

CASE STUDY

FlexPro® and Quadrasperse® Technologies Combine to Save Gulf Coast Chemical Manufacturer Over \$2M

Background

Chemical plant operators are challenged to increase operational efficiency and throughput capacity while simultaneously complying with corporate sustainability objectives and state discharge requirements. A Gulf Coast client facing these challenges recently awarded ChemTreat the plant water treatment business with the clear expectation that we would deliver a solution to the issues uncovered during the plant audit.

Among the top priorities were cleaning the tower, helping prevent mineral scale deposition in the critical condensers, and addressing phosphate discharge issues to comply with state permit regulations. Evaluating the possibility of an on-line cleaning was also necessary to address an upcoming outage.

Solution

With an audit conducted, the next step was to utilize ChemTreat's analytical services to determine the exact type of deposited mineral scale and the elemental water chemistry profile. This testing included full cation and anion loading for the makeup and recirculating waters to allow for accurate solubility calculations.

The analytical testing was completed within a five-day period. ChemTreat was then able to provide the plant options for on-line cleaning methods and address the recurring deposition without acid feed.

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Targeted Improvement	ChemTreat Advantage	Annual Economic & Environmental Impact
Cooling tower cycles of concentration increase saved over 20M gallons of water/year	Water	Water and sewer costs reduced by \$60,000
Recirculation pumps and fan motor reductions saved 10% of energy required	Energy	Energy requirement for five fully-loaded 100 Hp motors dropped by \$25,000
PO ₄ and Zn limits under control	Waste	Discharge permit fine avoidance of \$40,000
Cooling tower drift problems eliminated	Air	Avoidance of tower outage saved \$85,000
Overall plant capacity increased	Production	Increased plant profit to over \$2,000,000

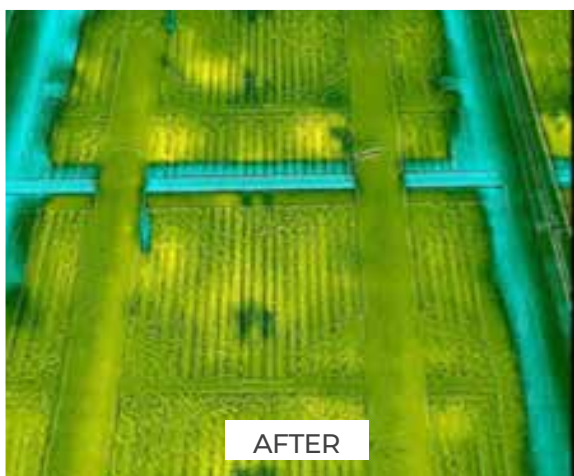
Results are examples only. They are not guaranteed. Actual results may vary.

Solution

With dezincification in the cooling tower wet dry areas and mineral deposition in the hottest skin temperature areas, a solution incorporating ChemTreat's Quadrasperse® and FlexPro® technologies became the optimal choice.

A key element in this strategy was deploying video and thermal imaging technologies, allowing ChemTreat to easily verify the magnitude of the known issues and uncover some unknown system constraints.

One of the most important unknown findings was associated with the cooling water storage/expansion tank that had over three feet of sludge in the bottom and an uncalibrated level transmitter. This sludge served as a source of solids and a nest for microbiological growth.

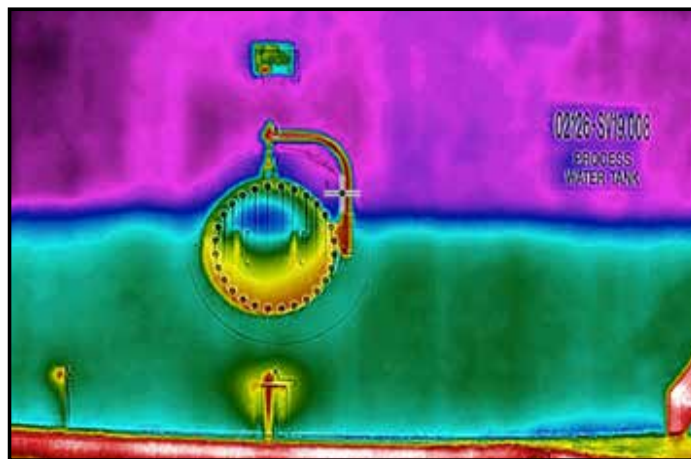


Results

With the known conditions in hand, ChemTreat immediately performed an on-line cleaning and passivation of the surface condenser using Quadrasperse® and FlexPro® technologies. Within four weeks, the condenser achieved 90 percent of its designed operating efficiency, and the upcoming outage was successfully delayed. The plant estimated the outage work to cost \$85,000, not including the lost production time. With the system operating efficiency restored, plant production capacity could be increased to the designed rate. This was certainly the largest impact for our customer, as they conservatively estimated the increased production to generate over \$2M of additional profit for the site.

Once the cleaning was complete, ChemTreat shifted focus to water usage and other environmental objectives. With the proper program in place and the deposition problem solved, the cooling tower cycles of concentration were safely increased, allowing the plant to achieve their water savings objective and save \$60,000 in water and discharge costs.

ChemTreat's treatment technology helped the plant meet phosphate requirements and far exceed corrosion control expectations, providing proper cooling tower protection and addressing the zinc discharge concern.



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