

Clean it up

three ways with water

Implementing an appropriate treatment process can deliver financial and environmental gains, maintains Puresep.

As water costs rise the treatment and recycling of site water for use in other processes is becoming more financially advantageous. As a leading water process company, Puresep offers several state-of-the-art technologies. For the purpose of this article, three complementary technologies will be looked at; Ultraviolet irradiation (UV), PureSec electrochlorination and PureChlor chlorine dioxide. All of these have recently been installed at food and beverage sites across the UK.

Ultra-violet irradiation

UV is primarily employed as a disinfection process that inactivates waterborne pathogens without using chemicals, where UV light changes the DNA and protein structure of viruses and bacteria and stops them from reproducing. Advantages of UV disinfection include:

- Effective for all types of microorganisms
- Low capital, operating and maintenance costs
- Compact and easy to install
- Efficacy is independent of pH
- No impact to the aesthetic water quality
- Safe and environmentally friendly

A Puresep Water UV system was recently installed at a soft drinks production factory, as a final sterilisation process. Upstream of the UV, the town's water is treated with a chlorine sterilant, to a prescribed residual with contact time. To prevent water or final product tainting, a PureFlow carbon adsorption process removes free residual chlorine. Post UV, final filters offer cryptosporidium protection before supply to product make up. A PureFlow reverse osmosis system treats the product make up water, to supply low mineral content water for isotonic beverage production,



with a point of use UV steriliser on the treated water storage tank outlet.

PureSec electrochlorination systems generate onsite chlorine solution. Brine is converted to produce 1% chlorine solution by electrolysis, salt and power are the raw materials for the process. The solution is safe to store and stable for long periods with no loss of activity. Multiple points of use can be applied from a common storage tank, with dosing control feedback via specific ion residual sensors.

Electrochlorination

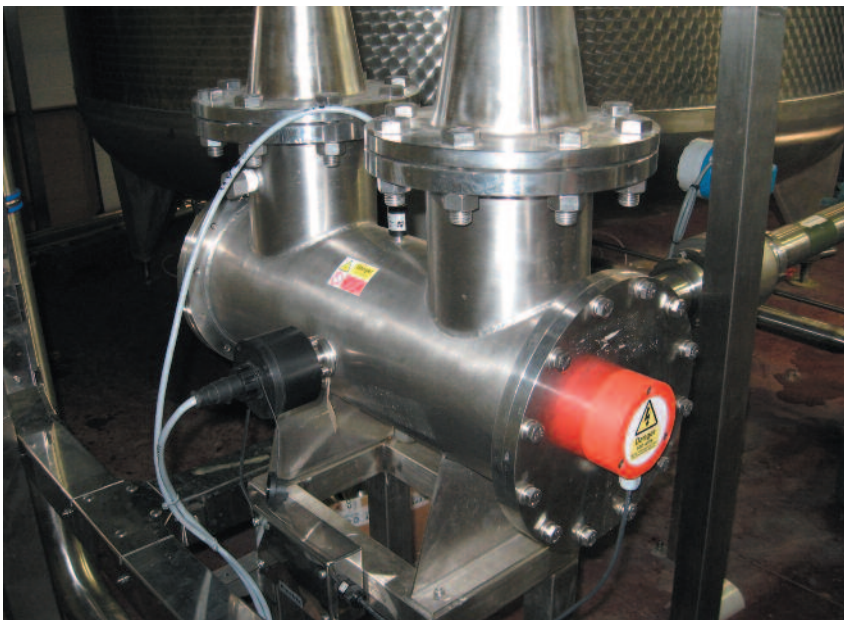
Over recent years the PureSec electrochlorination system has gained favour, due to the elimination of transportation, handling and storage of chlorine gas or other disinfection chemicals. This results in a safe, reliable and economic method of disinfection. The full range of PureSec systems are PLC controlled and have the flexibility to be configured to site specific process control requirements. They are well suited to the treatment of product water, drinking water, cooling water, as well as other industrial applications.

Puresep recently installed a PureSec electrochlorination system at Britvic Soft Drinks replacing a chlorine gas system. The electrochlorinator produces 36kg per day of chlorine supplying a buffer storage vessel with level control for make up. The point of use dosing system is a duty/ standby pump arrangement with feedback control for chemical injection and an auto pump changeover facility.

Kevin Cunningham, Engineering Support Team Leader at Britvic Soft Drinks says "We chose the PureSec electrochlorination system due to its high level of safety and efficiency, and the specialised knowledge of the Puresep engineers"

Finally, PureChlor chlorine dioxide is where chlorine dioxide is produced through the tightly controlled mixing of Puregen base reagents. Chlorine dioxide is a powerful disinfectant making it an effective and fast acting killer, by breaking down cell walls and attacking bio film leaving no resistant strains. It is well suited to a range of water treatment applications at low concentration, including CIP, feed water, product water and water re-use. The PureChlor systems are PLC Controlled with full safety features and multiple points of use. Benefits include:

- Fast acting killer unaffected by the pH range it operates in
- Hugely efficient low chemical usage ensuring a safer environment for everyone
- Zero harmful chlorinated by-products
- Easy future expansion
- Single reagent storage area





PureChlor Chlorine Dioxide Plant

SEP
Purification Filtration Separation

Chlorine dioxide

A PureChlor chlorine dioxide system has been installed at Universal Beverages, where the system feeds five points of use; these applications are de-aerated liquor, softened town's water, two CIP lines and post carbon filtered water.

Chris Newall Operations director, UBL, says, "The PureChlor chlorine dioxide system is very efficient for our needs and the fact that we can use one system with numerous points of use makes it

operationally beneficial and cost effective".

There are numerous options to efficiently and effectively treat water; the fundamental issue is to understand which option best suites the plant in question, the application and the financial viability. Puresep provide onsite consultancy services to review and assist companies with their water treatment needs, ensuring process, financial and legislative requirements are fulfilled.

All of these systems have recently been installed at food and beverage sites across the UK.

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