

Turkey Processing Plant Reduces Bacteria Counts with PureClO₂[®] Electrochemical Generator



GOAL

- » Lower high total plate counts (TPC)
- » Eliminate *E. coli* and potential for *Salmonella* and *Campylobacter*
- » Install a safe method for generating ClO₂ on-site

SITE

A turkey processing facility in the Midwest.

HISTORY

A well-respected food company was concerned about disinfection issues at one of its turkey processing facilities. In a diligent effort to control bacteria counts, the facility had relied on bleach as its primary disinfectant. Despite its efforts, TPC, *E. coli*, *Salmonella*, and *Campylobacter* counts remained above desired target levels. In addition, the company was concerned about the plant's ability to comply with stringent new government regulations regarding the control of *Salmonella*.

The Problem

Proactive personnel at the turkey processing facility determined that they could no longer continue to rely on bleach as the plant's primary disinfectant because it simply did not maintain TPC and *E. coli* counts. In addition, *Campylobacter* also posed a threat. Just as importantly, managers were also concerned about that the facility would not meet stringent new USDA FSIS regulations regarding *Salmonella* control unless they found a more effective disinfection system.

The company weighed its options. Although managers knew chlorine dioxide (ClO₂) would effectively remedy their disinfection problem, they worried that ClO₂ generation technology would present a host of other issues—specifically, dangers associated with chemical handling, worker safety and poor process control. Conventional chlorine dioxide technology relies on multiple precursor chemicals to generate chlorine dioxide—requiring users to store large quantities of bleach and acid on site. This added danger negated the benefits of ClO₂ chemistry. In addition, a multiple-precursor system would not ensure a consistent generation or delivery of pure ClO₂. Peracetic Acid (PA) and acidified chlorite were also evaluated, but eliminated from consideration because it proved too costly and also required the bulk storage of hazardous materials on site.

With new FSIS regulations and tighter enforcement in place, plant managers needed an effective disinfection method that could maintain critical bacteria levels without creating chemical handling and safety issues.

The Solution

The company turned to PureLine Treatment Systems (www.pureline.com) for a solution. PureLine's innovative PureClO₂ Electrochemical Generators safely and effectively disinfects poultry process water. Using PureCide[®] 25 as a single precursor, PureLine's patented generation technology produces 99.5% pure, chlorine-free ClO₂ solution on site and on demand. This high-purity ClO₂ is pumped into the whole-bird chillers via a conventional pump to reduce TPC and effectively kill *E. coli*, *Salmonella* and *Campylobacter* without producing disinfection byproducts. In the poultry industry, PureClO₂ Generators are ideal for disinfecting whole-bird chillers, pickers, wash stations and microbial dip tanks. With very fine dosing controls and turndown, PureClO₂ Generators can pump pure chlorine dioxide solution to multiple dosing points.



The Solution (continued)

PureLine's PureClO₂ Electrochemical HP-40 Generator was selected to meet the needs of the turkey processing plant. Once installed, the HP-40 successfully achieved a 2-3 log reduction in both TPC and *E. coli* at residuals well below the 3.0 PPM limit. Each PureClO₂ HP-40 Generator produces up to 40 pounds of pure chlorine dioxide per day. Like all of the models in the PureClO₂ series, the HP-40 has been engineered for safe, simple and completely reliable operation. In addition, PureLine worked with plant managers to address their safety concerns regarding potential ClO₂ emissions and engineered a series of ClO₂ air monitors into the process. These air monitors ensure ClO₂ levels in the facility never exceed unsafe levels. Additionally, PureLine established a series of testing protocols to make sure that the desired level of ClO₂ is consistently fed into the process in order to maintain optimum results.

Pure Results

Within days of its installation, the PureClO₂ HP-40 Generator had successfully reduced the plant's bacteria counts to desired levels. **Testing indicated that the addition of ClO₂ at 0.5 PPM – 1.0 PPM into the whole-bird chille water system resulted in a 2-3 log reduction in both TCP and *E. coli*.** Additionally, the generator provided the turkey processing facility with the tools it needed to comply with the USDA's stringent new regulations regarding the control of *Salmonella*. Because ClO₂ is up to seven times more effective than bleach when it comes to killing *Salmonella*, plant managers are now confident that they will have no problem meeting the USDA's new industry standard (<10% positive).

Since the PureClO₂ HP-40 Generator delivers pure chlorine dioxide rather than the mixture of ClO₂ and Cl₂ produced by conventional generation technology, the plant dramatically decreased its level of disinfection byproducts. Moreover, ClO₂'s neutral pH is less corrosive to process piping and plant metallurgy. Finally, by generating 99.5% pure chlorine dioxide on site and on demand, the PureClO₂ HP-40 has alleviated the company's safety concerns about chemical storage. Engineering solutions for ClO₂ air monitoring and testing provided plant managers with the additional assurance they required regarding the safety of ClO₂.

CONCLUSION

PureLine's PureClO₂ HP-40 Generator has provided the safe, reliable and cost-effective disinfection solution to this turkey processor's ongoing struggle with disinfection. Using a single precursor — PureCide® 25 — the HP-40 consistently produces a steady stream of 99.5% pure, chlorine-free ClO₂ solution on site and on demand—completely eliminating the need for Cl₂ gas, acids, and blending multiple chemicals to produce ClO₂. PureLine's state-of-the-art single precursor technology has eliminated safety concerns regarding the storage of the dangerous chemicals. Now the plant uses high-purity chlorine dioxide to effectively kill a wide variety of microbial contaminants without producing disinfection byproducts. As a result, PureLine's innovative electrochemical ClO₂ generator has effectively reduced bacteria counts to desired levels while improving plant safety.

PureClO₂ Generators are available in 3, 10, 20, 40 and 100 lbs/day capacities, making them ideal for a variety of poultry industry applications.



PureLine Treatment Systems
Corporate Headquarters
647 S. Vermont St.
Palatine, IL 60067

800.383.PURE (7873)
www.pureline.com

PureLine. The Pure Choice.