

Toxic Gas Sensing in Low Humidity

Product: TG Series Toxic Gas Sensors

Description: Operation in Low Humidity Environments

Many toxic gas sensors available today utilize electrochemical sensing elements. Electrochemical sensors deploy a positive and negative electrode that generate current, much like a battery, only when a particular chemical reaction occurs with the specified gas. Both Carbon Monoxide (CO) and Nitrogen Dioxide (NO₂) electrochemical sensors work when either CO or NO₂ react with water (H₂O). In most environments, this technology is reliable and accurate. However, in environments where water is not available for the reaction, such as an environment with very low humidity, these sensors will show a reduced response to gas due to the lack of necessary elements (water) available for this chemical reaction.

Electrochemical CO and NO₂ sensors may experience significant negative drift when placed in environments where the humidity is less than 15%. They have been found to read as low as 50% of the expected gas concentrations after an extended time in a low humidity environment. This issue is not specific to Senva's sensors; it is found across all electrochemical CO and NO₂ elements as it is a limitation of the sensing technology.

In these circumstances, we suggest one of the following:

- Re-calibrate sensors monthly to maintain accuracy.
- Install humidifiers by each device to maintain humidification of elements.
- Replace sensors with NDIR technology.

A handwritten signature in blue ink, appearing to read "Nora Knapp".

Nora Knapp
Director, Product Management