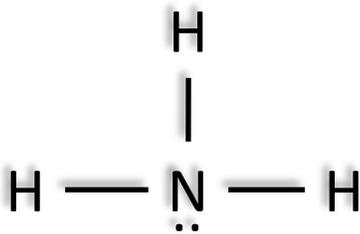


Ammonia

Monitoring with the LiquID™ Station

Measuring Ammonia

Ammonia (NH_3) is a key parameter of interest for both wastewater treatment operations and for environmental monitoring of drinking water sources. Ammonia limits are often set due to its toxicity to biological systems and its capacity to reduce dissolved oxygen levels. In addition to ammonia taken in through the raw influent, it can also be produced in the nitrification process.



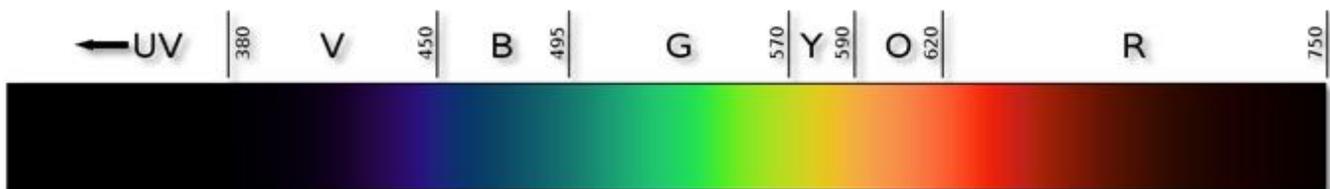
While ammonia is important in water and wastewater treatment, the lab methods for analyzing ammonia negate the opportunity for real-time process control. Many online real-time instruments use reagent-based chemistry which, by their nature, lead to ongoing consumable costs. The

LiquID detects ammonia by measuring the bonds of the ammonia molecules (above) using UV absorption. This high powered 'deep UV' monitoring enables the LiquID to monitor ammonia directly **without the use of any reagents or consumables.**

The LiquID Station utilizes optical ammonia detection capability, but with additional advancements for added reliability and sensitivity. LiquID collects a range of measurements on a cycle, about every two minutes, across the UV-Vis light spectrum, including at the frequency for ammonia detection. Compared to other instruments, LiquID operates far deeper in the UV range, utilizing more high energy light frequencies and getting better resolution even in complex matrices. The result is an instrument with high sensitivity as well as reliability of matrix correction, with **combined ammonia detection sensitivity below 1 part per million.**

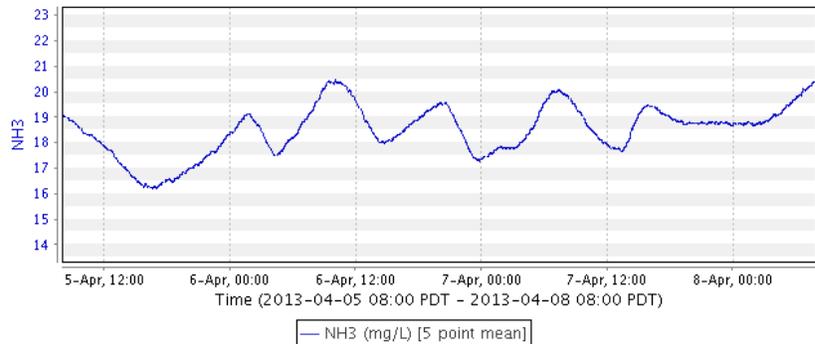
About LiquID™

The LiquID Station from ZAPS Technologies (pictured below) is an innovative, optical instrument for continuous water quality monitoring. The automated online instrument analyzes a continuous flow-through stream from a pressurized water sample line using multi-spectral light and software algorithms, and uses no reagents nor produces any waste other than the original sample (which is returned or wasted as appropriate). With this method LiquID is capable of monitoring a wide range of water quality parameters in a number of different industry applications, including those relevant to municipal water and wastewater treatment, water reuse systems and industrial process control.



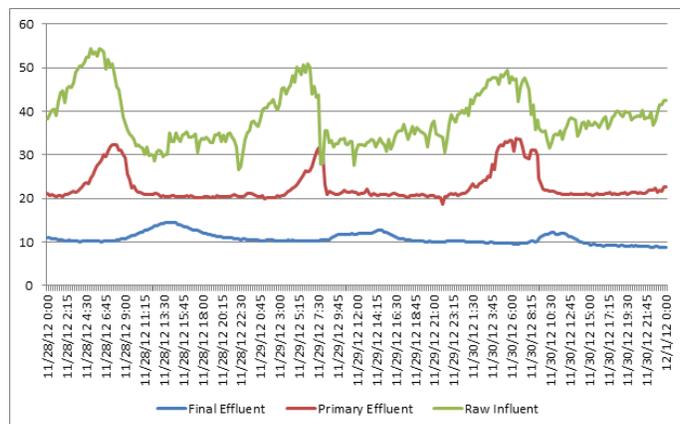
With broad spectrum, high-energy UV detection and intelligent on-board analytics, the LiquID Station provides ammonia monitoring with a higher sensitivity and in environments where many instruments fail.

The graph to the right is a screen capture of a 7-day data plot on the ZAPS LiquID web user interface (WUI), with readings collected about every two minutes. Notice the clear cyclical nature of the readings as the LiquID responds to daily process cycles. LiquID captures readings on a server, and plots of historical data are available with a few clicks. This graph shows ammonia readings at the final effluent point of a municipal wastewater treatment plant. At this plant, LiquID Stations are also positioned to collect multi-parameter readings, including ammonia, at the primary effluent and raw influent points.



Value of Real-Time Ammonia Monitoring

The LiquID ammonia parameter can be used to monitor treatment processes, to determine system loading, to provide an indication of the quality of discharged water and also track plant efficiency. The graph to the right shows real-time ammonia data for a three-day period collected by three LiquID systems installed throughout a wastewater treatment plant at the raw influent, primary effluent and final effluent locations. Not only does this demonstrate the range and applicability of the LiquID ammonia parameter, but also demonstrates how ammonia flows through the wastewater plant and can be used to determine the efficiency of the wastewater plant at managing ammonia throughout the process.



The real-time measurements of ammonia and other key parameters provide treatment plant operators with a better understanding of their system, and in some cases, opportunities for advanced process control. Contact ZAPS to learn how LiquID ammonia monitoring will benefit your application.

Contact ZAPS For More Information

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