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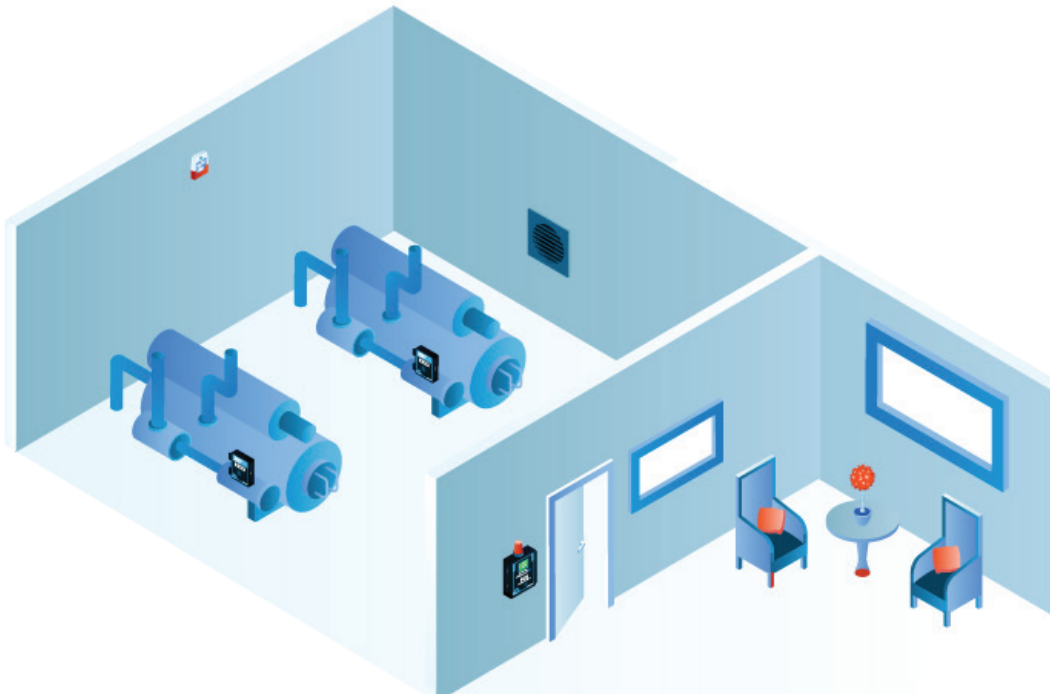
Continuous monitoring of refrigerant gas in mechanical rooms with two chillers.

Early detection of a refrigerant leak helps prevent dangerous health consequences to occupants, reduces significant loss of expensive refrigerant and decreases energy costs. If a leak does occur, a fixed gas detection system permanently installed near the chiller equipment in an area where a refrigerant leak is most likely to concentrate will ensure people will be alerted and kept safe.

Critical Environment Technologies' [FCS](#) 4 channel Flexible Control System and two [CGAS](#) gas detectors with a solid state refrigerant sensor provides an economical and reliable gas detection solution. Outside the door of the mechanical room, the [FCS](#) Controller should be mounted with a top mounted strobe and a manual shut off switch which meets B-52 Mechanical Refrigeration Code requirements. The [CGAS](#) transmitters will be mounted inside the room to provide continuous monitoring for potential leaks. When gas level readings reach a predetermined level, the [CGAS](#) will trigger its own alarm and relay (if configured) and send a signal to the [FCS](#) which in turn will trigger audible alarms and activate the mechanical ventilation system and call emergency response as configured.



Inside the mechanical room, two CGAS-D digital transmitters, each with an internal solid state refrigerant sensor should be placed in the areas where a refrigerant leak is most likely to concentrate and where pooled refrigerant is likely to accumulate, but away from ventilation fans and any rapidly moving air. Refrigerant gases are heavier than air and will concentrate closer to the floor and in areas with less air current. Each CGAS-D should be mounted 10" to 18" off the floor so it is at an appropriate height for detection and accessible for routine calibration and maintenance. The LCD display on both CGAS-D



transmitters can be enabled or disabled, and an optional relay and buzzer can be added at time of order. Gas measurement readings will be transmitted to the FCS Flexible Control System and will be viewable on its display.

The FCS Controller with a top mounted strobe and manual shut off switch (meets B52 requirements) should be mounted outside the mechanical room entry door. It will communicate with the CGAS-D refrigerant transmitter(s) inside the room and will display the target gas levels for viewing 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 setpoints, 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. Up to a maximum of four transmitters can be connected to the FCS-4. If more than 4 channels are required, other models of the FCS are available that offer 8, 32 or up to 64 analog channels.

The FCS should be equipped with a top mounted strobe and a manual shut off switch (meets B52 code requirements). The manual shut off switch can be used to shut off the chiller equipment. Remote visual and audible alarm devices such as the Remote Strobe & Horn (RSH-24V-R) should be set up inside the room and 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.

For many refrigeration applications, using solid state sensors will provide an economical and reliable gas detection solution. Solid state sensors are reliable if used in a clean area with very little temperature and humidity changes. Solid State refrigerant sensors should not be used where there are other chemicals or gases present (other than refrigerants), such as alcohol based cleaners, fumes from running engines, fuel storage containers, etc.