



ACLARUSTM
OZONE

\H2OSOLVED

The George Brewery

BREWERY CASE STUDY



BREWERY THE GEORGE

PREMIUM CRAFT BEER, ENVIRONMENTALLY FRIENDLY

The George Brewery resides in a beautifully restored hotel & bar built in 1845 and located in historic Newmarket, a tourist friendly town just north of Toronto, Canada. The brewery produces an eclectic variety of premium handcrafted ales, lagers and sours.

All breweries require large volumes of water to process and brew beer. It can take as much as four barrels of water to produce one barrel of beer. This estimate does not include the additional water used to grow the hops and various grains that are required. Consequently, The George is committed to sustainable, environmentally-friendly practices in the operation of its brewery.

The George is actively engaged in their community as a steward of the environment. For example, the organic matter that results from the brewing process is distributed to local farmers for use as cattle feed and compost. Furthermore, every effort is made to use best practices to reduce the use of chemicals in the effluent which in turn reduces the load on the local municipal wastewater treatment plant. The George also strives to conserve and re-use water in every aspect of the brewing process.

"95% of beer is water so water chemistry is critical." states Steven Herold, The George Head Brewer. Steve is a graduate of Niagara College's Brewmaster & Brewery Operations Management program, and has degrees in both biochemistry and microbiology. He is continually striving to improve product quality using the most environmentally conscious brewing practices that reduce their use of water and chemicals.



BREWERY

Breweries require high quality water for a number of uses on site including the beer production and sanitizing equipment.

Fast Facts

CLIENT

The George

LOCATION

Newmarket, Ontario, Canada

DATE

October 2019

TREATMENT PURPOSE

Disinfection/Sanitization of equipment; bacteria, virus, cysts; yeasts and organics; metals such as zinc and iron; removal of residual odour, colour, taste

OZONE USE

Incoming Municipal Water for Restaurant, Beer Brewing, CIP Sanitation

FLOW RATE

10 GPM

PREMIUM DRINKING EXPERIENCE THROUGH SUPERIOR WATER.

Ozone is the best choice for breweries for the cost savings, the environmental benefits, and of course, the premium quality beer.

Client Needs

- ☰ Safe, chemical-free and environmentally friendly
- ☰ Superior Disinfection and sanitizing capabilities.
- ☰ Prevention of build up and biofilms on equipment.
- ☰ Easy installation and maintenance.
- ☰ Compliant with safety and production regulations.

Previous to joining The George, Head Brewer Steven had worked in several other craft breweries where reverse osmosis was used to treat incoming water for brewing and Peroxyacetic Acid (PAA) was used for cleaning and sanitation.

In 2019, The George was looking for an environmentally friendly and cost-effective disinfection technology to treat its water. Steve was knowledgeable about ozone, its use in the beer and wine-making sectors, and reached out to Aclarus for its expertise in ozone water treatment solutions. Specifically, they needed a solution to treat incoming water, outgoing waste water,



Image:
Steven Herold, The George Head Brewer

as well as provide premium brewing water and CIP sanitation. Another key requirement was a solution with a relatively small footprint that could be installed within the existing historic hotel infrastructure. Aclarus' modular, scalable system design was ideal.

"At The George we are always striving to make the best quality beer in the most environmentally conscious way. Our mandate is to use the very best water, AND the least amount of water to produce our premium craft beers."

THE ACLARUS SOLUTION

The Aclarus team worked with the brewery to determine key factors like the water quality, potential solutions, flow rate and ultimately determined the required ozone "dose" and system design for treatment success and maximum ROI. The Aclarus system was designed to meet all of the brewery's needs for treatment of incoming water for brewing, CIP and sanitation purposes.

The George treats its incoming municipal water source prior to brewing. Source water is treated to remove contaminants that affect the quality of the water (and the beer) – such as chlorine, iron, zinc, sulphur and manganese – among others. The Aclarus ozone system works on-demand, without chemicals to disinfect and also removes colour, taste and odour. After the initial ozone treatment, the water goes through a carbon filter to capture matter such as microplastics as well as any residual ozone. This process produces premium brewing water for as little as 5cents/1000L.

The George's AOWT-8 Aclarus Ozone System is NSF-61 Certified for drinking water – meaning it meets the most stringent global standards criteria for materials and water quality assurance.

Another advantage of the Aclarus ozone system is its ability to effectively manage fluctuations in chlorine content and other contaminants of the incoming municipal water. The treated incoming water is consistently treated to meet bottled water standards.

The George was also seeking a CIP sanitation solution that would conserve both their use of water and final rinse chemicals. For sanitation, the stored water goes through the same process as the incoming treatment, except this water does not require the carbon filter. Ozone works with cold water eliminating the additional expense of hot water. The George's water use was greatly reduced given

Technical Specifications


- ≡ Aclarus System AOWT-8
- ≡ Small System Footprint (~36"W x 24"L x 50"H)
- ≡ 4-8gr/hr Ozone Generator with Automatic Air Dryer
- ≡ Mixing & Injection System, Contact Tank, Flow Switch, Degas Removal & Air Vent, Teflon Tubing
- ≡ In-line Ozone Monitor & Ambient Ozone Monitor, Automatic Self-Cleaning Filter
- ≡ NSF-61 Certified

Aclarus' closed loop final rinse sanitation system which allows the water and the chemical wash to be reused instead of flushing it down the drain. Furthermore, the ozonated water that eventually goes down the drain breaks down to oxygen and helps reduce contaminants that are regulated in wastewater (BOD/COD). Chemicals such as chlorine and PAA increase contamination which can lead to costly municipal wastewater treatment overage fees.

The George estimated that without the Aclarus ozone system they would have used a large volume of Peroxyacetic acid (PAA) to sanitize. On average 60 litres of PAA would have been required per tank and this would have gone directly down the drain after use. Steven estimates that the typical brewery industry payback for water disinfection equipment is 5 years, but only 3 years with the Aclarus Ozone system. The system will have paid for itself simply from the savings from PAA alone. Furthermore, The George's water and chemical use was greatly reduced given the closed loop final rinse sanitation system.


THE BENEFITS

The Aclarus system resulted in a superior water treatment with a number of benefits:




SAFE, CHEMICAL FREE, ENVIRONMENTALLY FRIENDLY

Eliminates more than 95% of their need for PAA throughout the brewing process, as well as other chemicals; improved wastewater quality.




COST-EFFECTIVE

One System – Two Solutions; no need to purchase/transport/store expensive and toxic chemicals, such as PAA; eliminates the need for salt during the brewing process; costs about 5 cents per 1000 litres of water treated, virtually no maintenance.




REDUCED WATER CONSUMPTION

The closed loop final rinse sanitation system allows water to be reused; Reverse Osmosis (RO) results in 30-50% of the water it uses going down the drain.




ENERGY SAVINGS

Ozone disinfects and sanitizes with cold water, eliminates the need for hot water and its "instant kill" shortens disinfection time.



EASY INSTALLATION AND MAINTENANCE

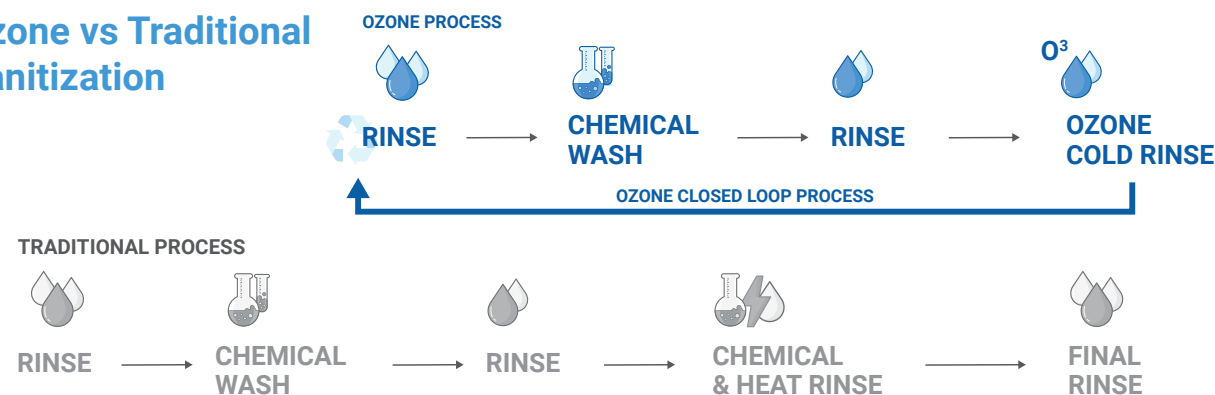
Small footprint modular system that results in easy installation, maintenance and service.



NO DISRUPTION TO THE BREWING PROCESS

Ozone is produced instantly on-demand with cold water.

Ozone vs Traditional Sanitization



“It doesn't make sense to use anything other than ozone for so many reasons...the quick ROI and cost savings, the environmental benefits, not to mention premium quality beer. You can't produce great beer without great water. Aclarus Ozone alleviates so many of the concerns with respect to water quality and makes the brewing process so much easier.” says Steve Herold. “Ozone is by far the better way to treat water. I recommend Aclarus Ozone to everyone. They are dedicated ozone experts who are friendly, responsive and great to work with.”

- Steve Herold, Head Brewer The George



WHY ACLARUS?



Ozone is a superior chemical-free disinfectant effective at treating the most complex water problems including the following:

Pathogens

- Bacteria (E. coli, Streptococcus, Cholera, Pseudomonas, Mycobacterium)
- Virus (Adenovirus, Legionella, Rotavirus, Salmonella, influenza, hepatitis, polio)
- Cysts; (Giardia, Crypto, Cyclospora, E. Dispar)

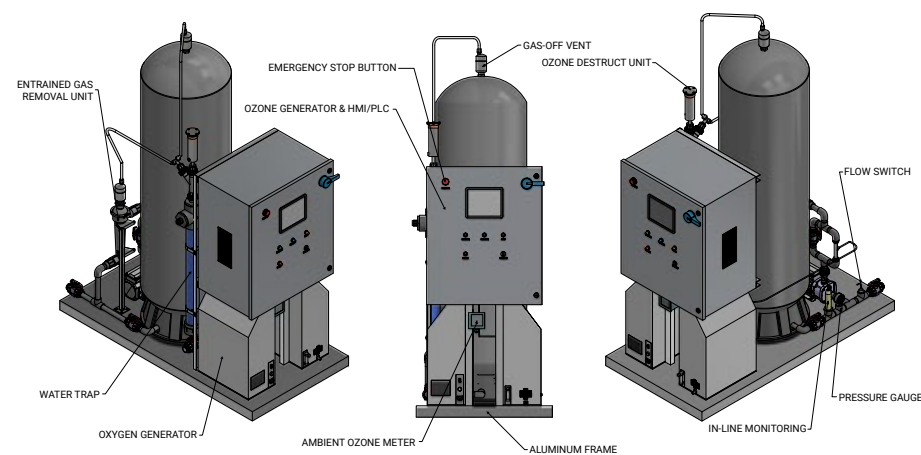
Contaminant

- Metals (Iron, Manganese, Sulphur, Lead, Arsenic)
- Organics (Biofilm, Algae, Tannin, Colour, NOM)
- Inorganic's (Cyanides, COD)

Contaminants of Emerging Concern

- Pharmaceuticals & Personal Care Products
- Hormones, Antibiotics, Medications
- Estrogen, Sulfamet, Oxycodone, Ibuprofen, Triclosan
- Amphetamines, Cocaine, Opioids
- PFAS (per & Polyfluoroalkyl Substances - Teflon)
- Micropollutants & Microplastics

ACLARUS TYPICAL SYSTEM DESIGN & FEATURES





ACLARUS[™]
OZONE

\ H2O SOLVED

GET IN TOUCH



Adam Doran
VP Marketing

1 (888) 905-8801
(705) 991-2179
adoran@aclarus.ca
www.AclarusOzone.com

© 2021, Aclarus Inc.

