

## Peace of mind. Guaranteed.

Continuous monitoring of carbon monoxide and nitrogen dioxide in a mid-sized parking garage.

Enclosed parking structures can become hazardous areas when exhaust fumes collect and are not ventilated properly. To provide fresh air and move contaminated air out of the facilities fans are typically used. It is not economical or practical to run the fans continuously, as wear shortens motor life, higher maintenance services are required and the energy consumption is not only expensive, but not environmentally friendly either.

Carbon monoxide is the most abundant of the exhaust fumes, but there is also the potential for nitrogen dioxide from diesel powered engines and in more modern facilities, hydrogen buildup from electric car charging stations. To provide a safe parking facility and minimize energy costs associated with the operation of the ventilation system, a hazardous gas detection system is necessary.

For a small to mid-size parking structure, Critical Environment Technologies' SCC Self Contained Controller with one internal electrochemical CO sensor and one internal electrochemical NO<sub>2</sub> sensor offers the features and functionality to ensure a safe breathing environment.



Parking garages vary in size, layout and the number of cars in operation. When planning installation and mounting locations for each SCC, you must consider the air flow patterns. Entrances to the parking facility, elevators, exhaust fans, makeup air fans and any other sources of active air currents will affect the ability of the sensor to accurately read the gas levels. Sensors should be placed in dead air zones, where there is little or no air movement and areas of good air circulation but



not in the path of rapidly moving air. For most commercial vehicle exhaust applications, each sensor will monitor up to 5000 to 10,000 square feet, or a 40 to 56 foot radius. Each SCC should be mounted in the “breathing zone”, 4 to 6 feet from the floor, the height at which most humans breathe. The SCC can be mounted on the back of a column or a wall, preferably in a less obvious spot to reduce the likelihood of tampering. A few typical configuration examples for an SCC with two internal sensors, one CO and one NO<sub>2</sub> would be as follows.

Configured with the low alarm to trigger the first relay to turn on the exhaust fans to bring the gas level down to an acceptable level and the high alarm to trigger the second relay to activate a remote horn/strobe.

Configured with the low alarm to trigger the first relay to turn on the exhaust fans and the makeup air fans to bring the gas level down to an acceptable level and the high alarm to trigger the second relay to activate a remote horn/strobe.

Configured with the low and high alarm to trigger the first and subsequent second relay that activates a two speed fan at low speed and high speed. (This requires the proper power connection of the fans themselves.)

The relays can be programmed to activate the equipment or to delay the activation of the equipment for a programmed length of time after the low alarm is activated (up to 20 minutes). This allows the fans to get up to speed and stay on before they get turned off if the alarm was activated by a nearby idling vehicle or a high number of cars entering/exiting all around the same time, as commuters start and end work. Using the relay's on delay and off delay functionality for activating the ventilation system keeps the equipment running properly and reduces energy costs by not having the fan on constantly. The SCC also features an optional on delay for the internal alarm (up to 15 minutes).

The SCC is available with combustible gas sensor options, for example, if the parking facility is frequented by propane powered vehicles or is equipped with electric car charging stations that cause hydrogen buildup, or if the facility has been built on an old landfill site, methane off-gas may be of concern.

Remote visual and audible alarm devices such as the Remote Strobe & Horn (RSH-24) may be connected to Relay 2 and be located in an area that will alert the appropriate parking lot personnel.