

What is the difference between Residential and Commercial Gas Detectors and Why Should Residential Gas Detectors NOT be used in Commercial or Industrial Applications?

Commercial gas detectors can be as much as 100 times the cost of residential gas detectors, making the residential models financially tempting, especially for large area applications. However, there are some important differences in performance, diagnostics, regulatory standards, and configurability between the two that make using residential models in commercial or industrial environments insufficient, dangerous and unlawful.

Enclosures

Residential detectors are built to withstand standard household temperatures and activities, which mean they are typically made of regular low impact plastic, are not waterproof or IP rated and are mounted on the wall and forgotten about. If used in a commercial setting, the enclosure alone probably wouldn't survive a year. Commercial detectors need to be able to endure all types of conditions such as heat, cold, water, dust, regular maintenance and possible damage from vehicles, machinery or vandalism. Commercial gas detector enclosures are typically rugged, waterproof, IP rated, locking and will last for years in mild to harsh environments.

Sensors

Residential gas detector sensors are tested before they leave the manufacturing plant and do not require calibration after they are installed. Commercial gas detectors are calibrated before they leave the manufacturing plant and require a regular maintenance schedule that includes bump tests and full calibrations to ensure the device is working properly and accurately sensing gas levels.

Residential sensor technology is basic as no specialized features are required. Likewise, the protocols are basic and often follow an OFF/ON pattern whereby the sensor takes readings at intervals. Commercial sensor technology is required to be more advanced because of the demands of the environments the sensors are placed in and the information needed to be obtained from them.

Commercial sensors are continuously monitoring the air and they may be placed in humid, cold or fluctuating temperatures or spray down environments. There are many sensing technology types (electrochemical, semiconductor, infrared, catalytic, etc.) that have different sensing ranges, lifespans, resolutions, compensations, and are better suited sensing certain gas types in different applications.

Functionality / Configurability

Residential gas detectors are basically maintenance free and once installed don't require any changes to their pre-programmed settings. The alarm is set on a timed basis and in the event there is a gas leak, it will alarm only after a time-weighted duration of over 60 minutes. Meaning in general, if the gas reading is above the average exposure allowed over an eight hour period for longer than an hour, then the alarm will sound. (Of course, if the gas reading skyrockets over a certain level, the alarm will sound sooner.)

Commercial gas detectors will alarm immediately at one or more pre-determined gas levels, usually referred to as a low alarm and high alarm. Some detectors have a mid-alarm level set point as well. These detectors can also be configured to do many other things such as start or stop ventilation systems, trigger remote strobes/horns, network with each other, communicate with a BAS or a controller, dial emergency response, data log, etc.

Ratings / Certifications and Regulatory Authorities

Residential and commercial gas detection devices are regulated by national organizations such as UL, ANSI, CSA, EMC, local and federal building code, etc. for safety and performance and each must meet different certification standards. Additionally, the standards for commercial devices are further standardized depending on use, such as non-hazardous and hazardous applications. Failure to use the correctly rated equipment in the correct application could seriously jeopardize the health and safety of people and lead to very expensive legal issues.

Then there are the regulatory authorities such as OSHA and NIOSH who have established codes and standards for permissible exposure limits to hazardous gases in the workplace, which differ from the standards set out for residential houses.

In conclusion, residential and commercial gas detection equipment is significantly different in their functionality, physical abilities, required certifications and compliance with local and national codes and standards. One should not be substituted for the other in applications they are not approved or intended for. It is important to understand what features and benefits the different types of gas detectors offer, where and why they should be used, and the rules and regulations that govern that use to ensure that the health and safety of human lives is protected properly and with due diligence.

For suggestions on gas detection systems, indoor air quality monitors and calibration, please contact EnviroMed Detection Services.

References

Sensor Insights. The Difference Between Industrial, Commercial and Residential Sensors
Mike Justice, Grid Connect. June 12 2015
<http://www.sensorsmag.com/sensors-products/difference-between-industrial-commercial-and-residential-18338>

© 2015 Critical Environment Technologies Canada Inc. All rights reserved.