

CASE STUDY FOOD SAFETY

Vegetable processor discovers unique benefits of safe and reliable chlorine dioxide disinfection.

Site

A mid-Atlantic spinach and vegetable processing plant.

History

A mid-Atlantic spinach and vegetable processor utilized a disinfection program that included chlorination with calcium hypochlorite ($\text{Ca}(\text{OCl})_2$) tablets for primary vegetable wash and flume steps. After blanching, the disinfection protocol was followed with 2% stabilized chlorine dioxide (ClO_2) in the flume and a final spray application of ClO_2 directly onto the product before the freezing process. While the facility's disinfection protocol maintained bacteria counts within acceptable levels, customers requested that the counts be lowered so they could pursue more profitable market opportunities within the prepared foods segment of their industry.

The processing regimen coupled with seasonal factors also presented a challenge when it came to ensuring that the existing disinfection program remained consistent. As a result, there were variations in product quality between the spring and fall seasons. Finding a more effective disinfection program would not only provide greater reliability during the time-sensitive processing seasons, it would satisfy customer demand for higher quality products that could be marketed in the more profitable cold-blending market.

Goal

- Achieve lower Listeria levels and reduce bacteria counts in frozen spinach and vegetable products.
- Improve the safety and reliability of the plant's disinfection program.

Problem

Today, vegetable processors are being asked to help their customers eliminate the cook step in many prepared foods. Customers are willing to pay more for products that meet higher quality standards. If the vegetable processors can provide a product with ultra-low bacteria counts, their customers can eliminate cooking and proceed directly to a cold-blend step for prepared microwavable foods and foods reheated in applications where sanitization is not always achieved. Eliminating the cook step not only saves energy, it also reduces the labor, equipment and time required for the extra processing.

When asked to provide a higher quality spinach product, the mid-Atlantic processor turned to Bolinski Consulting, LLC in Medford, New Jersey. After reviewing the existing process and application goals, Bolinski teamed with Water Dynamics in Whippany, New Jersey, and introduced the processor to PureLine's Pure ClO_2 ™ Electrochemical HP-40 Generator. Pure ClO_2 Electrochemical Generators produce 99.5% pure chlorine dioxide that is ideal for disinfection.

Solution

PureLine's Pure ClO_2 HP-40 Generator was selected to replace both the calcium hypochlorite and the 2% stabilized ClO_2 product at the plant. The Pure ClO_2 HP-40 Generator produces up to 40 lbs/day of pure ClO_2 gas that can be pumped to multiple injection points within the plant. Unlike older, inefficient and labor intensive chlorine dioxide technologies that require multiple-chemical precursors and are notoriously unreliable and difficult to maintain,

PureLine's electrochemical generators use a single precursor chemical to dramatically improve reliability, safety and purity.

PureLine's unique, patented electrochemical generators use a safe and economical liquid chlorite solution to produce 99.5% pure, chlorine-free chlorine dioxide. In addition, electrochemical technology actually uses very little electricity. The HP-40 can produce 40 lbs/day of ClO_2 from a single-phase, 30-amp circuit costing about \$7.00 to \$8.00 per day in electrical operating costs.



