

Case study: North America

VIVID smart water treatment controller improves plants environmental footprint

An operator in the United States was using clarified river water as cooling tower makeup, making the conductivity of the makeup subject to seasonal changes. The operator observed significant swings in the 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 build-up. 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 preventative 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 using the **Total Systems Approach™ (TSA)**, which identified multiple areas of possible energy savings. One item with a clear benefit was an automated monitoring and control system. Although the customer was hesitant due to poor prior performance of controllers, they agreed to a trial.

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. The simple intuitive interface reduced the frequency of operator checks. PM frequencies declined from daily, on the previous controller, to weekly with VIVID.

The plant saw 100% compliance with target cycles after installation, and chemical residuals KPIs improved from 34% to 99% compliance. As an added benefit, a reduction in corrosion rates occurred (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 chemicals consumption, and save CAPEX by leasing the controllers from Baker Hughes.

Program success led to the implementation of VIVID smart water treatment controllers in all the operators cooling towers.

Challenges

- Account for changes in conductivity of river water used for cooling tower makeup
- Eliminate need for daily blowdown valve adjustments
- Control changes in chemical residual build up
- Overcome negative association with controllers, based on previous bad experiences

Results

- 99% program KPI compliance
- 70% improvement in corrosion rate
- 14% reduction in water usage
- VIVID controller provided energy, CAPEX, and OPEX savings