AirTest™
Sensors That Make Buildings Smart!

Understanding CO Sensing Technologies to Cut Energy Cost for Parking Garages

Overview

City codes for enclosed parking areas require ventilation during all hours of operation to protect against an unhealthful build-up of carbon monoxide (CO). As a result, exhaust fans generally run 100% of operating hours. Although some buildings use timers to cut fan run time, it is important to note that the use of timers may not meet code compliance and health considerations.

To achieve major energy savings and meet all health requirements, carbon monoxide sensors have now been authorized by code and mandated in some jurisdictions. Sensors measure CO levels, activating fans only when necessary to maintain CO at an acceptable level, saving upwards to 90% of energy cost.

The technologies typically used are solid-state (MOS) and electrochemical sensors.

Critical Considerations for CO Sensors

- Highest possible degree of accuracy
- Design to enable annual calibration
- Maintain accuracy during sensor life
- Susceptible to other gas and humidity
- Sensor life and replacement cost
- Easily incorporated into existing BCS
- Easy use with standard electric boxes

Solid-State Sensors

These sensors are most commonly used in residential areas with a need to typically detect gas concentration of 100 ppm for over 90 minutes. In contrast, parking garage applications typically need to measure 35 or 50 ppm concentrations within a few minutes.

All solid-state sensors have short-term drift (typically ±20%) and long-term drift (varies with manufacturer) that have dictated industry practice of checking calibration on an annual basis when applied in garage applications.

The accuracy of measurement of these devices can be significantly affected by changes in temperature and humidity. These sensors can have a life of 2 years or less (depending on the manufacturer).

Solid state sensors are relatively inexpensive and are generally used where high level performance and accuracy are not required.

Electrochemical Sensors

Electrochemical sensors are highly accurate (better than ± 1 ppm at concentrations that are under 50 ppm) with minimum short or long-term drift, compared to solid state sensors, which can be as high as ± 9 ppm. Accuracy is not significantly affected by other gases, humidity, or temperature. The sensor is designed for simple annual calibration.

Sensor is loop powered to easily incorporate into existing building control systems and used with existing electrical boxes. It is designed for vandalism and impact resistance.

Electrochemical was often two to three times the price of solid state with only up to an 18 month life. The technology has evolved so that the first long-life, electrochemical sensor system with a 5 year life is now available at a solid-state price with a very low cost plug-in sensor replacement required after 5 years.

ENERGY INNOVATION GROUP

3916 Sepulveda Blvd., Suite 109, Culver City, CA 90230
P: 310-313-1917 F:310-313-7605
info@energyinnovation.net