

Gulf Coast Chemical Company

FlexPro® CL Provides Solutions to Reduce High-Temperature Heat Exchanger Fouling

Background

A cooling tower at a large Gulf Coast chemical plant was operating at 9 cycles on clarified Sabine River water, which is relatively corrosive. Under the previous phosphate-based treatment program, corrosion control had been adequate, but the plant was experiencing calcium phosphate deposition issues. The plant suffered from fouling problems in the tower fill and several high-temperature heat exchangers. Deposition in the shell-side heat exchangers led to a decrease in heat transfer efficiency, thus greatly increasing approach temperatures. Furthermore, the ceramic material in the heat exchangers was prone to thermal cracking when deposition occurred. Off-line cleaning was needed to correct this, so plant downtime was significant. Despite cleaning, several heat exchangers did fail, and maintenance costs grew. Each exchanger replacement cost the plant \$100K plus downtime.

Solution

Although the corrosion rates had been acceptable, the plant wanted to use a more forgiving, non-fouling program. ChemTreat's solution was FlexPro® CL, a phosphate and zinc-free product designed for corrosive-to-moderate waters. FlexPro® CL is a breakthrough innovation in cooling water treatment that offers superior deposition and corrosion control. By eliminating added phosphate, deposition risks are greatly reduced. Phosphate also contributes to algae bloom formation and promotes microbiological growth within the tower. FlexPro® CL offers an exceptional alternative to phosphate-based treatment while maintaining superb corrosion and deposition control.

Results

Corrosion coupons have shown excellent results, with mild steel corrosion remaining around 1 mpy or less. Calcium phosphate deposition has been eliminated, and heat exchanger approach temperatures have remained flat. After switching to FlexPro® CL, the plant went without a heat exchanger failure for 2 years. Because of the phosphate-free technology, FlexPro® CL also enabled water treaters to reduce the amount of biocide needed for the tower by 70 percent. The plant is thrilled, and has since switched three other towers to FlexPro® CL technology.

