Cycle Time Improved and Maintenance Costs Reduced in Plastics Plant

Problem
A plastics injection blow molding plant in the Midwestern U.S. was experiencing high maintenance costs and production losses due to microbiological fouling in the 3,000 ton process cooling water system. The oil-contaminated closed loop cooling water was black and carried a distinct rotten egg odor. Total and anaerobic bacteria counts were consistently high; iron levels routinely exceeded 10 ppm, indicating severe corrosion; plugging and heat transfer problems in the cooling water lead to maintenance, high cycle times, and quality problems.

Analysis
A bag filtration system was installed to remove suspended solids and biocide dosages were increased to help control the microbiological fouling and related corrosion. However, maintenance costs and production losses remained high while the time and labor associated with changing the filter bags was a concern.

A Chem-Aqua Engineer visited the site to evaluate the problem. Four dead legs were identified as the probable source of the microbiological problems. A dead leg is a section of piping filled with system water, but not receiving circulation. The dead legs were capped supply and return lines installed to enable future expansion of the cooling water system.

These dead legs were the source of the persistent microbiological fouling. With a lack of circulation, dead legs are often not properly cleaned upon startup. Furthermore, they are not impacted by biocide additions.

Solution
Chem-Aqua recommended flushing the dead legs and installing jumper piping to connect the supply and return lines and provide continuous circulation. Two HPF Closed Loop Filters were also recommended to filter the system water down to five microns. The automatic backwashing HPF Filters provide effective filtration without the hassles and labor costs associated with bag filters.

The plant followed these recommendations with outstanding results. Microbiological counts, iron levels, mold cycle time, and maintenance costs decreased while product quality increased.

Chem-Aqua’s recommendations helped improve the plant’s production efficiency and reduced maintenance costs.