



GEMI[®]

Collecting the Drops:

**A Water
Sustainability
Planner**

Case Example

Ashland Water Technologies, Drew Industrial, Division of Ashland Inc.: Taking a Non-Chemical Approach to Microbiological Control for a Recirculating Cooling Water System

Drew Industrial, a division of chemical manufacturer Ashland Inc., helped a Texas manufacturer of a unique, proprietary elastomer to improve the environmental, health, and safety (EH&S) impact of their microbiological control program by replacing the conventional chemical treatment program with its chemical-free SONOXIDE[®] ultrasonic treatment.

At the Texas plant, bleach was being applied to a 2400 gpm Marley cooling tower for microbiological control. The program was effective as evidenced by total bacterial counts averaging less than 10² colony forming units per milliliter (CFU/mL). With safety being a priority, the manufacturer instituted a policy to continuously work toward minimizing the amount of chemicals stored on site as well as reducing related traffic in and out of the plant. This need was further emphasized when a reportable quantity of bleach was spilled due to a broken pipe. The plant expressed a need to Drew Industrial to convert the microbiological control program to one that is more consistent with the corporation's EH&S objectives. Equally important, performance could not be compromised to this critical cooling system which is already challenged by an increase in organic loading and hot climate conditions.

Solution

Ashland Water Technologies recommended a non-chemical ultrasonic device as an alternative solution to microbiological control. The SONOXIDE ultrasonic system met all criteria for performance, safety and environmental requirements. This patented technology utilizes low-power, high-frequency ultrasound to provide total system microbial control throughout the entire system. The new system was easily installed to a bypass from the basin of this cooling tower, which services chiller condensers, overhead condensers and process heat exchangers. Upon startup, all chemical microbiocide and dispersant chemicals were eliminated. System performance was routinely monitored using microbiological assay slides.

Results

SONOXIDE ultrasonic treatment provided improved performance over the chemical treatment program:

- Total bacterial counts average less than 10² CFU/mL.
- Biofilm control is achieved in all areas
- Upon inspection of heat exchangers, surfaces were found to be clean. All exchangers were clean and free of biofilm.

Benefits

- Maximized equipment life expectancy by reducing the corrosion potential associated with biofilm-laden surfaces and oxidizing microbiocides.
- Excellent, consistent control of total bacteria maintained at a level of ≤10² CFU/mL.
- Clean surfaces evident even in areas unaffected by the previous bleach program.
- Optimized heat transfer rates by elimination of insulating biofilms on heat transfer surfaces.
- Elimination of all delivery, storage and safety issues associated with bleach program.

Ashland Inc.: Taking a Non-Chemical Approach to Microbiological Control for a Recirculating Cooling Water System (Cont.)

- Better utilization of labor hours and costs associated with dosing, maintaining and monitoring bleach program in higher priority areas