

# Mechanical Equipment Rooms

Safety & Best Practices



WE KNOW WHAT'S AT STAKE.

# Mechanical Equipment Rooms

## Importance of monitoring refrigerant and combustible gases within Mechanical Rooms

A building's mechanical room is the hub of its heating, ventilation and air conditioning system. This can include central utility plants, boiler and chiller rooms, mechanical and electrical rooms and fuel rooms. The equipment within these rooms has the potential to leak harmful combustible or toxic gases, including costly and environmentally harmful refrigerant gases.

Refrigerant gas is considered a toxic gas and although refrigerants have low toxicity, at high concentrations they can displace oxygen. Oxygen deficiency can cause serious injury or death to workers. Furthermore, these chemicals are controlled substances by the Environmental Protection Agency, which means not only are they dangerous to worker health and safety, but they are harmful to the environment. Many of these refrigerants are categorized as ozone depleting substances and are highly monitored. Gas monitors satisfy the requirements for equipment room emissions included in EPA regulations.

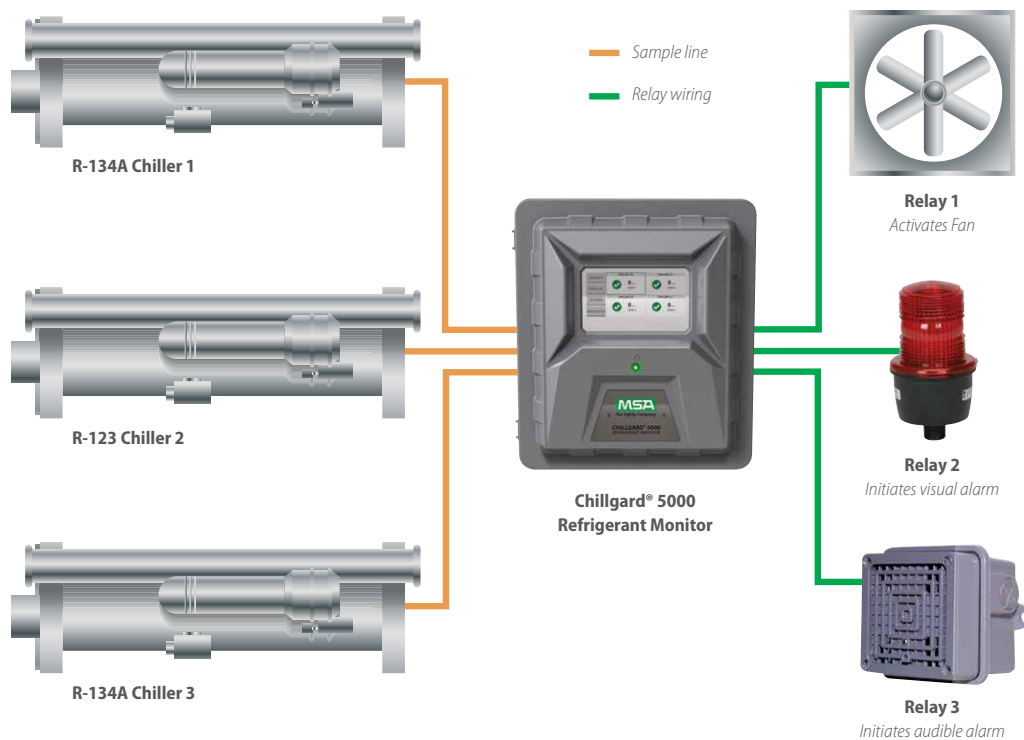
For economic reasons refrigerant leak detection is encouraged due to costs associated with refrigerant leaks.

## The Complete Solution

The Chillgard® 5000 is the most selective and sensitive refrigerant leak detector on the market. With the ability to read down to 1 ppm, this monitor provides the earliest response to leaks. Minimize unnecessary maintenance costs associated with calibration and sensors by using a centralized sample draw system.

The Chillgard 5000 is equipped with five internal relays for fault, three levels of alarm and an external horn option.

It has integrated BACnet and Modbus for direct digital communication back to a centralized control system. BACnet protocol allows for non-intrusive gas concentration monitoring and alarm status. No configuration is necessary, data is automatically mapped into the database upon protocol selection.

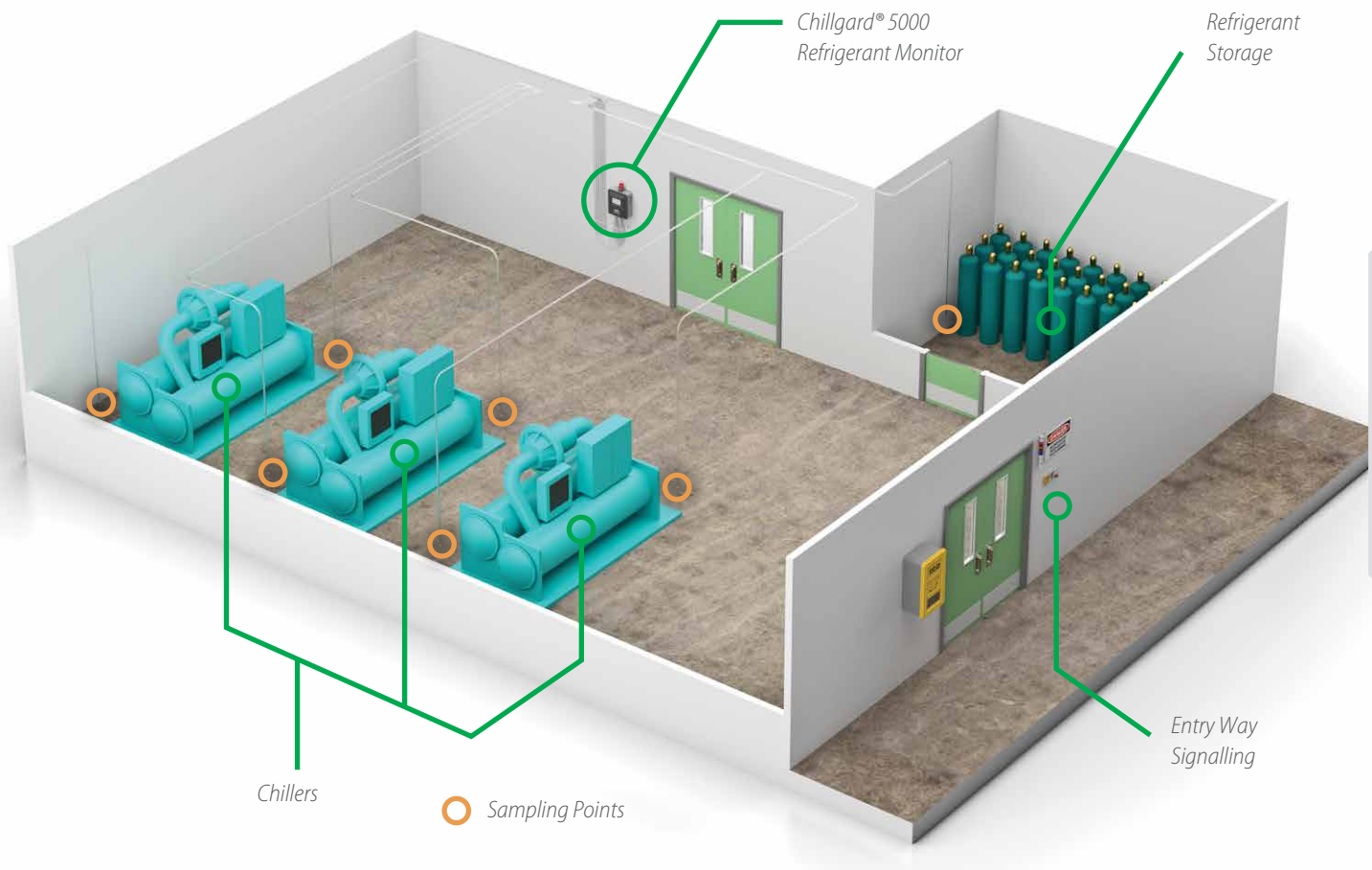


## Monitor Location

- Mount the unit vertically; do not mount the unit to structure subject to vibration and shock such as piping
- Do not locate the unit near excessive heat source, direct solar heating or in a wet and damp location
- For proper cooling, allow at least three inches clearance around all surfaces except mounting surface

### Guidelines for locating the sample points:

- A sample point may be remotely located up to 46 m from the monitor (152 m for 4,6 mm ID tubing) in an area where refrigerant vapors are most likely to leak or accumulate
- It is widely accepted to locate the sample point near the barrel of the chiller and on adjacent corners to enhance ability to monitor leaks
- As refrigerants are heavier than air, monitor the refrigerant in locations like pits, stairwells and trenches
- If possible, monitor the vent line of the chiller
- Remember to monitor the cylinder storage area if inside or near the chiller room in case of cylinder leakage





## Boiler Room Monitoring

In addition to monitoring for refrigerant leaks, it is important to monitor your mechanical room's boiler equipment to ensure an adequate supply of combustion air and to help reduce the build-up of a flammable gas concentration. MSA offers a line of detectors that have the ability to work alone as a stand-alone system.

Recommended solution would be an ULTIMA® X5000 Gas Detector with a combustible sensor. When locating the sensors keep in mind that natural gas is lighter than air; therefore, gas sensors should be located over potential leak areas such as: the gas shutoff valve, air intake, gas meter, and the burner assembly as well as the gas train assembly.



ULTIMA® X5000  
Gas Detector

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