

Quadrasperse®

Quadpolymer Helps Solve Major Fouling Problem At Large Gulf Coast Petrochemical Plant

Background

After a previous water treatment supplier achieved poor results, ChemTreat was given the opportunity to help turn things around in a large, open recirculating cooling system for a Gulf Coast chemical plant. The cooling system serviced a light olefins unit with multiple-stage, cracked-gas compressor after-coolers operating at a high skin temperature. At a maximum skin temperature of 185°F, the fourth stage compressor after-cooler presented the most severe operating conditions. Using the competitive treatment program, the cooling system experienced severe admiralty corrosion with copper plating out on mild steel surfaces, leading to elevated mild steel corrosion rates. Iron released as a result of the high corrosion fouled the cracked-gas after-coolers and other critical exchangers in the system.

Solution

After a thorough survey and assessment of the situation, the decision was made to use the new ChemTreat Quadrasperse® polymer as the primary polymeric dispersant in the system's treatment program. The high-temperature stability of Quadrasperse® and the ability to measure its polymer residuals were key factors in choosing the right program.

Results

Results using Quadrasperse® have been excellent. Mild steel corrosion rates have averaged 1.0 mpy and have ranged from 0.8 to 1.2 mpy. Admiralty corrosion rates have averaged 0.15 mpy, ranging from 0.1 to 0.2 mpy. An initial Quadrasperse® overfeed led to accelerated removal of old deposits from the system, causing pluggage in the cracked-gas after-coolers. The pluggage

mechanism was defined using heat transfer data, metal transport data, determination of free and total polymer, deposition pattern, and deposit composition. Free and total polymer measurements were used to optimize the polymer levels in the dirty system. Once the dispersant residuals were reduced, the exfoliation of old deposits was eliminated, providing controlled and gradual removal of previous fouling deposits.

Summary

Quadrasperse® achieved excellent results at this facility. Other improvements incorporated by ChemTreat in the treatment of this large system included:

- Sodium bromide with bleach for reduced admiralty corrosion.
- ChemTreat Solutions® system for on-line cooling system monitoring and control.