ASHRAE PROTOCOL

Sessile Biofouling: Laboratory Tested

FLOW-TECH WATER TREATMENT SYSTEMS

BACKGROUND

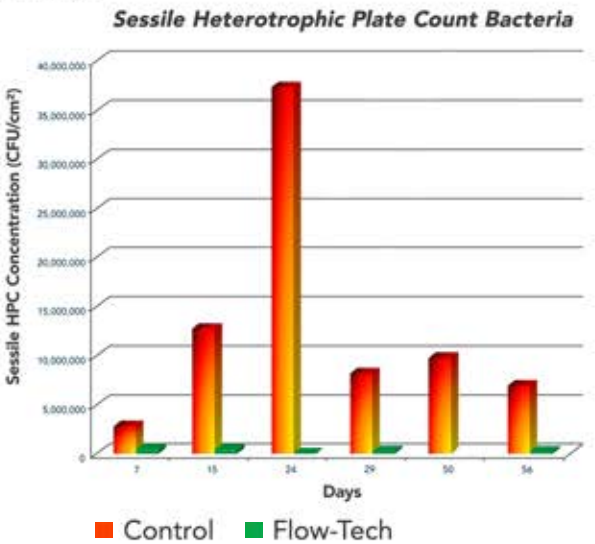
- *2009:* ASHRAE commissioned a study through the University of Pittsburgh Department of Civil and Environmental Engineering
- A protocol was established to test non-chemical water treatment systems and evaluate their efficacy in controlling biological fouling in cooling water systems
- No system tested (including magnetic, pulsed-power, ultrasound, electrostatic, and hydrodynamic cavitation) over 8-month evaluation period showed any ability to control sessile bacteria growth rates compared to the control

SET-UP

- *2012:* Identical pilot-scale cooling towers operated simultaneously
- Both towers (T1 or Control, T2 or Flow-Tech) simulated realistic field conditions: heat load, evaporative cooling, blowdown and water make-up
- Heterotrophic Plate Count (HPC) samples taken once per week for 8-week test period and sent to the Special Pathogens Laboratory

RESULTS

- Flow-Tech reduced sessile bacteria growth by 1-3 log
- On average, HPC concentrations were approximately 50 times higher in T1 (Control) than T2 (Flow-Tech)
- Maximum difference between T1 (Control) and T2 (Flow-Tech) sessile heterotrophic bacteria concentrations equaled 37,400,000 CFU/cm²
- Flow-Tech realized a 98% reduction of biofilm growth



LAB TESTED