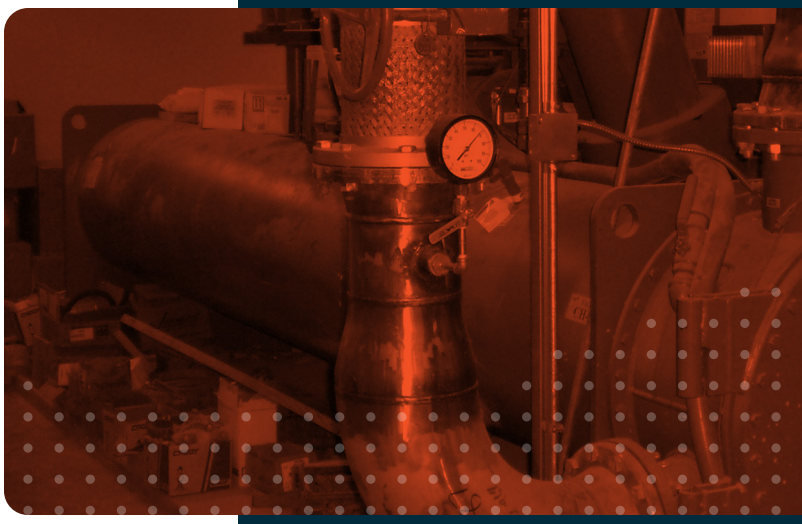
APPLICATION GUIDE

SINGLE CHILLER GAS DETECTION

Continuous monitoring for refrigerant leaks in a machinery room with one chiller.



Peace of mind. Guaranteed.

Often located in less visible areas of a building, machinery rooms contain the equipment that generates chilled water for air conditioning systems in commercial and institutional facilities such as hotels, office towers, and supermarkets. These systems use refrigerants or ammonia to move heat efficiently. While highly effective, these substances can pose serious risks if they leak—potentially displacing oxygen, causing toxic exposure, or creating fire hazards depending on the refrigerant type. Detecting leaks early in these mechanical spaces is crucial to protecting occupant health, preventing costly refrigerant loss, and avoiding increased energy consumption.

Using Critical Environment Technologies' cGas-SC Self Contained Controller and a cGas Detector Infrared Refrigerant Analog Transmitter is key to maintaining a safe, efficient, and regulation-compliant chiller room.

Inside the machinery room, an analog cGas Detector with an infrared refrigerant sensor should be installed as close as possible to potential leak sources and 10 - 18 in (25 - 45 cm) off the floor. Refrigerant gas is heavier than air and tends to accumulate near the floor in areas with limited air movement. The CGAS-A-IR will continuously transmit a 4 - 20 mA analog signal to the cGas-SC Self Contained Controller which will show the corresponding gas level reading.

The cGas-SC should be equipped with a side mounted strobe and installed at viewing height outside the chiller room door so the displayed gas level reading can easily be seen prior to entering the room. There should be an RSW-E Remote Switch outside the door that provides an emergency shutoff control for the mechanical equipment

GAS DETECTION SOLUTION

- cGas-SC Self Contained Controller
- cGas Detector IR Refrigerant Transmitter
- RSW-E Remote Switch
- RSH-24V-R Remote Strobe & Horn

Critical Environment Technologies

THE GAS DETECTION EXPERTS.

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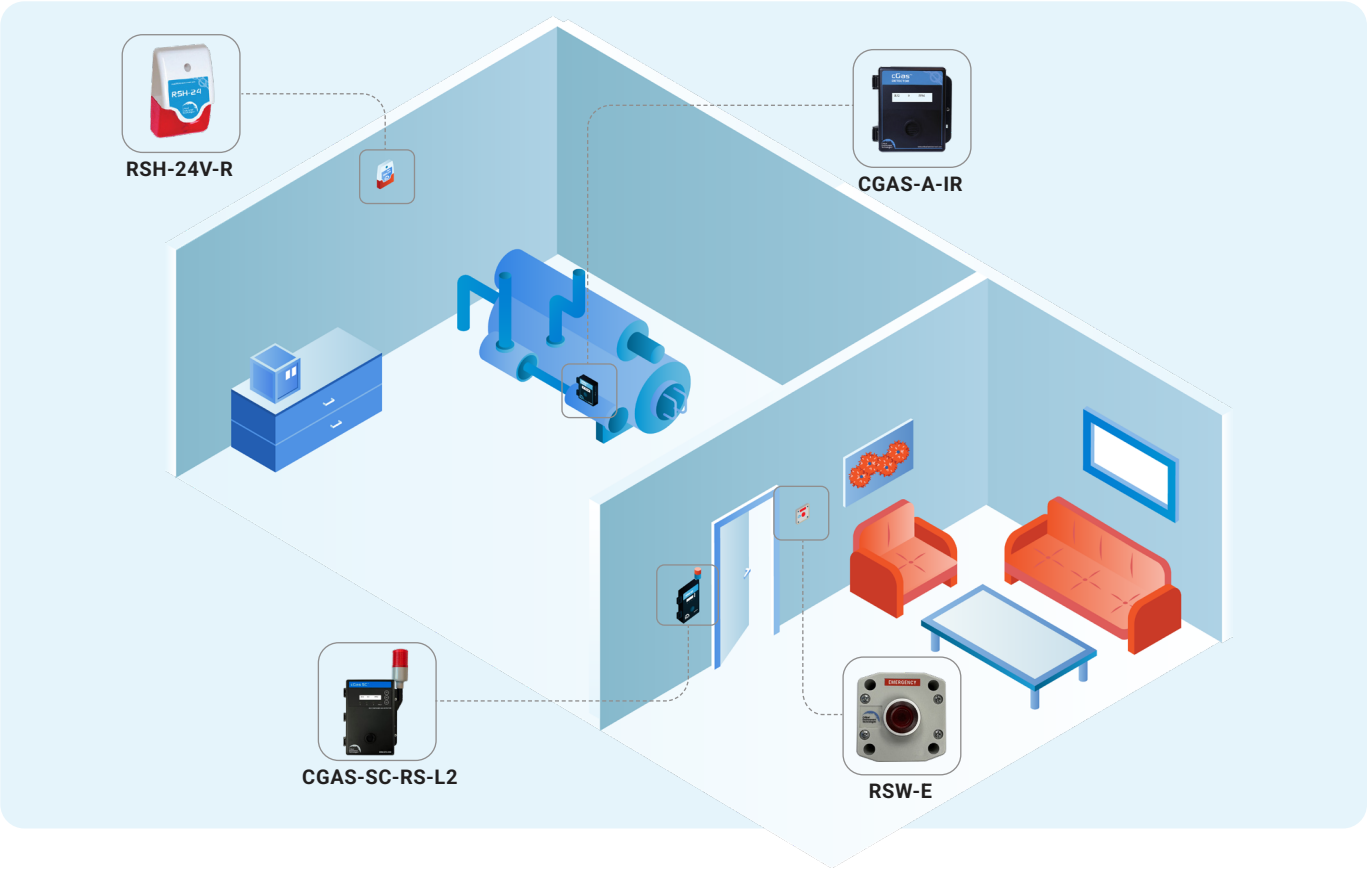

should it be necssary to do so. A remote audible visual alarm device such as the RSH-24V-R Remote Strobe & Horn should be mounted in a higly visible area inside the room.

When gas concentrations reach or exceed a preset threshold, the CGAS-A-IR sensor activates its alarm and sends a signal to the cGas-SC controller. The controller then initiates audible and visual alerts, starts the mechanical ventilation system, and executes any other necessary safety protocols. This process safeguards maintenance staff, supports compliance with standards such as ASHRAE 15 and CSA B52, and helps mitigate environmental harm caused by refrigerant leaks.

The cGas-SC operates on low voltage by default but can be configured for line voltage using Option -DV. It features three programmable alarm levels and two dry contact relays. Option -2AO allows for two analog outputs, which can be used to control variable frequency drives (VFDs) or integrate with a Building Automation System (BAS) to trigger alarms and other safety responses. Additionally, the cGas-SC supports field-configurable BACnet® or Modbus® communication for seamless BAS integration.

When ammonia (NH_3) is used instead of refrigerants, the system configuration remains largely unchanged—except that a cGas Detector equipped with an ammonia sensor is required instead of one designed for refrigerant gases. The CGAS-A-NH3 should be installed above the chiller, positioned as close as possible to potential leak points and near the ceiling. Since ammonia is lighter than air, it tends to rise and accumulate at ceiling level, making high placement critical for effective detection.

The cGas-SC Self Contained Controller and CGAS-A-IR fixed system is fully set up, programmed, calibrated and tested prior to being shipped from the factory. It is ready to install upon arrival and operate following the appropriate warm up period.