



Midwest Glass Coating Plant

The System: A 3000 gallon closed recirculating cooling water loop. The loop water provides direct cooling of cathodes used in the process of coating glass with silver, titanium and zinc.

The Problem: The cathodes, which are constructed of aluminum, copper and stainless steel, were becoming pitted. If the pitting continued unabated, the cathodes would have to be replaced far sooner than expected, at considerable cost to the plant. Plant engineering personnel consulted a metallurgist, who identified the cause of the pitting as excessive dissolved oxygen in the loop water. However, a sister plant, whose loop water chemistry and corrosion inhibitor approach were virtually identical, was not experiencing the pitting problem.

The Chemtex representative administering the cooling loop water treatment program suspected the pitting was the result of microbiologically induced corrosion (MIC), despite the fact that cultures for aerobic bacteria were negative. He conducted in-plant studies using Hach BART™ tests for detection of sulfate reducing bacteria (SRB). The BART™ tests were positive for SRB.

The Solution: A program of regular additions of Chemtex AA-315 glutaraldehyde-based biocide was instituted. AA-315 was chosen based on its proven effectiveness at controlling populations of SRB, along with its ability to penetrate biofilms. Subsequent BART™ tests revealed that the SRB population had been eliminated from the loop system. The regular AA-315 additions have been continued, and on-going BART™ tests indicate that the SRB population remains under control.

Once the cooling loop SRB population had been eradicated, the pitting process on the cathodes stopped. After five years on the AA-315 program the condition of the cathodes has remained unchanged.

The Benefits: If the pitting corrosion of the cathodes had continued, their replacement would have been necessary within one to two years. Quick action by Chemtex and the effectiveness of AA-315 saved plant management the one million-plus dollars they would have been forced to spend on new cathodes.