



## IDEXX Tecta: Proactive water quality management with automated onsite drinking water testing



NK Vand A/S is the drinking water utility for the town of Næstved in Denmark, which has a population of approximately 45,000. Its parent company Envafor is recognized nationally as an innovative utility services company, leveraging new technologies as part of its energy transition and water management programs. One such example within the Næstved municipality is the adoption of IDEXX Tecta™, a microbiological testing system that provides rapid evidence of bacterial contamination, which can be used within or outside of a traditional laboratory setting. For the NK-Vand team, the IDEXX Tecta system has quickly become a key technology to use in the absence of an in-house laboratory. The system allows the company to test on-site drinking water samples proactively throughout the month as supplementary testing to its routine accredited water samples, which are sent to a third-party laboratory.

### The Challenge: Waiting on external laboratory results to make critical operational decisions

The primary objective for any water utility is maintaining regulatory compliance and protecting public health, and for NK-Vand this means ensuring that its drinking water supply meets the regulatory compliance requirements, as set out by the EU Drinking Water Directive 2020/2184. In Denmark, many drinking water utilities outsource their routine compliance water testing to external independent accredited testing laboratories, to ensure that they comply with the stringent national and international drinking water quality standards as set out by their governing body, the Danish Environmental Protection Agency (Miljøstyrelsen). Using an accredited laboratory for water quality testing provides impartial, verifiable results that demonstrate compliance for the water utility, in addition to building public trust.

Rasmus Liljegren, drinking water engineer for NK-Vand, does not underestimate the responsibility he has for protecting public health and maintaining a clean drinking water

distribution network. "We have 16,000 connections, and these include kindergartens, homes for the elderly, and hospitals. If there is any concern about the safety of the water, we shut off the water supply. To me, it's better to shut off the water out of an abundance of caution, versus not shutting off the water supply when there is the risk of a safety issue."

In most circumstances, relying on an external laboratory for compliance testing meets NK-Vand's needs. However, in certain situations, the team at NK-Vand needs information on drinking water quality faster than the partner laboratory is able to provide. For example, in the rare cases that NK-Vand receives a positive result for total coliforms from its laboratory, even the rush two-day turnaround time it provides is not sufficient. "If there is something in the system, we want to react to it as soon as possible," says Liljegren. If there are operational decisions to be made or remediation to be done, the team needs to know the impact of those actions and decisions as soon as possible. Waiting days for results would mean longer shut-offs, and would compromise Liljegren's team's ability to quickly remediate, if needed.

Additionally, while it is not a regulatory requirement, Liljegren feels it is best practice to verify the cleanliness of new pipe installations. "Generally, utilities just flush the new system with three times to total system volume. Sometimes that works, but sometimes not—we don't want to take the risk of putting a dirty system into operation, so we test to make sure." Waiting for laboratory results for these projects would significantly delay construction, leading to extended project timelines and cost overruns.

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Rasmus Liljegren, NK-Vand water engineer

## **The Solution: Automated on-site testing with results within 18 hours**

To address the challenges associated with sending water quality samples to an external laboratory, the team at NK-Vand performs automated, in-house water microbiology testing with the Tecta B16 instrument. "If we ever have results that call into question the quality of the water we supply, we immediately drive out and take samples to verify the seriousness. Within the first few hours, Tecta will already give us an indication of what we are dealing with. We really rely on the system to guide our actions in these situations—if there is actually something in the system, we want to react to it as soon as possible." Getting faster results from the Tecta system allows Liljegren and his team to take any necessary actions quicker, allowing them to rapidly address any issues.

NK-Vand also uses IDEXX Tecta in conjunction with an innovative on-line TVC (total viable count) monitoring system. When the monitoring system shows higher levels of bacterial activity, Liljegren and his team follow up with testing specifically for total coliforms and *E. coli* using Tecta.

Another way the team at NK-Vand uses the Tecta instrument is to verify the cleanliness of new pipes before they are put into service, in conjunction with the on-line TVC monitoring system. The Tecta instrument is well suited for this type of testing. The team takes two samples prior to connecting any houses or businesses to the new system, and the Tecta instrument provides a fast result, which allows construction teams to get to work, finalizing a project as quickly as possible. A key feature of Tecta for this testing is that it provides an automated, emailed result. This means that construction teams can get a notification that verifies the system is clean overnight, and can start their work early the next day. This reduces project costs and improves worker safety — crews are less likely to be working on the road in the afternoon, when the traffic is busiest.

The Tecta system offers automated analyzers with either 4 or 16 incubation chambers, depending on throughput requirements, and user-friendly cartridges that require minimal sample preparation. The system can simultaneously detect total coliforms and *E. coli* in 18 hours or less, without the need for input or visual interpretation from a laboratory technician. The ease of use and automated nature of the system is critical to the NK-Vand team. Liljegren indicates that



his entire team of operators has been trained to set up and perform a sample—meaning the testing can be done at any time, even later in the day or on weekends.

The Tecta system can also test for fecal coliforms and enterococci. The system employs an enzyme substrate detection method coupled with automated sample reading to deliver accurate and timely test results. The instrument can detect positive samples faster than traditional 18- or 24-hour methods, and highly contaminated samples can return positive results in as little as two hours. Because results are automatically emailed, the need for any operator to physically read a test result is eliminated, allowing for results to be communicated directly to the relevant parties as soon as they are available.

### **Results: Ensuring Public health via security of clean water supply**

The Tecta system has allowed the distribution team at NK-Vand to uphold the high standards it maintains for the quality of its water, to quickly react to any issues that arise in its distribution network, and to be confident in new pipe installations—especially when used in conjunction with on-line TVC monitoring. “Our accredited, third-party laboratory does all our mandatory, compliance testing. Tecta

allows us to have an internal testing program so we can react quickly to any issues. It’s easy for our operators to use, portable, and provides automated results—we rely heavily on it.”

The speed of Tecta allows the team at NK-Vand to make critical operational decisions rapidly. Furthermore, Tecta allows NK-Vand to verify that new drinking water infrastructure is installed without contamination, and avoid slowing down the associated construction projects. Tecta has become a key technology used by the NK-Vand team; an important tool that supports its dedication to delivering safe water to the population of Næstved.

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