



# Agriculture

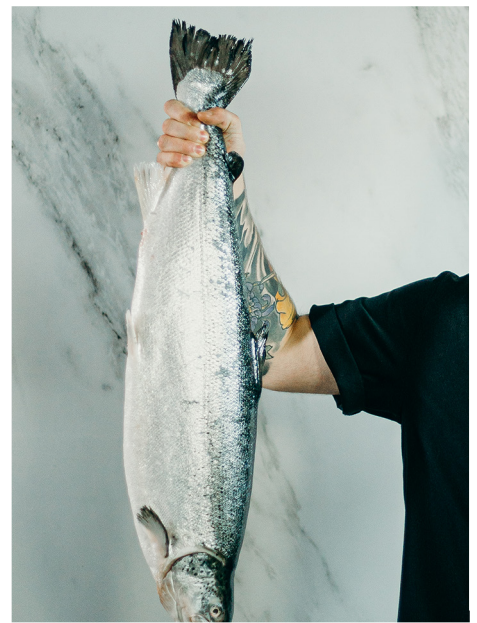
## Ozone solutions for air and water treatment



Farming



Animal husbandry



Aquaculture

### What is Ozone?

Ozone ( $O_3$ ) is a very powerful oxidation agent. It is easily soluble in water, and has a fantastic capacity to eliminate micro-organisms that are part of water pollutants. Once the effect has taken place, it dissolves, returning to an oxygen state.

### Uses of ozone

Ozone is, both in water and air a powerful disinfectant, bactericide, virucide, and fungicide. The main applications of ozone are for disinfection, deodorization of the environment and for the treatment and purification of water. With this, the elimination of pathogenic micro-organisms and bad odours is achieved.



# Non-Animal farming

## How does it work?

An ozone system is easy to handle. Once the initial settings are made, the operation is automatic. Ozone is continuously produced from the ambient air, via an oxygen generator, and led into the collection tank. Supervision from time to time is sufficient. Key advantages:

**Strong disinfectant.** Ozone's oxidizing potential is high. It ranks among the top four oxidants. In practise, it's the second strongest after hydroxyl radicals.

**Fast reduction of COD and BOD.** The ozone treatment of unwanted organic residues effectively reduces the organic COD and BOD loads of the water.

**Unaffected nutrients.** Nutrients such as ammonium, phosphate, sulphur and potassium remain unaffected.

**Low energy input.** Required power input is normally 1-3 kW.

## What can I use it for?

### IRRIGATION

The professional ozone system for in-line irrigation allows irrigation water to be treated by in-line pressurization. It is perfect for drip irrigation and medium flow sprinkling, in the field or greenhouse. Ozone is an ecological disinfectant solution for agricultural soils. It is a product of nature that does not pollute. With the ozonation of irrigation water online and a certain level of redox (eV) we achieve the best disinfection results and quality of the agricultural product.

#### Benefits of ozone treatment for in-line irrigation

- Increases the Redox potential of water mV
- Improves the quality of irrigation water
- Reduces biofilm in pipes
- Oxygenates irrigation water
- Reduces waste and enhances the crop

### RINSING

During handling of fresh produce, like tomatoes, potatoes and lettuce it is of utmost importance to avoid cross-contamination of bacteria and other micro-organisms that may arise from growth on open process equipment, for example conveyor belts. Upon utilizing ozone as a sanitizer, the only bi-product is oxygen (which is the natural breakdown compound of ozone). This makes a solution from Ozonium an environmentally friendly alternative to ensuring high standards and freshness in the fresh food handling procedures. Thanks to its non-organic, intrinsically natural characteristics, ozone is an ultimate compound for rinsing vegetables, fresh-cuts and other non-processed products.

### HYDROPONIC CROPS

As in traditional farming, the water quality is a main factor to take into consideration to keep crops healthy and profitable.

### SUPPLY WATER QUALITY ASSURANCE

Sanitized and clean supply water for industrial use is an issue in food and beverage production in many parts of the world. Ozone is a cost-effective method to sanitize the supply water used, sanitation of process equipment and plant wide rinsing. Not only does ozone offer the most effective sanitation, it also removes BOD and COD. In addition, it provides ultra-clear water by removing particles and discolourations. Ozone leaves no by-products or taste. It is a perfect alternative to chlorine dioxide sanitation, which is commonly used

### OPEN SURFACE OZONE SANITATION

Ozonated water is an effective surface sanitizer (also known as COP, clean out of place), which means it can be used for conveyor belts (for example in the filling line) and floor areas in the brewery.

### AROMA COMPOUNDS REMOVAL

For breweries that produce successive batches of various types of beverages - mixed batches of beer, cider or flavored mineral water - aroma cross contamination may occur. The effective oxidizing characteristics of ozone present a novel way of removing aroma compounds which may otherwise contaminate the finished product.

# Animal farming

## How does it work?

Over 50% more efficient at breaking through bacteria membranes compared to chlorine

Eliminates a wide range of bacteria over 3000 times faster than chlorine

Potent disinfectant at low concentrations

Decomposes into oxygen gas leaving no by-products

FDA-approved for direct contact with food

Extends shelf life of most food products

Efficient odour remover

Easily and economically produced at point of use

Easily detectable at low concentrations by humans, thereby safe to manage

Regulatory framework in place for human exposure in most countries

## What can I use it for?

### SANITATION OF EQUIPMENT

Closed process equipment which comes in contact with fresh or processed food and beverage, such as pipes, vessels and evaporators must be kept clean and sanitized in order to maintain proper level of hygiene and work environment. The strongly oxidizing characteristics of ozone makes it a viable complete replacement for traditional chemical disinfectants. Typical heat treatment of components such as heat exchangers and valves can also be avoided.

### ANIMAL HUSBANDRY

Ozonated egg-laying areas, or chicken farms, eliminates pathogens from the environment, reducing the incidence of diseases (like Fowl cholera, Fowl-pox, Metasalmonellosis, Avian influenza, Staphylococcus and more). The strong smell of these facilities disappears and oxygenates and purifies the air. Ozone plays a very important role due to its disinfection and deodorization power of air and water. It increases the oxygen in the area treated.

### WASTEWATER

Since ozone does not leave any harmful by-products. Reduced water consumption means less load on wastewater treatment plants. Some wastewater effluent is inevitable in any food & beverage plant. Our ozone systems break down industrial wastewater COD, TOC and BOD effectively and can be integrated into existing wastewater treatment plants.

### AQUACULTURE

Fish farming, both in sea and fresh water, require an extensive control of the quality of the water. Deterioration of water can lead to losses. Ozone will provide ideal conditions for the pools to flourish, keeping optimal water quality at all times. Ozone systems provide clean, transparent, oxygenated and harmful organisms free water.

### HORSE STABLES

Air quality in stables is an important factor in the horses' health and stress levels. Thanks to the deodorizing power of ozone we can eliminate the particles and bacteria that cause this smells, like the ones from stools and urine. Odour is not the only problem, this odours can attract insects, that are leading cause of diseases in horses. We can use ozone as a barrier to keep this unwanted visitors and its diseases (like Equine infectious anemia, bacillus anthracis or equine encephalomyelitis) away.

### CIP

For closed process equipment in the food and beverage industry, ozone completely eliminates the need for traditional, organic and chlorine based disinfectants. This reduces the consumables cost and handling. It also makes typical CIP cycles more effective.



#### Manufacturer Certifications



ISO 9001 and BUREAU  
VERITAS



FUNDING MEMBER of  
EUO3TA



CE CERTIFICATION



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