ElectroBrom Replacement of Chlorine Gas Biocide
At an Electrical Power Generating Station

History

A large coal fired electrical power station in southern Indiana has historically used chlorine gas for control of biological growth in two cooling tower systems serving 531.5 MW and 565 MW steam turbine generators. Due to the increasing restrictions on use of chlorine gas by the USEPA, DHS, and OSHA; the station desired to convert to an alternative biocide.

Control of biological growth in both cooling systems with chlorine gas was judged to be acceptable using four slug doses per day. System specifications are:

	Unit 3	Unit 4
flow rate, gpm	171,560	190,330
system volume, gal	1,870,000	1,650,000
makeup rate, gpm	7,533	7,133
delta T, deg F	33	33

condenser tube metallurgy 304 stainless steel

Unit 4 Cooling Tower

The two cooling tower systems are normally operated at 4 cycles with addition of 0.75 mg/l HEDPA phosphonate and sulfuric acid addition to control cycled cooling water pH to 8.2 su. Makeup water is taken directly from the White River with no pretreatment.

Two EB-60 units with dose tank and pump.

Following our development of the patented ElectroBrom technology in 2003, we recommended that the chlorine gas use be replaced with two Model EB-60 units feeding a dose tank. Station management agreed and the recommended equipment was installed and started up in March, 2004.

Results

Biological control, with the EB-60 units replacing the chlorine gas, has been judged to be visually the same, or better. This observational data has been verified by routine daily ATP and bio test strip test data which has shown equal, or better, results than during operation with chlorine gas.

The station is pleased that the ElectroBrom Biocide System has controlled biological growth while eliminating a safety and regulatory problem at an operating cost increase of only 28% over chlorine gas.

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