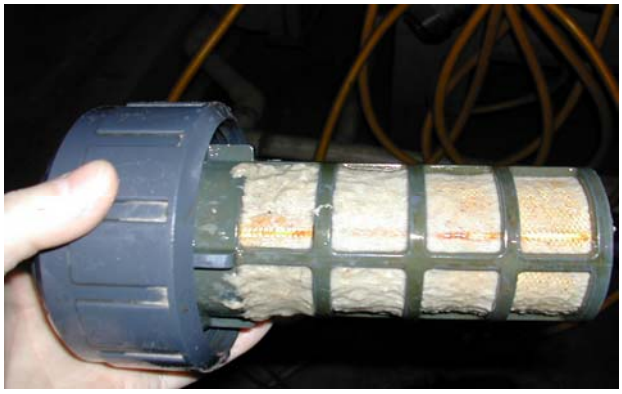
ElectroBrom Replacement of Multiple Biocides
Lumber Mill Vacuum Dry Kiln Cooling Tower

History

A northwest Pennsylvania lumber mill installed an advanced vacuum kiln drying system to decrease the time needed to process dimensional hardwood from months to weeks. The system exposes the hardwood to a vacuum while heating it to 50 C using hot water coils within the wood stacks. A water seal vacuum pump, drawing through a water cooled condenser, is used to evacuate the kilns. Cooling water, recirculated from a 75 ton counterflow cooling tower, supplies the condenser and vacuum pump water.

Following start-up, an extreme biofouling problem developed. Another water management firm attempted to treat the problem by use of continuous feed of DETA II biodispersant and large multiple weekly slug doses of polyquat, DBNPA, and stabilized bromine. In spite of this treatment program; in-line filters, condensers, and the cooling tower fill would become plugged with bio slime in as little as one week.



This plugging caused major problems as the equipment had to be disassembled and manually cleaned. The rapid biofouling is due to the low vapor point organics, good bionutrients, drawn from the drying wood and introduced into the cooling water via the vacuum pump.

ElectroBrom Patent #7,927,470

Following our development of the ElectroBrom technology in 2003, we recommended that the four biocide chemicals in use be replaced with a Model EB-4.

On August 27, 2003, the use of the four biocide chemicals was discontinued and a Model EB-4 started-up.

Results

Biological control, with the EB-4 replacing the four noted products, has been excellent. No downtime due to biofouling pluggage problems have been reported since installation of the ElectroBrom unit.

ATP test data from monthly service calls shows high levels, up to 17,718 rlu, immediately after start-up, dropping to a long term mean of 1070 rlu.

The plant is very pleased that the ElectroBrom unit has solved a severe biofouling problem while eliminating all use of toxic biocides. The precursor salt solution used, PCT 3024, is DOT/OSHA non-hazardous and is registered with the USEPA as a biocide precursor, registration #58616-6.

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