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Peracetic Acid: Cooling Tower at Nevada Power Station Passes 1-Year Mark of Trouble-Free Operation

Problem

The biocontrol program at an Empire, Nevada geothermal power station was to slug feed calcium hypochlorite granules manually. Deposition of calcium carbonate scale on the condenser tubes reduced heat transfer efficiency and limited power production. Microbiological control was poor. In the summer months algae and slime developed in the basin and on the film fill and support structure.

Solution

Replace the manual slug feed of calcium hypochlorite with 15% peracetic acid (BioSide HS 15%®) delivered automatically 3 times a week in summer and twice a week in winter.

Results:

- No more condenser scale deposition
- No evidence of biofouling on heat exchanger surfaces upon inspection
- Bacterial plate counts were 102 CFU/ml after the PAA dose
- Basin, film fill and support structure remained clean and free of algae and slime
- Compatible with scale and corrosion program
- Reduced metal corrosion rates

Value to the Customer:

- Production losses due to condenser scale deposition were halted
- Eliminated the need for manual cleaning of algae and slime infested areas of the cooling system
- Eliminated worker exposure and operator errors through reliable automated product delivery system

Water Treatment Program:

Scale and Corrosion Program: All-organic Trasar (80 ppm)

Biocide Program: 15% peracetic acid (BioSide HS 15%™)

Dose: 4 gallons per dose

Residual: 5 ppm peracetic acid

Dosing: Automated

Frequency: 3 times/week in summer, 2 times/week in winter

Feed Time: 1 hour

Cooling System:

An open recirculating cooling system of 3 cells and 4 condensers; metallurgy is admiralty brass and titanium; total system capacity 100,000 gallons; recirculation rate 10,000 gpm; make up water 250,000 gpd; blow down 150,000 gpd; delta T 22 °F; 3 cycles of concentration; pH 8.9