Application Note

GQ-CE8900
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Service life of Hydrogen Cyanide (HCN) electrochemical sensor under different application environment

1. In the environment with constant presence of Hydrogen Cyanide (HCN) gas

Detection principle of HCN electrochemical sensor: During use, the active substances in the sensing electrode will be consumed, resulting in the signal drop of the sensor and the shortened service life, which is called a consumable electrochemical sensor. Long-term exposure to the HCN atmosphere will greatly affect the service life. To maintain normal service life, only short-term exposure to measure HCN gas concentration is allowed, and the sensor shall remain in fresh air environment once the measurement is completed.

For example, the sensitivity of HCN sensor from a manufacturer in the market is 0.1μA/ppm, and its theoretical detection life is 20000ppm•h. According to the environmental concentration and detection time, the calculated life is as follows. It should be noted that the service time here is h/day, which belongs to intermittent contact (electrochemical gas sensors are generally designed for intermittent detection of target gases and are not suitable for continuous detection applications, especially for those applications involving high gas concentration or extreme humidity and temperature).

Environment HCN Concentration	Sensor Expose Duration (h/day)	Sensor Life (day)
50ppm	2	200
25ppm	2	400
10ppm	8	250
5ppm	24	166

Note: The actual service life of the sensor is also closely related to the application environment. It is not recommended to use electrochemical sensors for continuous measure high concentration of HCN gas for a long time. When not in use, the sensor or the instrument equipped with the sensor shall be placed in the fresh air environment.