







Advancing the Management of NITRIFICATION

PARAMETERS MEASURED

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NITRITE
NITRATE
TOTAL CHLORINE
MONOCHLORAMINE
FREE CHLORINE
AMMONIA
TOC
pH
TEMPERATURE

DETECT NITRIFICATION WITH SPEED AND CONFIDENCE

Nitrification events can be costly to remediate and harm your community's trust in their water supply. Catching nitrification early and reliably lets you tackle the issue before it has a chance to spread, offering many benefits:

-  Spend less money on nitrification mitigation
-  Secure water quality to ensure public health and safety
-  Decrease chlorine burn, downtime within network and customer complaints
-  Ensure immediate corrective action for chlorine boosting and flushing to manage nitrification
-  Compliance with DBPs, Total Coliform Rule and Surface Water Treatment Rule
-  Minimize risk of do-not-use events

Real Tech's real-time nitrification monitoring solution focuses on the very first stage of nitrification by detecting trace levels of nitrite (NO_2^-) in your distribution system. Identifying a nitrite increase gives you the most reliable and the earliest possible indicator of a potential nitrification event, allowing you to respond quickly and confidently to mitigate it. Real Tech's solution provides this critical information in real time and without reagents.

Nitrification in the distribution system

During the chloramination process, ammonia and chlorine are combined to generate chloramine. Even when the chloramination process is operated at an ideal ratio, when the water leaves the treatment plant, free ammonia can still form from the breakdown of chloramine as the water travels through the distribution system. This free ammonia in combination with nitrifying bacteria present in the water distribution system then leads to nitrification, a microbiological process where ammonia is sequentially oxidized, first to nitrite (NO_2^-) and then to nitrate (NO_3^-).

Controlling and preventing nitrification is a challenging task. By monitoring water quality in real time at critical locations, early detection can be achieved and faster response to bring nitrification under control is possible.

Nitrite – The most direct water quality parameter that indicates nitrification is occurring without question

While other water quality parameters for detecting a nitrification event require further investigation, nitrite is the first product of nitrification and the presence of this contaminant is a direct indicator that nitrification has started.

The American Water Works Association (AWWA) manual on nitrification (M56) defines a nitrite concentration of 0.010 mg/L-N as “Alert Level” and 0.015 mg/L-N as “Action Level” in the distribution system. Detection of this essential parameter for nitrification monitoring therefore requires a high level of sensitivity and accuracy, which to date has only been available through grab sample testing or the use of expensive wet chemistry analyzers that use reagents. This has limited the feasibility of reliable continuous nitrification monitoring solutions that can be deployed within the distribution system.

The best available technology for nitrite monitoring

Real Tech provides a practical alternative solution for utilities to obtain this valuable nitrite detection at the AWWA recommended levels on a continuous real-time basis. The measurement principle is spectrophotometry, a simple and effective light-based technique that does not require reagents. Real Tech’s advanced, data-rich sensor is uniquely crafted with a powerful deuterium light source that is essential for detecting and distinguishing between nitrite and nitrate at low concentrations. Real Tech also applies data analysis techniques to the sensor’s spectral data. This further enables our monitoring solution to uniquely measure these critical parameters at the sensitivity levels required for the nitrification application, unlike any other sensor solution available.

In addition to nitrite detection, Real Tech also provides real-time monitoring for several other useful parameters all with one monitoring system including nitrate, total chlorine, monochloramine, free chlorine, ammonia, TOC, pH, temperature and more. These parameters can help you assess the root cause and potential severity of a nitrification event.

Discover more about our monitoring solutions:

realtechwater.com/nitrification

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