



CWT-CP-CH-N404-06.12

**Chemicals Processing**

# Innovative Cooling Tower Treatment Reduces Copper Corrosion Rates and Operating Costs

*Biosperse™ XD3899 Microbiocide*

## Customer Overview:

- Segment: Chemical Processing
- Product(s): Esters acetate
- Location: Pasadena, Texas, U.S.A.

## Application Overview:

- Type: Cooling Water Treatment
- Equipment: Cooling Tower, Process Chillers
- Capacity: 480,000 gallons with 35,000 gpm recirculation rate

## Existing Treatment:

- Stabilized phosphate treatment program
- Acid for pH control
- Bleach for microbiological control

## Problem Summary:

High copper corrosion rates were impacting process refrigeration reliability. Additionally, a \$60k acid tank providing pH control was in need of replacement. The plant wished to reduce metals discharge and improve environmental sustainability.

## Customer Objectives:

- Maintain or reduce program costs
- Reduce copper corrosion rates
- Eliminate the use of acid
- Maintain heat transfer performance
- Improve system cleanliness
- Reduce environmental impact

## Solenis Solution:

- Audit cooling system to characterize system volume, flow rates, costs and corrosion rates
- Perform toxicant evaluation to identify suitable microbiological control treatments
- Replace the neutral pH phosphate inhibitor with Drew™ 2301 alkaline corrosion inhibitor
- Institute the feed of Biosperse™ XD3899 microbiocide to generate bromine activated chloramine

## Customer Benefits:

- Chemical costs were reduced by \$30,000 per year
- Copper corrosion rates were reduced by more than 75%
- Acid feed was discontinued and a CAPEX spend of \$60,000 for a new acid tank was eliminated
- Tower cycles increased, saving 22 million gpy of water
- Heat transfer performance was maintained
- Microbial activity was reduced
- Sulfuric acid was eliminated

## Conclusion:

Solenis' patented Biosperse XD3899 microbiocide effectively controlled biofilm formation in the recirculating cooling water and chill water systems and significantly reduced corrosion rates. The Drew 2301 corrosion inhibitor program increased tower cycles, resulting in water and chemical savings.

### Bleach Program (Corrosion Rate = 0.43 MPY) – Admiralty Brass Coupons Before and After Cleaning



### XD3899 Program (Corrosion Rate = 0.08 MPY) – Admiralty Brass Coupons Before and After Cleaning

