

PureLine's PureClO₂[™] Gas Series Generator Makes Controlling Pathogens Easy and Effective for U.S. Cheese Plant

GOALS

To disinfect water in the chill loop to prevent food contamination without fouling the system or causing corrosion.

SITE

A dairy in California.

HISTORY

The Dairy had a large process chilled loop that frequently became contaminated with milk products. The milk products provided an excellent source of food for a variety of bacteria. Since the chilled loop is considered a potential source of food contact, the bacteria in the chilled water had to be maintained below detectable limits to comply with regulatory requirements. For twenty years, the Dairy had used traditional biocides to battle the problem, but they always eventually fouled the system or caused corrosion.

Detectable levels of bacteria required immediate emergency maintenance that caused a significant increase operating costs and, at times, unscheduled downtime. Yet, failure to take immediate action could result in even greater product loss, a shutdown mandated by state or federal regulators, or the possible danger that there could be a bacteria-related illness outbreak among consumers that would lead to huge revenue losses.

PROBLEM

For twenty years, the Dairy tried a variety of non-oxidizing and oxidizing biocides in an effort to remedy the problem. These were industry-standard biocides easily available to water treatment service providers. The non-oxidizers proved to be ineffective in terms of their cost and efficacy. These products did not penetrate the slime layers that formed in conditions found under the chilled water loop. As a result, there was a rapid recovery of the bacteria levels in the circulated water. Frequent high-dose shock treatments were required to treat the contamination, but these treatments were costly and created a significant increase in organic loading.

The oxidizing biocides used were all classified as “surface burning agents.” The organic loading in the chilled water created a heavy demand on these agents. Feeding the oxidizing biocides at dosages required to meet this demand and achieve a successful kill created corrosion throughout the system.

SOLUTION

The client purchased and installed a PureLine PureClO₂[™] Gas Series Model HP-6E chlorine dioxide generator.

PureLine's electrochemical chlorine dioxide gas generation systems produce a pure gas stream using just one precursor. Purecide 25 is exposed to a patented electrochemical cell where it is converted into a chlorine dioxide solution by applying current and separating the resulting by-products using



proprietary membrane technology. The pure chlorine dioxide gas is then stripped from the solution using an eductor and proprietary stripping column. The pure chlorine dioxide gas is immediately introduced into the water or air stream to be treated. The generators are equipped with a state-of-the-art control package that makes operating the system easy and allows for immediate automatic response to disinfectant demand .

PureLine's safe and reliable method for generating chlorine dioxide provided the Dairy with an alternative to the biocides it had been using. Safe, pure, effective chlorine dioxide did not add to the organic loading or produce significant corrosive salts or outside fluids. Pure chlorine dioxide gas proved to be highly efficient kill agent even at low dosages, and was completely compatible with

the existing treatment program formulations. The chlorine dioxide was able to penetrate and eliminate the slime formations without attacking system metallurgy. Because PureLine's proprietary on-line control system automatically monitors the system for any contamination, maintaining the system's cleanliness was made much easier and prevented unexpected emergency maintenance or shutdowns.

RESULTS

PureLine's innovative chlorine dioxide generation technology and control instrumentation combined with the company's professional service program resulted in a successful treatment solution that was easy for plant operators to implement even with the schedule constraints typical at today's dairy production facilities. Safe and reliable technology combined with professional support services virtually eliminated plant maintenance requirements. Daily routine system monitoring was reduced to less than 10 minutes per day.

For less than \$2,500 per month, the Dairy now receives a comprehensive packaged solution that includes a full-service agreement along with an open-cooling system disinfection application that is safe for continuous critical food contact. PureLine's overall program fees are very competitive with other traditional treatments the Dairy used in the past. However, better efficacy and system protection, a reduction in unscheduled maintenance, and easy implementation have all made PureLine's chlorine dioxide gas generator a much more cost-effective solution to Dairy's problems.

CONCLUSION

PureLine's line of safe, reliable and highly effective chlorine dioxide gas generators serve as an alternative to biocide in applications where there are:

- » persistent pathogens
- » heavy organic or other contaminant loading

- » system conditions that reduce contact time
- » extended system retention time with oxidant-sensitive treatment formulations and system metallurgy and where potable acceptance may affect the efficacy and application of traditional biocides.

As a result, PureLine's chlorine dioxide gas generators offer ideal disinfection solutions for drinking water, chilled water, process waters, industrial and municipal wastewater, reclaimed water, air emissions control, re-used and water conservation applications.