Ozone as a Brewery Disinfection Tool –

How this safe, organic solution is used in today's breweries

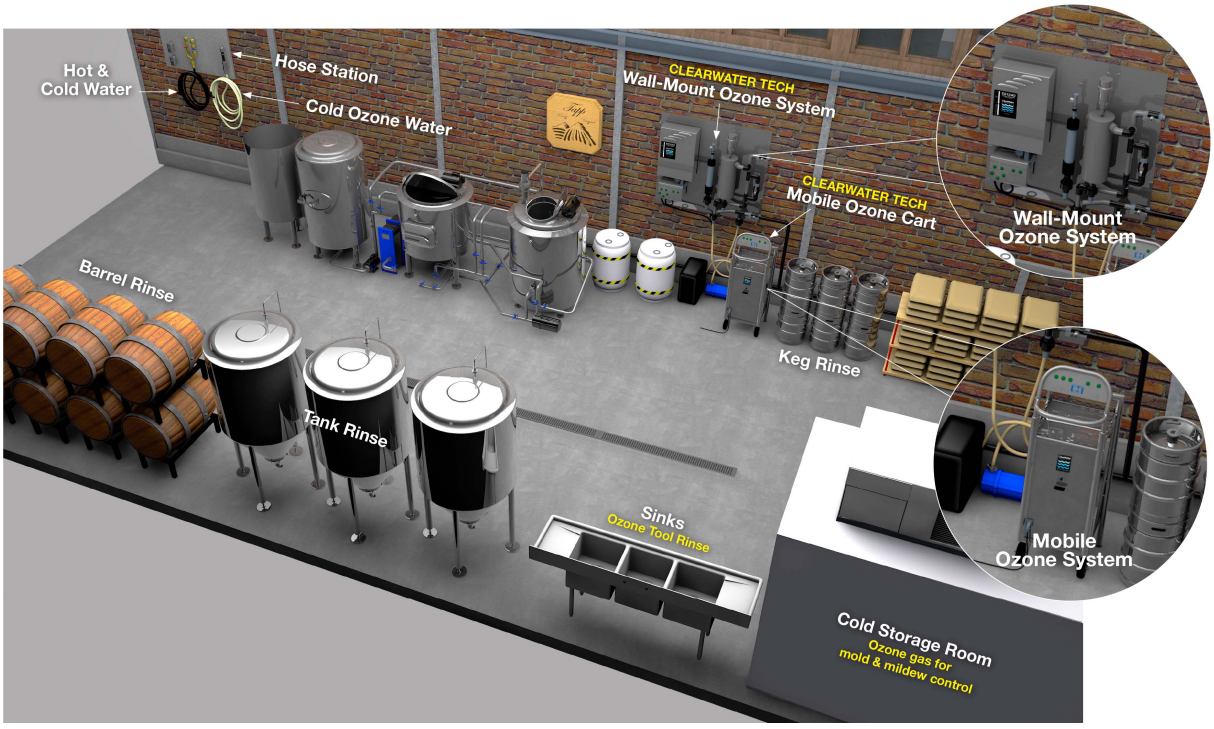
As the beer industry continues to grow to exorbitant proportions, brewery professionals know that microbiological quality control and brewery disinfection methods are critical for the processing and production of beer.

While some beer makers use chemicals, steam, or hot water for disinfecting equipment, many are turning to ozone technology as an effective alternative and organic disinfectant.

Ozone is the most powerful oxidizer and disinfectant that can safely be used and is commercially available for the control of bacteria, molds, and other microbes. Ozone provides this disinfection through a lysing process, which breaks down the microbe's membrane and cell wall, destroying it completely and very quickly. It is far more efficient in disinfection than hot water, caustic chemicals, or acids. Further, ozone is generated on-site reducing the need for handling and storage of such chemicals.

Let's start with some facts about the ozone molecule. Ozone is Mother Nature's perfect purifier and is formed naturally within the ozone layer. Ozone (O_3) is generated when oxygen (O_2) is exposed to UV light or an electrical charge (lightning). Ozone is that fresh, clean scent that can be smelled after a lightning storm. As the oxygen passes through the electrical field, the O_2 molecule splits and forms two O_1 atoms. Each unstable O_1 atom combines with an oxygen molecule to form O_3.

FDA and USDA approved for food surface contact, ozone leaves behind no residues or aftertastes. Because ozone is created from oxygen, it is consumed by the contaminant and reverts quickly back to oxygen.



Brewery Overview - Point-of-Use for ozone disinfection

Cleaning and disinfection procedures within a brewery take time, in fact, many beer makers admit that it takes far more time to clean and disinfect the brewery than it does to actually make the beer. Traditional procedures start with a *pre-rinse* to knock down large debris; then the *chemical cleaning* step typically using alkalis and acid based products to remove sugars and other debris; a *post rinse* to remove the cleaning chemicals; then hot water is often used during the *disinfection rinse* to reduce and destroy microbes, peracetic acid, caustic soda or even hydrogen peroxide; and lastly a *final rinse* is often used to remove the disinfectant. However, when using ozone as the disinfectant, the *post rinse* and *final rinse* can be eliminated as there are no negative effects when mixing ozone with the cleaning chemicals, and because ozone is safe for food contact, the *ozone disinfectant rinse* can also be the final rinse.

Typical disinfection products can take 30-minutes or more to provide sufficient contact time, whereas the proper levels of ozone can take mere seconds. Further, if hot water is being used in the disinfection protocol it is now eliminated, as ozone rinse uses only cold water. Ozone not only saves time, but saves energy, and water.

Ozone is an excellent addition to disinfection protocol to assure microbe free surfaces within processing equipment. In addition, it can also be used to disinfect barrels and fermentation tanks (inside and out), transfer lines, hoses, fittings, valves, and clamps.

Other places that disinfection can go forgotten in the brewery are, floors, walls, and drains. Left untouched these places can attract fruit flies and other pests creating a breeding ground for microbes that can eventually become the source microbial problems throughout the brewery. Ozonated water is used simply and effectively in these areas to help prevent microbial outbreaks that can taint and cause loss of product.

The use of ozone for disinfection has now spread throughout much of the beer industry today, and has become an industry standard worldwide. As the benefits and cost advantages of ozone become more widely understood, the technology's role in breweries will grow. There are many ways to make improvements to your brewery, but none can help to provide a more consistent product, reduce equipment, water and energy costs, and improve beer quality the way ozone can!