frequency should be according to manufacturer specifications.

Manufacturer specifications for calibration frequency have undergone changes in recent years, as studies have shown that an annual calibration is not sufficient. Manufacturers, including leading brands Armstrong Monitoring, Honeywell Analytics, and Quatrosense Environmental (QEL), agree that calibration should occur a *minimum* of twice per year.

- **Armstrong:** "Verification of operation and calibration should be done at least once every 6 months for safety reasons, and for highly demanding applications, monthly verification is recommended."ⁱⁱ
- **Honeywell:** "The frequency is determined by the operating conditions... Inspect the unit at least every 6 months."ⁱⁱⁱ
- **QEL:** "Recommended every three months."^{iv}

Benefits and Cost Savings

Frequent calibrations have a twofold benefit: they help ensure human safety—always critical—and they improve energy efficiency and equipment longevity. The ultimate result of improved energy efficiency and equipment longevity is cost savings. Here's why:

- Frequent calibration keeps the detectors operating at their optimum level, prolonging sensor life and thereby reducing capital expenditures for replacing the sensors.
- Sensors kept at the proper range also prevent a premature triggering of the ventilation system, resulting in tangible savings due to lower utility and operating costs.

One HVAC service company emphasizes that regular calibrations result in reduced wear on fans, because properly calibrated equipment only triggers the system exactly when needed and turns it off as

soon as gas levels are below warning level. This decreases “wear on bearings, belts, and motors; increased fan life and savings are realized.”

Energy savings are even greater: “Reducing the run time of fans to an *on-demand* basis will reduce energy requirements for the actual fan operation. This can be realized for both the exhaust fans *and* the make-up air fans.” Click [here](#) for the full article, or refer to endnote.

A study was done that confirms the benefits and cost savings when detectors are properly calibrated. Depending on the application, thousands of dollars per year of savings are possible when the system is maintained at optimum efficiency. For a scanned copy of this article, please contact me at laura@multigasinc.com.

MultiGas promotes *industry best practices* for optimal performance of a gas detection system—scheduled quarterly calibrations. This results in a safe and healthy building that has the highest level of energy efficiency. At the same time, our company realizes that factors like model and age of equipment, operating conditions, and so on may impact the calibration schedule. By looking at all the factors that affect sensors, including the number of detectors providing coverage, MultiGas advises on an appropriate calibration schedule—two, three, or four times annually—for each individual case.

If you would like to schedule a technician to assess your application, discuss how we may be of service to your company, or request a calibration estimate, please email the sales team at sales@multigasinc.com or visit our website at www.multigasinc.com.



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ⁱ US Department of Labor OSHA Safety and Health Information Bulletin. <http://www.osha.gov/dts/shib/shib050404.html>

ⁱⁱ Armstrong Monitoring, AMC-1222 Operations Manual. <http://www.armstrongmonitoring.com/Files/store/attachments/AMC-1222.pdf>

ⁱⁱⁱ Honeywell Analytics, E3Point Operations Manual.

<http://www.honeywellanalytics.com/Technical%20Library/Americas/E3Point/Manual/1998M0772%20E3Point%20Network%20EngFra%20rev3.pdf>

^{iv} QEL Safety, QTS 6000 Operations Manual. http://www.qelsafety.com/wp-content/uploads/2012/02/QTS_6000_IOM1.pdf

^v Arjay Engineering Gas Detection, “Gas Monitoring for Ventilation Control and Energy Management (Vehicle Garages)” [brochure]. <http://www.skitternet.com/brochures/Gas%20Monitoring%20for%20Ventilation.html>

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