CASE STUDY

HALLIBURTON

Louisiana

Cooling tower water monitoring and control system delivers significant savings for operator

Combination of probes, chemistry, analyzer-enabled monitoring, and continuous automated control provides a viable solution

CHALLENGE

- Outdated automated cooling tower and monitoring control system
- System prone to plugging required frequent cleaning and was limited to two control parameters
- Frequent manual chemical adjustments
- Off-spec injection rates nearly 20% of the time resulted in operator 20% over budget for treatments

SOLUTION

- Implement advanced cooling tower injection, automation, and monitoring system
- Probes, chemistry, and analyzer enabled monitoring and continuous automated control of five parameters

RESULT

- Decreased combined chemical usage by $58,000, which far exceeded the skid purchase price
- Improved annual savings from chemical usage to $200,000
- Improved control of the polymer, phosphate, and TTA chemistries to less than 3% variable of the target ppm dosages

Challenge

A chemical plant operator requested assistance from Halliburton to provide a superior automated cooling tower monitoring and control system. The system was outdated and prone to plugging, required frequent cleaning/calibration, and was limited to controlling two parameters: pH with acid and conductivity cycles with blowdown.

This limitation resulted in Halliburton and the operator making frequent chemical adjustments. The time between testing and adjustments led to erratic under and overfeeding conditions. These conditions were usually minor, but occasionally were much more than intended, and added to the budgeted chemical costs.

Solution

Halliburton recognized the need for a flexible and innovative solution and recommended an advanced cooling water system from Halliburton's APX™ suite of digital solutions for enhanced chemical performance and monitoring. The recommended solution included implemention of a polymer analyzer and a customized polymer dispersant.

For the phosphate corrosion inhibitor, rather than use a phosphate analyzer, which is known to be problematic and maintenance intensive, Halliburton recommended a PTSA (pyrenetetrasulfonic acid, sodium salt) traced phosphate with probe monitoring. Next, since the cooling water heat exchanger system consisted of metallurgy, which contained yellow metal, a yellow metal corrosion inhibitor chemical treatment was also required. Halliburton recommended the application of a tolytriazole (TTA) corrosion inhibitor with a TTA monitoring probe. This combination of probes, chemistry, and analyzer technology-enabled monitoring and continuous automated control of five parameters: pH, conductivity, polymer, phosphate (via PTSA tracer), and TTA.

Result

Following the operational start-up of the advanced cooling tower system and the continued control of existing pH and conductivity parameters, Halliburton improved control of the polymer, phosphate, and TTA chemistries to less than 3% reduction in target dosage variability. This decreased combined chemical usage by $58,000 and far exceeded the skid purchase price. The overall value of energy, water, and maintenance avoidance realized by the installation of the advanced cooling tower system is more than $200,000 annually.

At Halliburton we collaborate and engineer solutions to maximize asset value for our customers. All products and service solutions are available as integrated offerings or as discrete services, based on customer requirements.