



Tape Manufacturing Plant – Cooling System

Prone to Fouling – Organic Deposit Control in Carbon Filter VOC Control Process

Case Study – CIP (Cleaning in Place)

Problem – Heavily Organic Deposit Fouled Cooling Water System



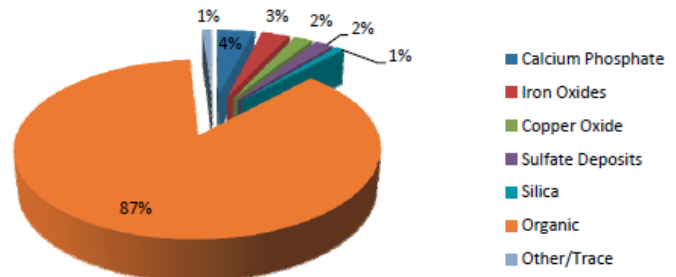
A USA Midwest tape manufacturing plant uses toluene as a solvent in the manufacturing process. Toluene, being an environmental air space pollutant is removed from the air space using activated carbon filters in a traditional trap process. Steam stripping of the carbon filter beds (regeneration) produces a condensate containing toluene and the toluene is recovered and returned to the manufacturing process. The steam condensate that contains trace levels of toluene, is used as a source of make-up to a cooling tower associated with the process.

This part of the overall manufacturing process has historically experienced extensive organic deposition fouling for over 25 years. Toluene is a food source for bacteria whom produce extracellular polymeric substrate (EPS) which is part of the deposition. The treatment program was ineffective as evidenced by the collapse of the cooling tower's fill which required costly tower fill replacement. Continuation of the non-performing program would allow the often-repeated scenario (replacement of large sections of fill).

Cause of Problem - Biofouling

Deposit analysis, including XRF analysis (elemental assay) of the deposits, supported the initial conclusion of the sample being "predominately organics (87%)".

Most Probable Deposit Composition



An on-line cleaning program based on BCP™ 1015 was proposed to the potential tape plant customer by the solution provider.

This cleanup (remediation) program cost was about \$10,000, much less than the program that did not use BCP 1015.

Solution & Results

The proposed new BCP® (Biofilm Control Program) cooling water treatment program included:

Biocide 1: Oxidizing Bromine based microbiocide.
Biocide 2: Non-Oxidizing Biocide: 20% DBNPA
Dispersant: BCP 1015 (Classic DTEA II®)

Clean Up Dosing: BCP 1015 was dosed at about *200 ppm 3 days a week* for the clean-up phase for 3 weeks (9 doses).

Maintenance Dosing: A short cleanup program using only BCP 1015 was followed by the BCP program which consisted of dosing BCP 1015 at about *100 ppm at 3 days a week using biocide periodically, as required.*

Results: Within 60 days, the on-line cooling water program above had not only cleaned up the cooling water system but was keeping the biological fouling under control most important; **No fill replacement was required!**



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