



COOLING TOWER CLEANING

Project Scope

A power plant on the West coast was experiencing problems with its large, open-circuit cooling tower system. Excessive bacterial growth in the tower was leading to solids accumulation within the tower's fill and an increasing frequency of TSS excursions in their blow down discharges to the local municipal treatment facility.

Prior attempts at cleaning the cooling tower system with a variety of biocides, both oxidizing and non-oxidizing, proved ineffective. They needed an immediate solution to clean the tower that was fast, cost effective and did not require removal and manual cleaning of the tower's fill material.



Technology

The unique properties of hydrogen peroxide (H₂O₂) make it an excellent technology for periodic cleaning of cooling towers, heat exchangers and cooling loops. Hydrogen peroxide works extremely well at exfoliating organic biofouling on surfaces through mechanical means, e.g. effervescing "scrubbing bubbles", and in specific applications through biocidal mechanisms.

In this application, hydrogen peroxide is applied in a slug mode, where it is fed into the cooling system and recirculated over a period of four to eight hours. Performing an occasional cleaning of a cooling tower with hydrogen peroxide can remove biological buildup on the surfaces and within the tower's fill, resulting in improved heat transfer efficiency. By removing excess biofouling, hydrogen peroxide also improves the efficiency of the ongoing cooling system treatment program by reducing demand for commonly used biocides such as sodium hypochlorite, bromine and non-oxidizers.

Solution

Working directly with the power generating facility and its cooling water service company, USP Technologies developed the following dosing program to treat the excessive biological growth in the cooling tower.

Turn-Key Scope of Supply

Chemical Supply	50% Hydrogen Peroxide
Equipment Supply	Set-up, operation, and breakdown of temporary storage and feed equipment
Field Support Services	Dose rate optimization, peroxide residual testing
Delivery & Safety Review	Hydrogen peroxide safety training to site personnel. The tower cleaning was completed in less than one day, including set-up, breakdown and removal of temporary hydrogen peroxide feed equipment.

Results

The turbidity of the tower water before adding hydrogen peroxide was 12 NTUs and increased to 216 NTUs after the cleaning, due to the removal of organic material from the tower fill material.



The cooling tower cleaning was performed in a safe and environmentally friendly manner. It allowed the power generating facility to reduce the biological accumulation in the tower, improving efficiency and eliminating the need for an expensive, manual cleaning of the tower's fill.



Five hours after hydrogen peroxide was added to the tower, the turbidity stabilized and the peroxide level in the bulk water was down to <20 ppm, at which point the water was evacuated from the tower to remove the solids from the system.

About USP Technologies

USP Technologies is the leading supplier of peroxygen-based technologies and services for environmental applications. We have been serving the water, wastewater and remediation markets for over 20 years and have offices and field service locations throughout North America. Our consultative approach to problem solving includes application assessment, technology selection and development of a tailored treatment approach. Our full service programs successfully integrate storage and dosing equipment systems, chemical supply, inventory and logistics management, and ongoing field and technical support. This approach provides cost-effective, "hands-off" solutions to our customers. USP Technologies also can provide access to experienced application partners for a turn-key program encompassing engineering, site characterization and technology selection, program implementation, execution and report generation.

Getting Started

We look forward to supporting your treatment needs, whatever the scale of your requirements. To obtain a streamlined treatment solution tailored to your specific project, give us a call at (877) 346-4262.

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