ChemTreat
Case History

Corrosion Inhibition Program Improves Performance and Reduces Maintenance at Gold Mine

Background

A North American mine suffered from accelerated corrosion in the clarifiers used in their Merrill Crowe gold recovery operation. The customer reached out to ChemTreat for a solution. In most gold operations, the lime used to maintain an alkaline pH in the process water typically increases the potential for calcium carbonate or calcium sulfate scale formation. However, it was evident scale formation was not an issue at this site's Merrill Crowe circuit. Instead severe corrosion in the operation, as evidenced by leaking valves in all seven of the clarifiers, required downtime for maintenance and replacement. Traditional antiscalant solutions were clearly not working, and a more in-depth approach was needed.

ChemTreat Solution

ChemTreat technical personnel performed chemical analyses on the water feeding the clarifiers and calculated industry-standard thermodynamic indices to assess the water's scaling and corrosion potential. The Larson-Skold Index, which measures the potential for pitting corrosion as a result of relative concentrations of alkalinity and chloride and sulfate ions, was 110, suggesting a very high corrosion potential.

ChemTreat used laboratory tests to evaluate several different corrosion inhibitors and discovered that a ChemTreat corrosion inhibition program designed specifically for mining operations effectively reduced test corrosion rates by nearly 50 percent. Based on these tests, ChemTreat obtained the mine site's approval for a field trial.

To demonstrate program effectiveness, ChemTreat installed a corrosion coupon rack in a sidestream of one clarifier's effluent. A month-long trial with no treatment showed a corrosion rate of 4.2 mpy and a pitted coupon, as seen in the photograph below. ChemTreat's program dramatically reduced the corrosion rate to 0.8 mpy with no evidence of pitting, as seen in the photograph below.

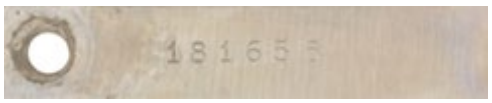
ChemTreat's program thus offered a corrosion rate decrease of more than 80 percent at a cost of less than $0.007/ton of solution treated. The mine's maintenance costs also decreased with the elimination of previously-experienced pitting corrosion.

Summary

ChemTreat's corrosion inhibition program was extremely effective in reducing corrosion caused by high chlorides and sulfates in a Merrill Crowe circuit.

The ChemTreat team met the mine's objectives in reducing corrosion rates with a highly cost-effective solution that was easy to monitor and control. The gold mine was very satisfied with the ChemTreat's approach, technology, and program support.

Elevated pitting corrosion in the untreated circuit.



Extremely low corrosion rates and no pitting in the circuit as a result of treatment with ChemTreat.

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5640 Cox Road / Glen Allen, Virginia 23060
www.chemtreat.com

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