Prior to turning on the MIOX unit we tested the cooling water for micro counts and found it high. We were warned that the system could take a few days to reduce the load since it was so high. Within one day the counts were lower than we had seen on any of the cooling systems throughout the season.

CUSTOMER’S CHALLENGE

Can cooling is a critical step in the overall canning process and requires the use of a biocide to ensure that the cooling waters remain microbe free. Canning system cooling waters often present a uniquely challenging disinfection environment due to high organic load in the water from burst cans, the open environment, and warm temperatures - all of which are factors that encourage the growth of bacteria.

A leading U.S. producer of premium food products was experiencing high microbiological counts in their cooling water while using stabilized bromine in numerous cooling systems at a tomato plant in California. The facility uses multi-pass fresh water to cool the cans, making it extremely important to keep the micro counts low in the water to ensure food security and quality.

Traditionally, the facility used bromine-based disinfectants, which are often deployed in high pH environments despite the high cost of this chemical. However, the use of bromine at the facility has failed to measure up to the facility’s exacting biocontrol standards, which are more stringent than those required by the federal government. As a result, they approached MIOX to determine if MIOX’s enhanced Mixed Oxidant Solution (MOS) chemistry would be a good fit for their cooling water application.

MIOX’S SOLUTION

MIOX, a global supplier of equipment used for the on-demand production of custom water treatment chemistries, partnered with the customer to demonstrate the superior biocidal efficacy of MOS. Since the only chemicals used in the production of MOS are sodium chloride (table salt) and water, MIOX’s on-site chemical generation process provides a disinfectant that increases worker safety while at the same time providing an effective, low-cost biocide.
A skid-mount MIOX Vault M15 on-site generation system was installed at the facility. During the pilot, the FAC residual was monitored several times per day to ensure that the residual achieved by MOS in the cooling tower was equal to or less than the residual present during disinfection with stabilized bromine.

**MIOX’S MOS ADVANTAGE**

Mixed Oxidant Solution (MOS) is a biocide composed primarily of sodium hypochlorite and hydrogen peroxide. This chemistry has a long track record of being a highly effective biocide in difficult to treat cooling waters similar to the water used in the customer’s canning processes. Typically, MOS is able to achieve better microbial population control compared with traditional biocides used in cooling systems, including various forms of bromine. Furthermore, the operational cost of MOS is typically significantly less (up to 75% less) than traditional biocides treatment, including stabilized bromine.

**STUDY DESIGN & RESULTS**

The canned food producer and MIOX jointly designed a pilot study to demonstrate the capability of MOS as a disinfectant for canning line cooling water. In this study, MOS treated one canning line at the tomato processing facility. MOS was applied to the water at the same dose rate as the stabilized bromine that was previously in place. Bacteria populations were measured before the use of MOS to establish a baseline for microbial control.

Within one day of MOS treatment, the counts were lower than they had seen on any of the cooling systems throughout the entire season. The MIOX system treated the cooling water for 3 weeks and was able to fully control the microbiological load.

Microbial populations measured after MOS was put into service showed nearly complete elimination of the bacteria in the cooling water with as much as 1,000x fewer bacteria present. Interestingly, when the stabilized bromine chemistry was put back on-line as part of the evaluation, the microbial population spiked to baseline levels again.

This striking result clearly demonstrates that MIOX’s MOS is the superior biocide option for the treatment of these waters. Dramatically increased efficacy combined with substantial projected cost savings compared to stabilized bromine makes MOS a very attractive disinfectant for canning cooling water operations.

**BACTERIA COUNTS (cfu/mL) IN CANNING COOLING WATER**

**FAC RESIDUAL (mg/L) IN CANNING COOLING WATER**

25% REDUCTION IN DOSAGE & FAC