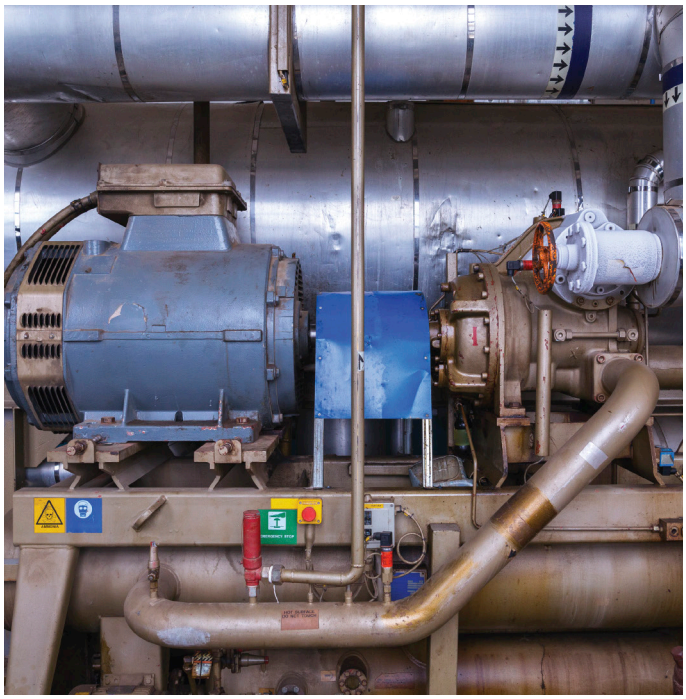
Detecting Gas Leaks in Refrigeration Facilities

Keeping a SafEye on your safety

Refrigeration facilities in the food and beverage industry are widely used to keep food cool for long periods of time, thus preserving their freshness. These facilities often use ammonia-based cooling systems, as it is efficient and economical for large scale food processing and storage, as a raw product or as a byproduct, for example, for carbon capture and storage.



Ammonia, however, is highly toxic above 500 parts per million (ppm) and may cause lung damage and death. Many cases have been documented of ammonia leaks in bottling plants, frozen storage facilities, and other similar environments in the food and beverage industry, which led to high exposure and numerous deaths.

In addition to its toxicity, if released in an enclosed space with sources of ignition present in the vicinity of the refrigeration facilities, ammonia becomes flammable, causing fires and subsequent explosions. The explosive range of ammonia is from 16% (LEL) to 25% (UEL) when mixed with air.

Challenges

Ammonia leaks can be caused by different factors, for example, leaks from tanks or detached or broken pipes. While it is essential to ensure that concentration levels of ammonia do not become extreme enough to cause a fire, it is also crucial to ensure they do not reach life-threatening levels. However, sometimes it is difficult to determine when a toxic gas is reaching dangerously high concentration, which demand intelligent and highly sensitive detection equipment.

Solutions

Open-path, line-of-sight gas detection is ideal for monitoring emissions of toxic gases like ammonia. These detectors are based on a beam of light being absorbed by the detected gas between a transmitter (source of light) and a receiver over long distances. They monitor even the smallest traces of the gas that crosses the path between the transmitter and receiver units, ensuring reliable and fast detection.

Spectrex offers state-of-the-art monitoring systems that detect the presence of ammonia before it reaches dangerous concentration:

SafEye Quasar 960 - open-path NH_3 gas detector – for the detection of ammonia escapes, which is pervasive in refrigeration facilities in the food and beverage industry.

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