



Embracing automatic titration technology for water treatment

How one water treatment plant streamlined their manual titration methods

The company

A water treatment plant in the midwestern United States located on a nearly 20,000-acre, man-made reservoir is tasked with providing the surrounding community with access to clean drinking water. The treatment plant's laboratory has worked extensively to help its water treatment facilities improve their processes, meet regulations, and increase their efficiency in converting raw water to safe, finished drinking water for local citizens.

While the plant's mission is straightforward, its testing processes were not. Water treatment facilities must perform laborious manual methods to conduct integral testing procedures, which in turn can affect a plant's quality, consistency, and efficiency.

Annually, the plant would run up to 10,000 test analyses, most of them performed manually. Not only did these processes take a great deal of time and focus, but each person's lab technique was a little different, which had the potential to affect results.

Performing tedious and time-consuming manual, low-level alkalinity titrations was the most difficult aspect of their testing process. The manual titration complications were numerous, including overshooting an end point and having to repeat the titration test, waiting for the pH meter to stabilize after each addition, and having to accurately read the tiny volume marks on the micro burettes used for low-level alkalinity titrations.

The lab director knew the water treatment plant needed to streamline their processes with an automatic titrator that would make it easier for operators to do their jobs and achieve more consistent results. Doing so would help ensure the water in her community was of the highest quality. She turned to Thermo Fisher Scientific to make it happen.

The opportunity to adapt

The water treatment plant chose the Thermo Scientific™ Orion Star™ T910 pH Titrator.

Despite coronavirus restrictions, Thermo Fisher was still able to help them get the automatic titrator up and running without hassle through video training sessions. The application support team even ensured the automated low-level alkalinity method was installed into the titrator, allowing operators to get simple, step-by-step guidance right from the screen with every use. Soon enough, the titrator was ready to hand off to the water quality testing team to see how it would fit into their workflow.

From the very first step of using their new auto titrator, the operators noticed a major difference. Through its user-friendly features, the team was able to calibrate the pH automatically, and the instrument ran completely on its own once the titration started. This allowed the operators to carry out other important tasks while they awaited results.

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– Lab director, water treatment plant

Additionally, the water treatment plant staff appreciated how the simple touch of a button started the titration, and that the automatic dispenser added the proper amount of sulfuric acid needed to reach the end point. Because the Orion Star titrator allowed them to receive immediate results without having to go through any of the tedious manual steps, the plant’s testing processes became considerably easier and faster, and it also made their findings far more precise.



With the Orion Star automatic titrator, the operators no longer had to come in contact with hazardous sulfuric acid, or measure samples using unforgiving micro burettes. Instead, they were able to utilize the automatic dispenser—which accurately added precise volumes of the titrant into the sample—to make the process that had previously been the most prone to mistakes exponentially safer and more consistent.

The operators received immediate results without having to start over, which was an issue they used to run into often due to the test’s many laborious steps. Through the automatic determination of the sample’s end points, the titrator calculated and saved results. Upon completion, the operators found the titration test processes to be considerably faster, and the device also made their findings more accurate.

The new way of titration

The water treatment plant soon worked the Orion Star T910 pH Titrator into their everyday processes. Adapting to this new technology has relieved the operators from the formerly stressful aspects of manual processes, even enabling them to multitask, which has given them a significant productivity boost. “The auto titrator is really going to benefit our results,” the lab director said. “We’re going to be more accurate and consistent across the board.”

Now that the titrator automatically performs most steps of the process and provides detailed directions on-screen, the results are not only more accurate, but more consistent as well. The operators can track results via data collection straight from the titrator, which gives them analysis that is even more thorough for state regulators.

Since acquiring the Orion Star titrator, the water treatment plant has drastically improved their processes in just a few months, which will ultimately help it protect the citizens of their community for years to come.

Results

Amidst a pandemic that didn’t allow for in-person setup or training, the water treatment plant was able to smoothly upgrade to the latest technology and adapt their processes with the in-house expertise of Thermo Fisher Scientific.

The automated technology immediately relieved mounting pressure felt by the lab operators who dealt with the unforgiving nature of manual titration methods.

The Orion Star T910 pH Titrator increased the quality, accuracy, and consistency of their titration test results.

Through implementation of their automated system, the water treatment plant can now test the quality of their community’s drinking water with more reliable results.

Find out more at thermofisher.com/titrator