

# EXCALIBUR - ZENTEC AQUA HYBRID OZONE FILTRATION SYSTEM



*When performance and value matters choose Excalibur.*





## What is Ozone?

Ozone ( $O^3$ ) is Mother Nature's perfect purifier. The word "ozone" is derived from the Greek word for "smell". Ozone is formed naturally and found within the stratospheric layer of our atmosphere. You probably know it as the "Ozone Layer". It exists when oxygen ( $O^2$ ) is exposed to ultraviolet light, or exposed to high voltages of lightning. That fresh, clean smell that we notice after a thunder storm is ozone.

As the oxygen molecules ( $O^2$ ) are exposed to these energy fields, they dissociate and split, forming atoms ( $O^1$ ). These wandering oxygen atoms then recombine with other ( $O^2$ ) molecules in the air stream, forming ozone ( $O^3$ ). Ozone is nothing more than another molecular form of oxygen.

Because ozone is highly reactive, it readily oxidizes (breaks down) organic matter. When ozone encounters another compound, one oxygen atom will break away, attach itself to the compound and oxidize (clean or purify) it.

## What are the benefits of using Ozone?

Ozone is the most powerful oxidizer and disinfectant commercially available that can be safely used in water treatment. It is an environmentally friendly alternative to chemicals. Due to the instability of the ozone molecule, it is generated at the point of use and is easily converted back to oxygen. Ozone can literally oxidize material in water 3,200 times faster than chlorine and 5,600 times faster than bromine.

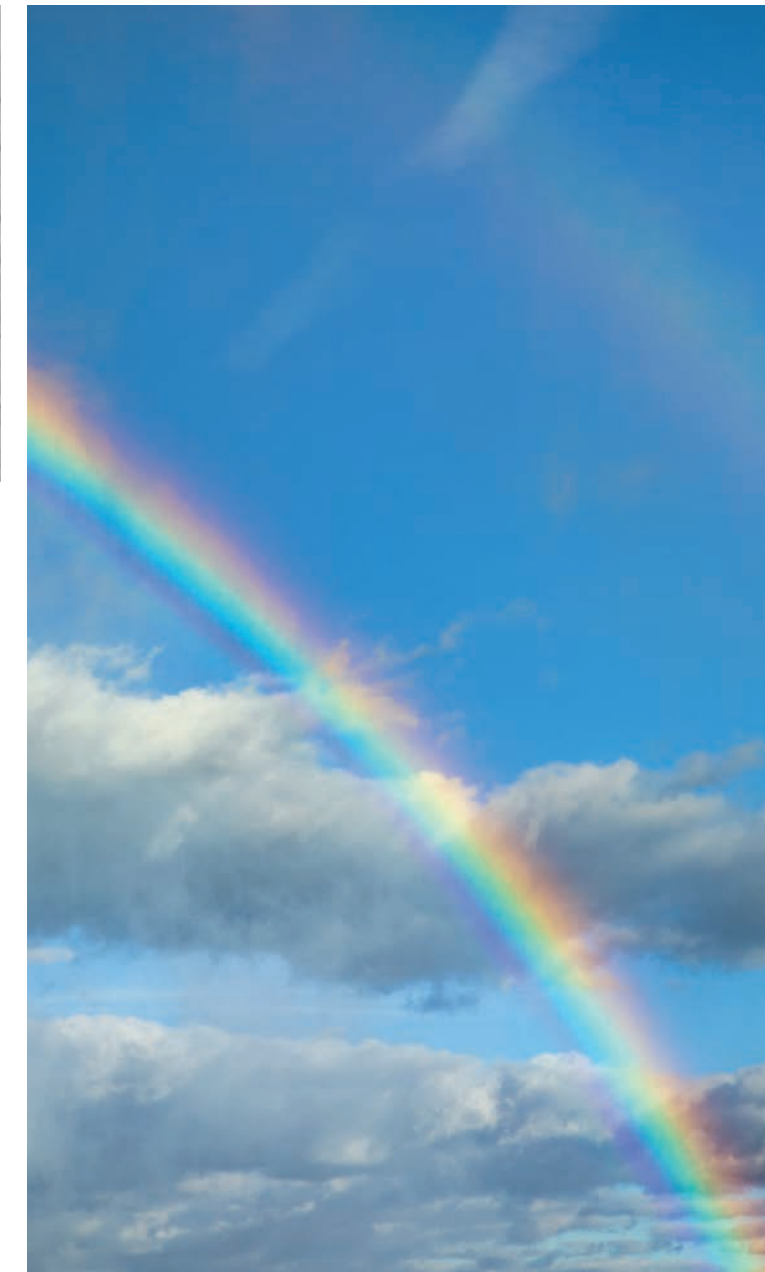


## Ozone Achieves these Water Treatment Functions:

- **Disinfection** – Bacterial disinfection and the inactivation of viruses and cysts.
- **Oxidation of Inorganics** – Precipitates iron, manganese, and sulfur.
- **Oxidation of Organics** – Including tannins, color, taste and odor problems, iron and sulfur bacteria, some detergents and pesticides, phenols, VOCs, turbidity control and micro flocculation of soluble organics.

## How is Ozone used for Water Purification?

Ozone must be made on-site and used immediately. Ozone generators produced ozone first by compressing ambient air, then separating it out and concentrating the oxygen. At Excalibur, we run the oxygen through a high-voltage device, called a corona discharge cell, essentially "lightning in a bottle". The generator then "injects" the gaseous ozone into water using negative pressure or a vacuum.



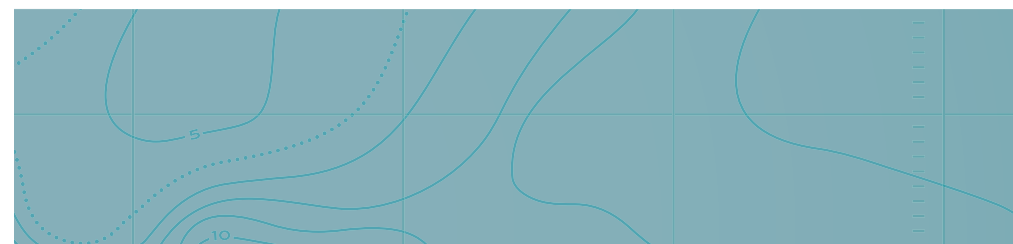
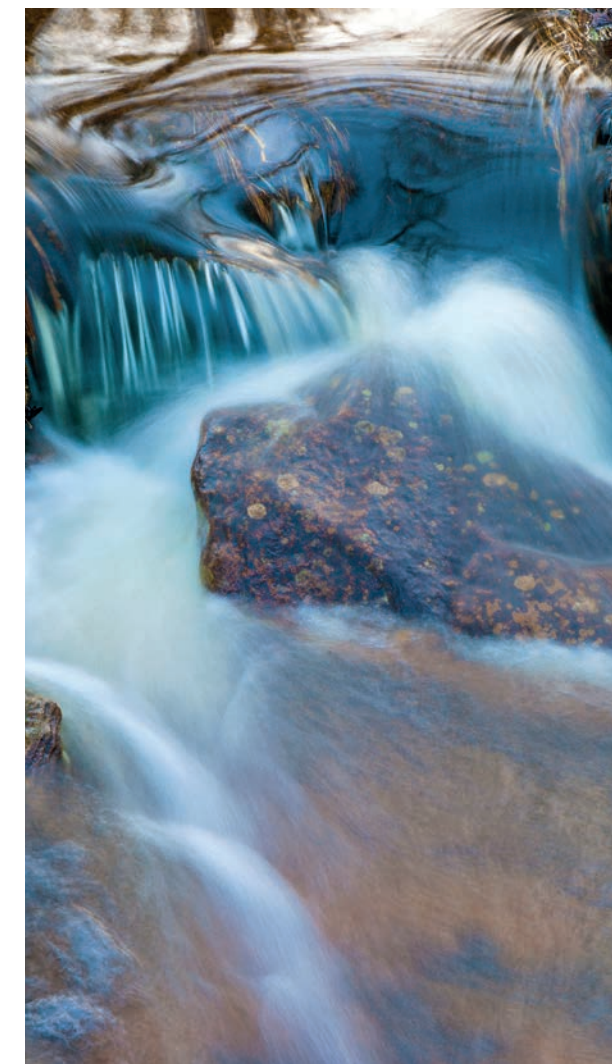
## Zentec Aqua Hybrid Ozone Filtration System

Zentec Aqua Hybrid Ozone Filtration was designed to solve problem water concerns that are commonly found in lakes and water wells.

In lakes you will see the water changing from clear to brownish color caused by acid rain decomposing vegetation causing the change in lake water known as tannins, also a form of bacteria.

Also in water wells, you will see iron, hydrogen sulfide (that rotten egg smell) and manganese including iron and sulfur bacteria.

Both these water problems can be solved with the Zentec Aqua Hybrid Ozone System that utilizes our continuous ozone and filtration that provides clean, clear filtered water.



## Water Contaminants Removed Utilizing Zentec Aqua Hybrid Ozone Filtration System

### Iron

Because 5% of the earth's crust is iron, it is not surprising that many surface and wells contain it in various amounts. It takes just a trace amount of iron to cause problems: as little as .2 ppm can stain plumbing, fixtures, and laundry. In larger amounts, water can become rust colored and have a metallic taste. Iron can coat the insides of pipes with hard, red scale, which reduces flow rates and plugs filter screens.

### Iron and Hydrogen Sulfide Bacteria

Iron bacteria and hydrogen sulfide bacteria are small living organisms that naturally occur in soil, surface water and groundwater. Iron bacteria combine iron (or manganese), present in water with oxygen. The iron bacteria may form large masses of orangey-brown slime. Hydrogen sulfide bacteria live in oxygen-deficient environments. They break down sulfur compounds present in water, producing hydrogen sulfide gas in the process. Iron bacteria are more common than sulfide bacteria because iron is more abundant in groundwater.

### Hydrogen Sulfide

Hydrogen sulfide is a naturally occurring gas that causes an odor that can be described as a rotten egg smell. At high concentrations, it will oxidize in the water when it is released from a faucet and will cause a black stain. Concentrations as low as .5 ppm can be detected by smell and as little as .5 ppm hydrogen sulfide is detectable by taste in drinking water.

### Tannins

Tannins are formed upon the decomposition of vegetation. These compounds are large molecular weight organics that fall under two large primary categories: Humic acids and Fulvic acids. The structure of the tannin varies, depending on the plant life in a given area. Tannins can cause a yellow to brown cast in water and may also impart a taste and odor. They will generally be found in surface water supplies or shallow wells.

### Manganese

Manganese causes dark brown to black stains on plumbing fixtures. Manganese contributes to soap curd. Fabrics washed in manganese-bearing waters are almost invariably stained black. An unpleasant taste and appearance in coffee, tea, and other beverages can be caused by manganese. Manganese deposits can collect in plumbing. Tap water frequently contains a black sediment and turbidity. It can cause the water to have a black appearance. As little as 0.05 ppm manganese in the water supply causes complaints.





### Zentec Aqua Hybrid Ozone Features:

- ◆ Continuous ozone oxidization injection with mazzei
- ◆ Contact retention mixing tank with bypass kit
- ◆ Flow switch oxidization operation feature
- ◆ Ozone enhanced oxygen generator
- ◆ Filter with electronic demand timer fully programmable
- ◆ Recirculation pump with timer relay operation box
- ◆ Filters Iron, Hydrogen Sulfides & Manganese
- ◆ Additional filter required for the removal of Tannins
- ◆ Flow rates available up to 10 gpm
- ◆ 5 Year Warranty Filter, 3 Year Warranty Ozone Injection

### Zentec Infinity Hybrid Removal Levels:

Iron.....	< 10 ppm
Sulfur.....	< 10 ppm
Manganese.....	< 5 ppm
Tannins.....	< 5 ppm

*Removes Iron & Hydrogen Sulfide Bacteria*

**Authorized Dealer:**



**Excalibur Water Systems**

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