

Case study: Northeastern United States

VIVID smart water treatment controller tightens program control, reducing water

An industrial plant in the northeastern United States was using clarified river water as cooling tower makeup, making the conductivity of the makeup subject to seasonal changes. The customer observed significant swings in tower water conductivity during testing, which required daily adjustments to the blowdown valve. These adjustments had a cascading effect of large changes in the cooling tower cycles of concentration and chemical residual buildup. Additionally, heat-load swings in the cooling tower caused the evaporation rate to increase.

To help combat these issues, a competitor's controller was installed. However, unreliable results, as well as the time required to do routine preventive maintenance (PM) and learn the complicated controller interfaces, resulted in a decision to abandon the controller and perform manual control instead. The customer considered upgrading the controller, but the CAPEX required to install multiple controllers was prohibitive. Seeking a better solution, the customer asked Baker Hughes to perform an audit, which identified multiple areas of possible energy savings. One item with a clear potential benefit was the installation of an automated monitoring and control system. Although the customer was hesitant because of the poor performance of the previously installed control equipment, they agreed to a trial in hopes of benefiting from tighter control of the cycles of concentration.

Baker Hughes presented the **VIVID™ smart water treatment controller** as a complete solution, specifically designed for cooling water application.

Its quick installation required minimal change to sample piping and electrical connections, and the simple, intuitive interface helped reduce the frequency of operator checks and preventative maintenance from daily, on the previous controller, to weekly on the VIVID controller.

The plant saw 100% compliance with target cycles after the installation, and the chemical residuals improved from being within the target control range only 34% of the time to being within the target control range 99% of the time. As an added benefit, they also saw a reduction in the corrosion rate from 3.6 mpy to 1.1 mpy.

The trial was deemed a success by the customer. They were able to save energy from more efficient cooling tower operations, save OPEX from reduced chemical residual swings, and save CAPEX by leasing the controllers from Baker Hughes. Because of this success, the customer made plans to add the VIVID smart water treatment controller to all of the plant's cooling towers.

