

O₂ Detectors Save Lives and Money: Case Study

By Paul Nesdore

A pair of gas detectors guard against both physical and fiscal problems at the GSA Federal building in Rapid City, South Dakota.

The three-story building houses regional federal facilities including district courtrooms, attorneys, IRS offices, Department of Agriculture personnel, computer rooms and ancillary services. The problem facing the GSA buildings and grounds superintendent Mike LaForest, was possible leaks of R-22¹ refrigerant in the mechanical equipment room.

The room has two chillers, a 130-ton Trane and a 75-ton York, plus condensers, tanks, pipes, valves, and controls. The physical problem is that R-22 is heavier than air, so a leak anywhere in the system would swiftly deplete oxygen in the room, leading to sudden sickness, unconsciousness and even death for personnel in the area.

LaForest's fiscal problem is that R-22 is costly, "and getting more costly all the time," he groans. "In fact, R-22 prices have more than doubled in the past year alone." Losing even small quantities of R-22 would mean lower system operating efficiencies, higher electric bills in scalding South Dakota summers, not to mention adding to greenhouse gas emissions.

The solution for LaForest was to install gas detectors for both oxygen and R-22, and place them in the mechanical equipment room LaForest chose detectors from Minneapolis-based Sensor Electronics. The O₂ detector warns the instant oxygen levels drop below 19 per cent. The R-22 detector works the opposite way, howling if refrigerant levels go too high. The O₂ detector is linked to its own dedicated transmitter that shows real-time readouts on a digital panel, updated every second. In addition, the transmitter features color coded LEDs that glow green as long as oxygen levels in the equipment room are safe. If O₂ readings drop below 19 per cent, the LEDs immediately go amber, then red at the danger point. In addition, the transmitter turns on alarm lights and horns to evacuate personnel. Similarly, the R-22 detector goes into alarm mode when it spots a leak, then shuts down the chillers. Installation of the O₂ detector/transmitter package was straight-forward: Simply a 120-volt line to the transmitter and a low-voltage link to the detector] The cost of the setup was less than \$1500

1. R22 is short for chlorodifluoromethane, which is an HFC (hydrochlorofluorocarbon) a class of gasses that have been identified for their bad effects on the Earth's ozone layer.