Fixed Gas Detection Systems

smart GasDetection Technologies

CI21 Transmitter

Low maintenance ammonia detection

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The charge carrier injection (CI21) sensor is a progressive development to improve upon current ammonia refrigeration detection methods. With CI21 technology sensor life is no longer limited to ammonia exposure levels. This reduces replacement costs associated with electrochemical sensors.

Charge carrier injection technology also eliminates false alarms frequently associated with metal oxide sensing (MOS). These, along with other features, provide reliable, cost effective, long-term safety.

The CI21 transmitter is an advanced development to which all other ammonia transmitters will be compared.

The new ammonia standard

Temperature influence

Utilizing a controlled sensor voltage, the CI21 maintains a constant internal temperature, allowing accurate readings without additional heating components.

Graph 1 compares the temperature behaviors of metal oxide (MOS) and electrochemical sensors with the CI21. The alarm threshold is set at 200 ppm, and each of the sensors is calibrated to 200 ppm NH3 at 77 ºF. At lower temperatures, the response of the CI21 is extremely accurate, whereas the MOS and electrochemical sensors drift considerably.

If calibration is performed at lower temperatures, the identification lines shift to a higher ppm indication. As temperatures increase, the CI21 operates with the same reliability, whereas the MOS and electrochemical sensors indicate alarm conditions due to the higher slope of their indication lines.

Humidity influence

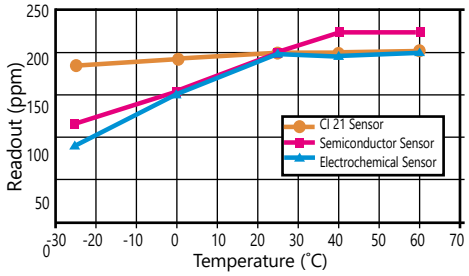
Fluctuating humidity levels are no longer an issue with the CI21. MOS sensors require a minimum humidity level in order to respond to leaks of ammonia, while the CI21 does not!

Low humidity is a typical condition of refrigerated areas due to lower temperatures. With the CI21, a direct calibration with ammonia test gas can be accomplished with low humidity. As shown in graph 2, the influence of humidity on the CI21 is considerably less than MOS sensors.

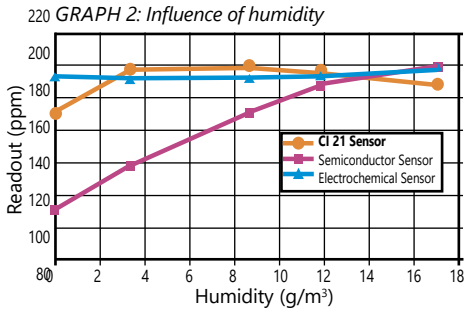
Sensor selectivity

MOS sensors typically interfere with other gases and are rarely specific. Cross interferences occur with alcohol, cleaning detergents, water, carbon monoxide and many other substances. Interfering alarms become a nuisance that can lead to work stoppage and expensive shut downs. In graph 3, the cross-sensitivities of conventional sensors and the CI21 are plotted on a logarithmic axis.

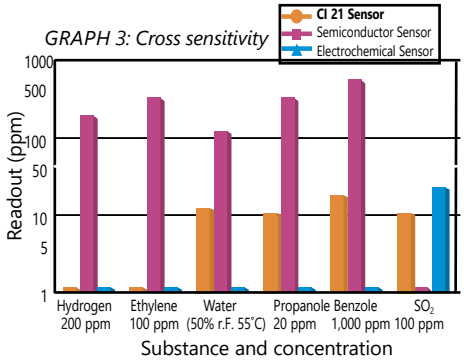
GRAPH 1: Behavior of temperature
after calibration with 200 ppm at 50 % r.M. (All sensors without temperature compensation)



GRAPH 2: Influence of humidity



GRAPH 3: Cross sensitivity



Technical Data: CI21

Gas: Ammonia (NH3)
Detection ranges: 20 - 200 ppm
30 - 1,000 ppm
30 - 10,000 ppm
Gas supply: Diffusion
Expected sensor life: Greater than 3 years
Temperature range: -40 to +131 ˚F / -40 to +55 ˚C
Humidity: 0 to 99% r.h. non-condensing

Pressure: 90 to 110 kPa
Output signal: 0.2-1 mA or 4-20 mA
Power supply: 10 to 30 V DC (300 mA maximum)
Shielded cable: 3 wire x 18 AWG for up to 500 yards
Protection class: IP54 - Casing

Dimensions: 3.9 x 3.9 x 2.2 in / 100 x 100 x 57 mm (HxWxD)
Weight: 13.05 oz / 370 g
Approvals / Certifications:
c-CSA-us
CSA C22.2 No. 205-M1983
UL 916

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