

# Ozonia\* Range Ozone Systems



# Ozonia Ozone Systems

Veolia delivers oxidation, purification and disinfection equipment from our Ozonia ozone and Aquaray UV businesses. From our company's roots in Switzerland, **Ozon**ia products have been the **ozone industry pioneer for over 40 years**. Veolia has thousands of Ozonia ozone installations, including **some of the world's largest oxidation systems**.

With three R&D centers and four manufacturing facilities in North America, Europe and China, Veolia can deliver to any customer's specifications.

Trust Veolia to deliver the highest quality **ozone technology solutions** to meet even the most difficult treatment challenges.

## Where Can It Be Applied?

**Ozone has many advantages over other oxidants. These advantages are the reason why ozone technology is the high-quality process standard for many applications.**

### Applications

- Disinfection
- Oxidation
- Advanced oxidation processes (AOP)



### Municipal

- Drinking water
- Wastewater
- Micropollutant removal
- Reuse



### Industry

- Industrial wastewater (COD removal, etc.)
- Pharmaceutical and ultrapure water
- Aquaculture
- Food and beverage
- Process water
- Bottling
- Ballast water treatment



## Ozone Advantages

### Strongest oxidizing agent on the market

- Lower dose requirements
- Very short contact time
- Can be used at many points in the treatment line

### Semi-selective oxidation removes a wide variety of molecules

- Micropollutants
- Microorganisms
- Bacteria and viruses
- Algae and cyanobacteria
- Color, taste and odor

### Ozone is chemical free

- Ozone technology does not add chemicals to water or air
- Environmentally friendly green technology

### Ozone dissolves naturally into oxygen

- Inherently safe after natural decay
- No harmful residuals
- Increased filter velocities
- Control of trihalomethanes (THM)

### Ozone is generated on-site

- Increased safety
- No transportation
- No storage

### Ozone optimizes the entire treatment plant

- Improvement of coagulation and flocculation
- Savings of flocculent and polymer
- No need for quenching
- Increases dissolved oxygen levels
- Improvement of effluent quality

# Ozonia

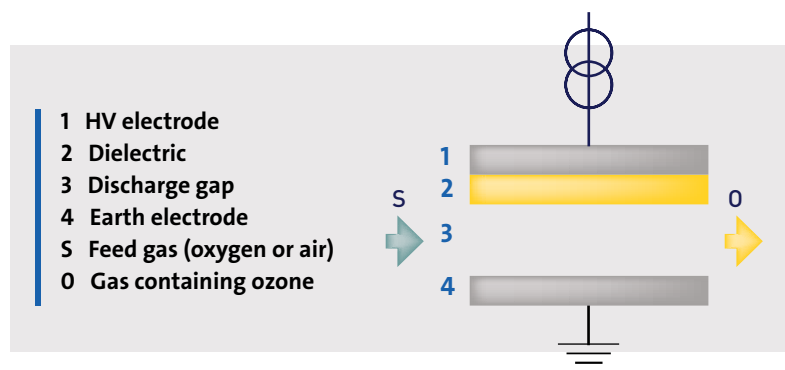
## Ozone Technology

Veolia designs and manufactures a complete range of **Ozonia** ozone generators from laboratory scale units to the largest ozone systems in the world. **Ozonia** products are consistently ranked among the best in the global ozone industry.

### Commercial Scale Ozone Generation

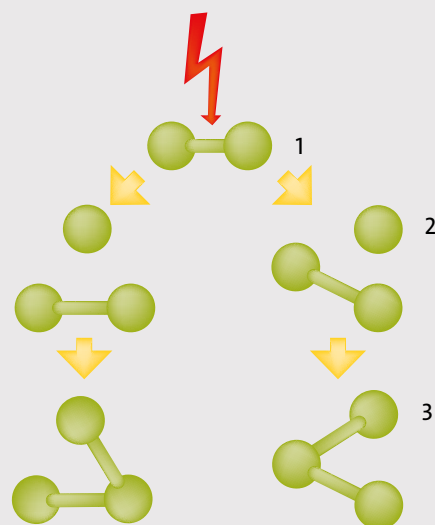
Ozone is produced when oxygen molecules ( $O_2$ ) are split into atomic oxygen (O) then recombined into ozone ( $O_3$ ). In most commercial applications, ozone is produced when a gas containing oxygen is passed through an electrical field separated by two electrodes. When oxygen molecules in the gas interact with the electrical field, they split and recombine forming ozone. This process is the Corona Discharge ozone generation method.

The **Ozonia Membrel** system uses the electrolytic process to produce ozone from water, making it the most effective method for ozone production in ultrapure water applications such as Pharmaceutical manufacturing.



Ozone has an oxidation potential which is 50% stronger than gaseous chlorine, making it one of the most powerful oxidants available in today's municipal, industrial and commercial markets.

Substance	Oxidation Potential (V)
Ozone molecule ( $O_3$ )	2.07
Hydrogen peroxide ( $H_2O_2$ )	1.78
Chlorine (Cl)	1.36
Chlorine dioxide ( $ClO_2$ )	1.27
Oxygen molecule ( $O_2$ )	1.23



Ozone is formed by splitting oxygen molecules ( $O_2$ ) into atomic oxygen (O), which combines with other oxygen molecules to produce ozone molecules ( $O_3$ ).

### Ozonia Technology Focus

- Intelligent Gap System (IGS+) technology
- The industry's most robust electrodes
- Fused dielectrics allows the industry's highest availability
- Long service life
- Laboratory testing, piloting and applications expertise
- Manufacturing facilities in Europe, China and North America
- Globally adaptable standards
- Industry-leading engineering capabilities
- Multiple redundant safety concepts

# Ozonia Ozone Product Portfolio



Features	Ozonia LAB 2B	Ozonia Membrel	Ozonia TOGC	Ozonia CFS	Ozonia M	Ozonia L	Ozonia XF*
Description	Ozone generator	Ozone generator	Ozone generator + oxygen concentrator	Ozone generator	Ozone generator	Ozone generator	Ozone generator
Ozone production with air	4 g/h	3 - 9 g/h from water	Up to 55 g/h from air via O <sub>2</sub> concentrator	Up to 1.6 kg/h	Up to 10 kg/h	Data available upon request	Data available upon request
Ozone production with O <sub>2</sub>	10 g/h			Up to 3 kg/h	Up to 20 kg/h	Up to 60 kg/h	>250 kg/h
Fully assembled	x	x	x	x	x	x	
Fully tested	x	x	x	x	x	x	
Completion on-site							x
Containerized version				x	x	x	x
SS enclosure option			x				
Remote control		x		x	x	x	x

The Ozonia XF offers ozone production capacities over 250 kg/h.



## Ozonia IGS+

### Intelligent Gap System

- High ozone concentration up to 16 wt%
- Ozone production capacities greater than 250 kgO<sub>3</sub>/h
- The industry's most robust ceramic dielectric
- Higher efficiency

## Ozonia Ozone Destructors

### Thermal Ozone Destruction

- More versatile and resistant to contaminants in vent gas
- Heat recovery on larger units reduces energy consumption
- No consumables to replace
- Long service life



### Catalytic Ozone Destruction

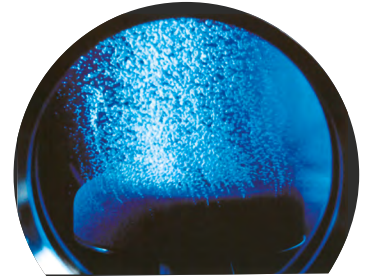
- Low energy consumption
- Very high ozone destruction efficiency
- Compact footprint
- Small pre-heater avoids condensation



## Ozonia Ozone Transfer Equipment

### Dome Diffuser

- No additional energy input for ozone dissolution
- No moving part
- Low hydraulic loss
- Simplicity and flexibility of operation



### Radial Transfer System

- High operation flexibility/turndown: from 0 to 100% gas flow
- Compact system, reduced footprint
- Easy operation
- Minimum maintenance



## Ozonia Containers

### Containerized Ozone Plants

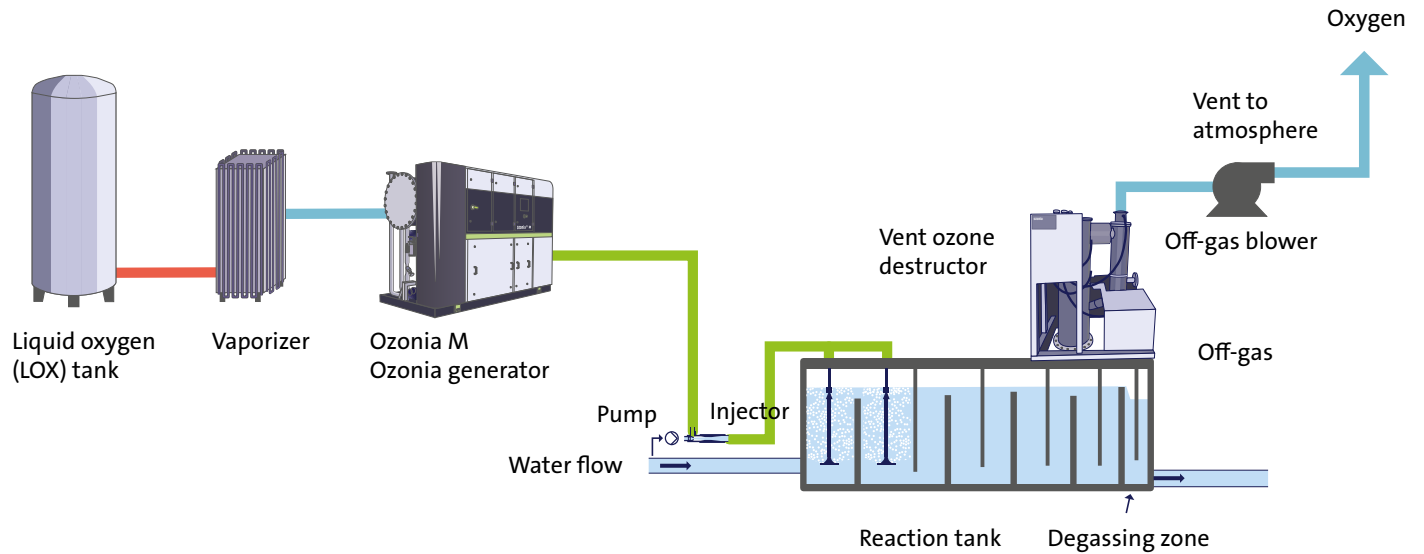
- Fully assembled and tested
- Industry leading quality and reliability
- Minimize civil work
- Eliminate building costs
- Minimize installation time





# Ozonia

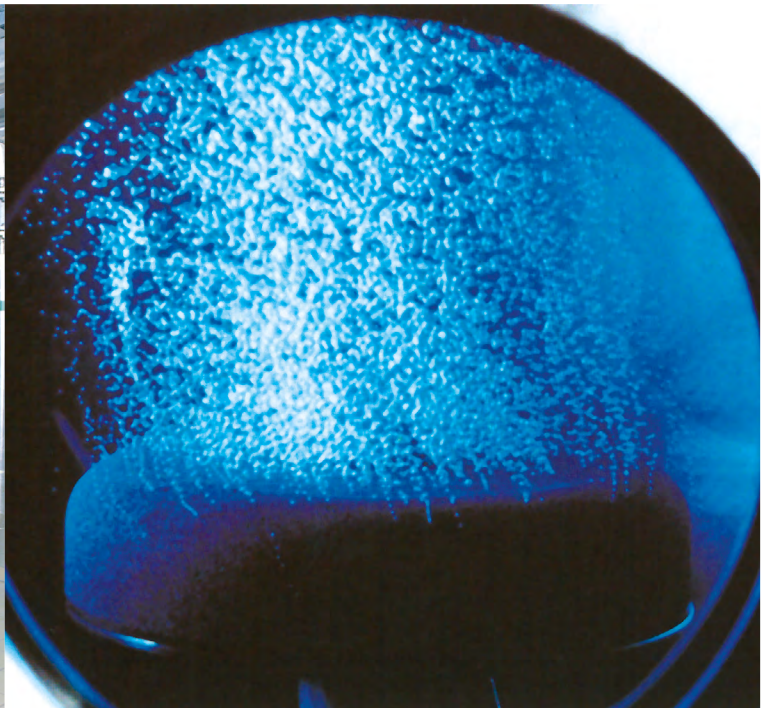
## Ozone Systems



**Ozonia XF Ozone System**



**Ozonia Dome Diffuser**



## Skills And Expertise

### Engineering

Veolia offers unique professional expertise with **over forty years** of experience in the ozone industry. As the original ozone industry pioneer, our proven IGBT based power supply systems, combined with revolutionary dielectric materials results in industry leading performance. In addition to ozone generation equipment, Veolia offers clients unrivaled ozone application technology for **any industrial or municipal ozone application process**.

### Quality Management



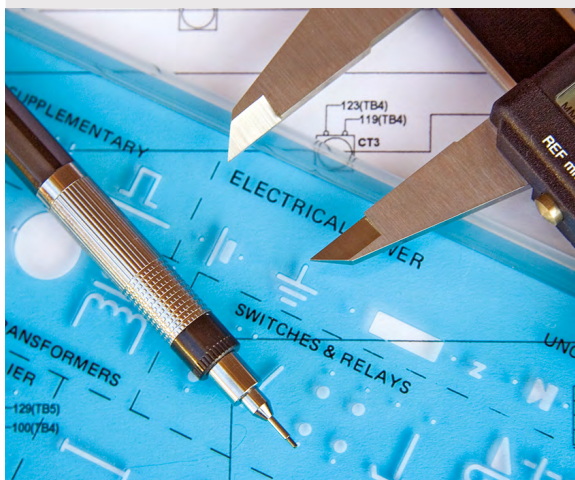
Veolia operates a **Quality Management System** covering all aspects of business activity. The system is supervised by a QA manager and is subject to regular internal audits and annual certification by the company SGS.

### Installation, Commissioning And Training

Following purchase, clients have full access to Veolia Customer Care services. These services offer: installation, supervision, inspection, commissioning and on-site training of the operator's personnel. Additionally, Veolia can organize training workshops in a classroom environment for larger groups.

### Plant Service And Maintenance

Having placed their trust in Ozonia ozone equipment, it is only logical that clients expect a professional and competent after-sales service as well as technical assistance in case of emergency. Veolia can ensure that clients get optimal support. The services offered range from a hot-line breakdown service to regular plant service contracts – everything to ensure that our clients get the very best from our equipment.



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**Veolia Water Technologies**

Please contact us via:

**[www.veoliawatertechnologies.com](http://www.veoliawatertechnologies.com)**