APPLICATION BRIEF

Real-time Online Ammonia Monitoring Improves Chloramination Control in Southeast Asia

Across Southeast Asia, drinking water facilities that rely on monochloramines for disinfection face ongoing challenges related to system stability, consistent chloramine formation, nitrification control, and disinfection byproduct (DBP) regulatory compliance. Although laboratory and handheld analysis options provide useful snapshot of ammonia levels, they often lack the high-frequency, real-time data needed for effective process control and optimization.

The instran® online free ammonia monitor addresses this gap by delivering frequent, automated measurements that enable operators to maintain the appropriate chlorine-to-ammonia ratio for effective chloramination. Continuous ammonia data also supports the development and refinement of chloramination breakpoint curves, helping facilities optimize chemical dosing while maintaining regulatory compliance.

Continuous Monitoring to Meet Stringent Ammonia Limits

One drinking water facility in Southeast Asia faced a regulatory requirement to maintain effluent ammonia concentrations below 1 mg/L. In search of a more reliable and efficient solution, the facility installed the instran online ammonia analyzer from Instrumentación Analítica. Chosen for its accuracy, repeatability, and low maintenance requirements, the instran analyzer has transformed operations at the facility since its installation in 2018.

The fully automated system provides dependable residual ammonia readings within 15 minutes with a resolution of 1% of the calibration standard—dramatically improving on previous methods that required up to two hours for results.

To further enhance reliability, the facility installed two instran analyzers in parallel downstream of the final treatment stage and upstream of the water distribution system. This configuration enabled continuous, real-time ammonia monitoring, supporting operational decision-making. The system's reproducibility consistently surpasses 0.03 mg/L within the 0-2 mg/L range, exceeding industry standards for both precision and reliability (Table 1).

With its proven track record and innovative features, the instran analyzer is poised to shape the future of water quality monitoring for drinking water facilities reliant on monochloramines for disinfection.

Table 1. Parallel Analyzer Ammonia Results

Time & Date	instran Analyzer 1 Reading	instran Analyzer 2 Reading
11:41 March 27, 2019	0.043 mg/L	0.045 mg/L
11:30 March 27, 2019	0.065 mg/L	0.064 mg/L
11:20 March 27, 2019	0.037 mg/L	0.039 mg/L
11:10 March 27, 2019	0.069 mg/L	0.070 mg/L
11:00 March 27, 2019	0.124 mg/L	0.145 mg/L
10:46 March 27, 2019	0.069 mg/L	0.078 mg/L
10:26 March 27, 2019	0.030 mg/L	0.039 mg/L

instran® Key Advantages at a Glance

- **Fast Loop Sampling:** This external system is used to obtain a representative sample for analysis. It ensures that the syringe never comes into contact with the sample or reagents.
- **Internal Teflon Coil (~10 mL):** Isolates the syringe with deionized water from contamination, with the sample and reagents.
- **Measurement Ability:** Provides measurements as NH_3 or $N\text{-}NH_3$ to ensure the operator receives the correct reading to support chlorine-to-ammonia ratio.
- **Measurement Method:** A direct measurement made using a comparable laboratory method in an online approach; the value provided is not a correlation of results. The Standard Known Additional method corrects the drifting of the ISE ammonia sensor during each analysis for better accuracy. There is no interference with chloramine, compared to the colorimetric method.
- **Repeatability and Reproducibility:** Excellent results and calibration required every 90 days.
- **Syringe Dispensing System:** Lower maintenance compared to the peristaltic pump and precise volume control for sample and reagents.

AMS is the US distributor for Instrumentación Analítica.

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