

## Peace of mind. Guaranteed.

Continuous monitoring of ammonia, carbon monoxide, nitrogen dioxide and propane in ice rinks

Ice arenas have multiple gas hazards in various locations throughout the facility. Ammonia is commonly used in the ice chiller mechanical room and if a leak were to occur, it would become a corrosive, toxic gas.

At the ice surface level, gasoline, propane, natural gas (and sometimes diesel) powered equipment such as an ice resurfer and ice edger produce exhaust composed of carbon monoxide and/or nitrogen dioxide. Other fuel powered equipment such as floor sweepers, lift trucks and other vehicles idling in close proximity can add to the CO and NO<sub>2</sub> levels.

Using Critical Environment Technologies' [FCS](#) Multi Channel System Controller, [CGAS-D](#) Detectors and a [CXT2](#) Explosion Proof Transmitter is the solution.

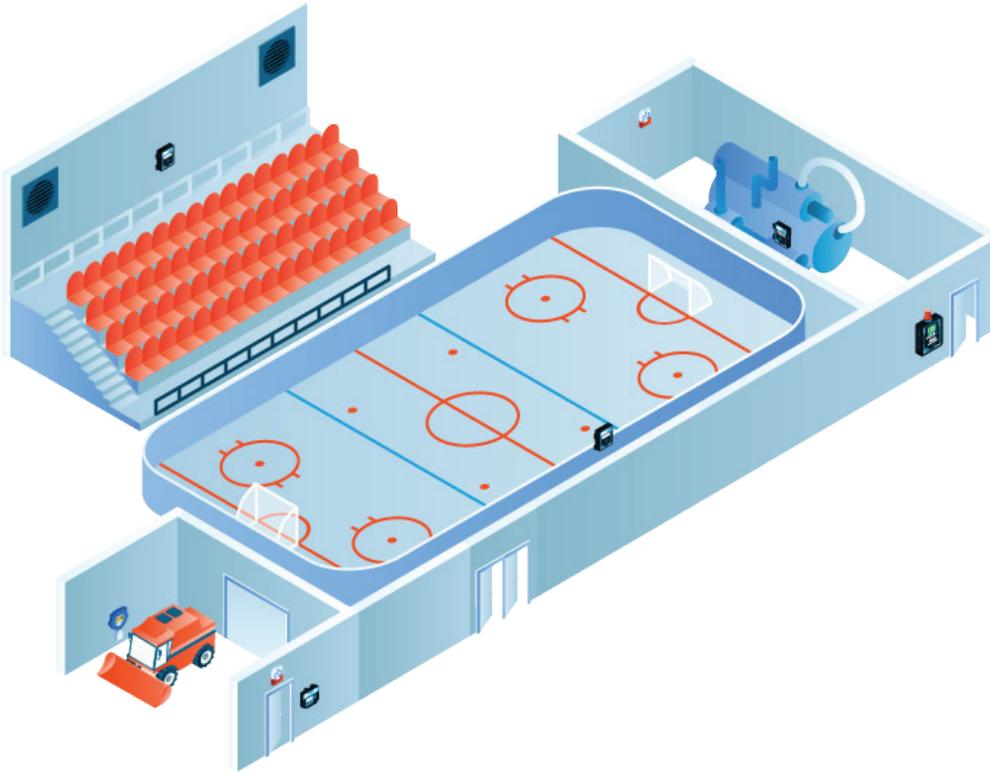
Strategic placement of the transmitters (gas detectors) provides continuous monitoring of potential leaks and the communication with the [FCS](#) Controller provides a status of the air quality conditions in all potentially hazardous areas.



## Continuous Monitoring of Ammonia (NH<sub>3</sub>), Carbon Monoxide (CO), Nitrogen Dioxide (NO<sub>2</sub>) and Propane (C<sub>3</sub>H<sub>8</sub>) in Ice Arenas

The CGAS-D-NH<sub>3</sub> digital gas detector inside the chiller room should be mounted on or near the ceiling because Ammonia is lighter than air and will typically collect within 12 inches of the ceiling. There should also be a remote Strobe & Horn inside the room, configured to be activated by the CGAS-D relay (if ordered with Option -RLY) or one of the FCS relays. A two channel CGAS-D-CO-NO<sub>2</sub> digital gas detector should be mounted atop the penalty box or score keepers' box to

monitor carbon monoxide and nitrogen dioxide levels on the ice from resurfacing equipment. The CXT2-D-IC3H8 Explosion Proof transmitter with an infrared propane sensor in the ice resurfer parking area should be mounted 6 inches from the floor, preferably near the drain channel as propane is heavier than air and will accumulate in low lying areas. If the ice resurfer is powered by natural gas, a CXT2-D-ICH4 Explosion Proof transmitter should be used instead and mounted on or near the ceiling to monitor the levels of methane. Outside the door of the maintenance equipment room should be mounted an RDM Remote Display Module to provide a visual check of gas levels prior to entering the room.



The FCS System Controller communicates with the CGAS-D and CXT2 transmitters, providing a single point of access to view gas level readings and configure transmitter settings. The RDM displays the information gathered from the FCS as another point of access to view the gas level readings. The FCS should be mounted outside the chiller / mechanical room entry door to provide a visual check of the gas levels prior to entering the room. The FCS is pre-programmed and field adjustable. Configurable settings include relay assignment, time delays, logic control, sensor types and ranges, alarm set points, etc. The FCS has 4 relays that can be configured to activate the exhaust ventilation system, trigger onboard and remote alarms and other procedures as appropriate. The same gas detection system is available with analog inputs and CGAS-A transmitters. Either system can be configured with an optional AO module that offers four 4-20 mA outputs. The FCS is available with BACnet® or Modbus® output to a building automation system.

The FCS should be equipped with a top mounted strobe and a manual shut off switch (meets B52 code requirements). At specified alarm levels, the ventilation system can be activated as well as any remote devices such as the Remote Strobe / Horn combo (RSH-24V-R or RSA-24V). The manual shut off switch can be used to shut off the chiller equipment.