

Use of Chlorine Dioxide Enhances Corrosion Control Program at Major Southwestern Petroleum Refinery

Challenge

This cooling system had unacceptably high corrosion rates: 8 - 10 mpy on carbon steel and 1 mpy on admiralty. The cause of the corrosion was a small, light hydrocarbon leak. Increased chlorine feedrates were required to keep the system in microbiological control, but also aggravated admiralty corrosion rates. Increased feedrates of azole copper corrosion inhibitor were also required since azole creates a demand for chlorine, further increases in chlorine feedrate were required. Chlorine reacts with azole, making it ineffective as a copper inhibitor, increasing requirements for azole.

Solution

Chlorine dioxide was fed continuously for 3 days to 'cleanup' the system. Treatment was then optimized to a twice per week frequency.

Results

Carbon steel corrosion rates dropped to around 0.5 mpy. Admiralty corrosion rates were < 0.1 mpy. Azole requirements were greatly reduced due to the non-reactivity of chlorine dioxide with azole and the fact that chlorine dioxide is far less aggressive to admiralty than free chlorine.

Courtesy by : [Siemens](#)