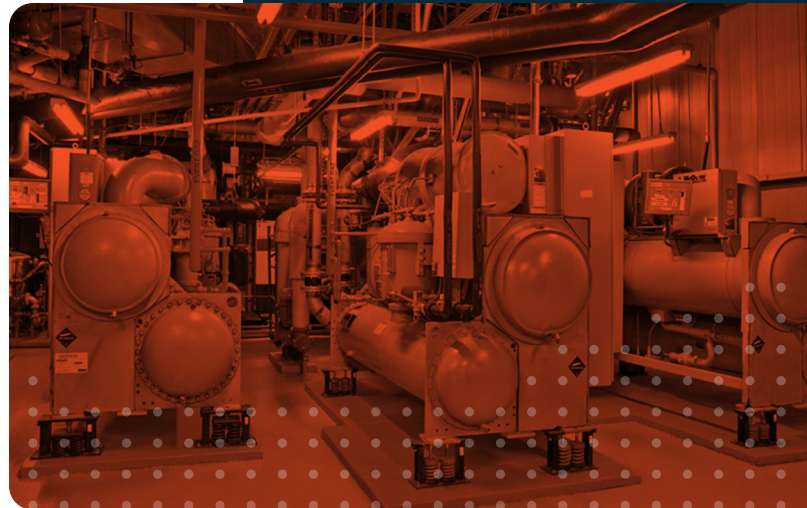


APPLICATION GUIDE

CHILLER ROOM GAS DETECTION

Continuous monitoring for refrigerant leaks in machinery rooms with two or more chillers.



Peace of mind. Guaranteed.

Often tucked out of the way, chiller rooms house the equipment responsible for producing chilled water used in air conditioning systems for hotels, office buildings, supermarkets and other commercial and institutional buildings. These systems rely on refrigerants or ammonia to transfer heat. While effective, these substances can be dangerous if leaked, as they may displace oxygen, cause toxic exposure, or even pose fire hazards depending on the type of refrigerant used. Early detection of a refrigerant leak in a machinery room can prevent dangerous health implications for occupants, minimize significant loss of refrigerant and reduce additional energy costs.

Using Critical Environment Technologies' FCS Flexible Control System and a cGas Detector Infrared Refrigerant Transmitter is key to maintaining a safe, efficient, and regulation-compliant chiller room.

Inside the machinery room, each chiller should be monitored by a digital cGas Detector with an infrared refrigerant sensor 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 FCS Controller communicates with the CGAS-D-IR refrigerant transmitters inside the room and comes equipped with a top-mounted strobe and manual shutoff switch. It should be mounted outside the machinery room entrance to provide a visual check of the gas levels prior to entering the room. The manual switch on the FCS provides an emergency shutoff control for the mechanical equipment should it be necessary to do so.



GAS DETECTION SOLUTION

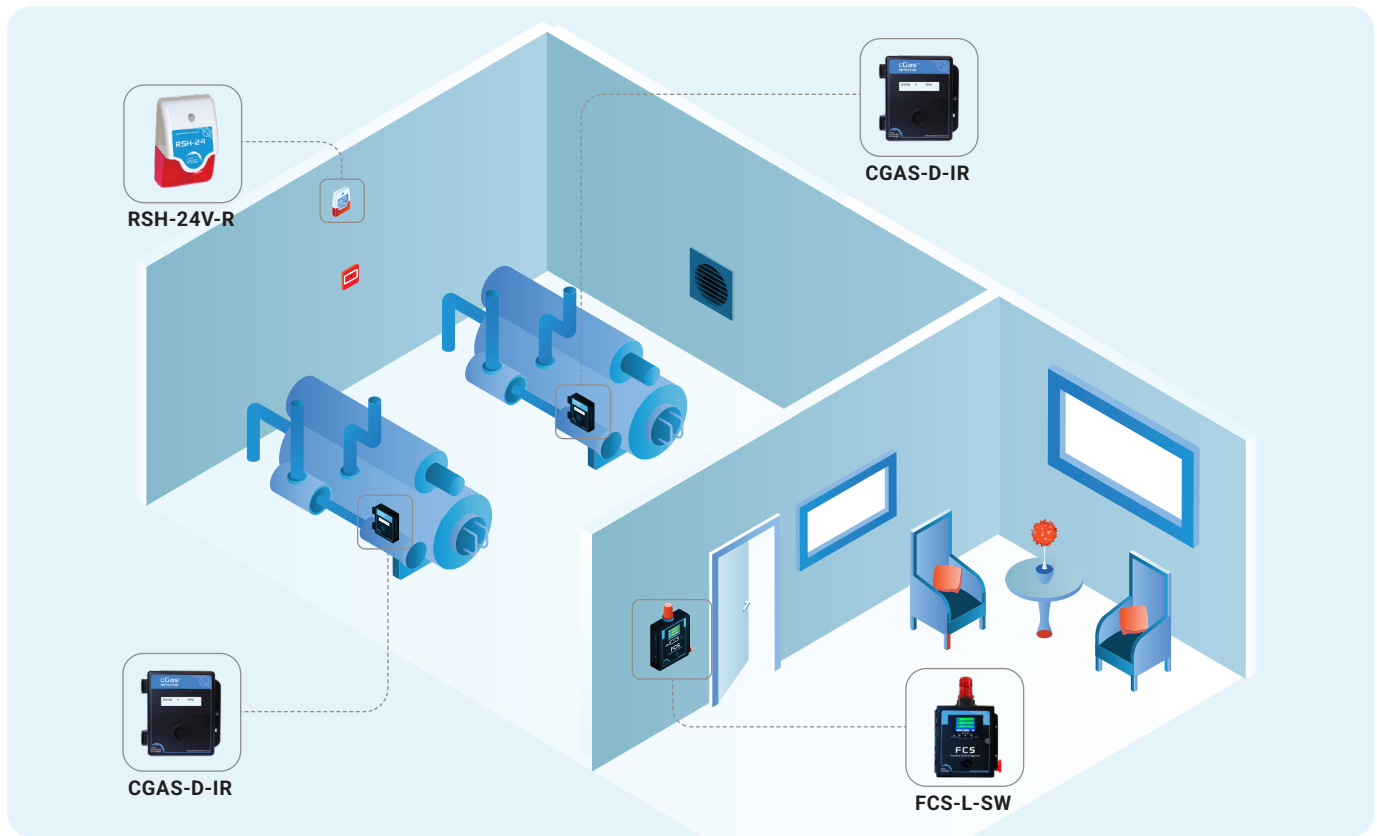
- FCS Flexible Control System
- cGas Detector IR Refrigerant Transmitter
- RSH-24V-R Remote Strobe & Horn



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If the gas concentration reaches or exceeds a predetermined level, the CGAS-D-IR will trigger its alarm and send a signal to the FCS which in turn will trigger audible alarms and activate the mechanical ventilation system, shutdown equipment and call emergency response as required. 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 FCS supports Modbus® RS-485 communication and optional 4–20 mA output signals. Integration with a building automation system is supported via BACnet® MS/TP or Modbus® RS-485. The system is pre-programmed and field-adjustable, offering four dry contact relays, priority settings, time-of-day logic, data logging, an audible alarm, and a full color touch screen. It can be configured to start exhaust ventilation, shut down equipment, sound alarms, or perform other safety procedures as needed.

Remote visual and audible alarm devices such as the RSH-24V Remote Strobe & Horn should be installed inside the room. If there is another entrance to the room, an RDM Remote Display Module with a side mounted strobe should be mounted outside the door of that entrance to provide visual confirmation of gas level readings prior to entering the room.

When ammonia (NH₃) 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-D-NH3 detectors should be installed above the chillers, 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 FCS Controller and CGAS-D-IR detector 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 warmup period.



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