UV

OZONIA

DISINFECTION

APPLICATIONS

OVERVIEW

Ultraviolet (UV) disinfection is environmentally safe and recognized as highly effective on a wide range of pathogens, including viruses. For the past 20 years, Aquaray® UV disinfection systems have been used successfully to eliminate hazardous and environmentally unacceptable chemicals such as chlorine and other associated disinfection by-products. Ozonia offers UV products for municipal wastewater, municipal drinking water and industrial applications.

Optimized performance

Cost effecfive

Low maintenance

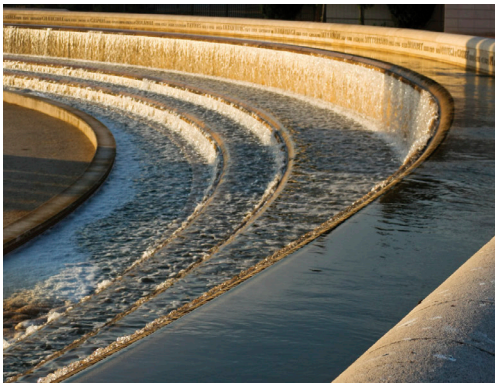
Easy retrofit

MUNICIPAL WASTEWATER

To protect the environment (like rivers, streams, lakes,…) increasingly stringent regulations are being implemented to limit the release of pathogenic microorganisms. In arid areas, due to water scarcity, a part of the treated wastewater can also be used for a reuse application such as land sprinkling, golf irrigation, …

Over the past 20 years, Ozonia has been providing UV disinfection systems for:

- Secondary or tertiary treatment disinfection
- CSO & SSO applications
- Reuse



MUNICIPAL DRINKING WATER

UV systems are used as a final barrier in drinking water treatment plants to disinfect water by inactivating pathogenic microorganisms such as viruses, bacteria and parasites. UV-C lights are particularly effective for chlorine resistant microorganisms such as Cryptosporidium and Giardia, even at low dosages. To reduce the risk of waterborne diseases, a growing number of countries are implementing strict limits on these pathogens through new regulations.

Ozonia can always offer the best solutions combining higher efficiency and smaller footprint with low- or medium-pressure UV reactors for small to very large water treatment plants.

Ozonia's Aquaray SLP and H_2O range have been third party validated and obtained DVGW and USEPA certifications upon completion of strict bioassay testing.

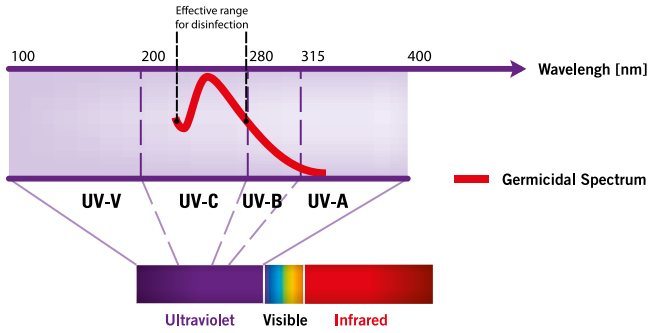
INDUSTRY

Ozonia provides open-channel or closed-vessel UV systems for Industrial applications for :

- Food and Beverage
- Electronics
- Pharmaceutical
- Cosmetics
- Aquaculture
- Cooling tower water
- Spas and Swimming pools

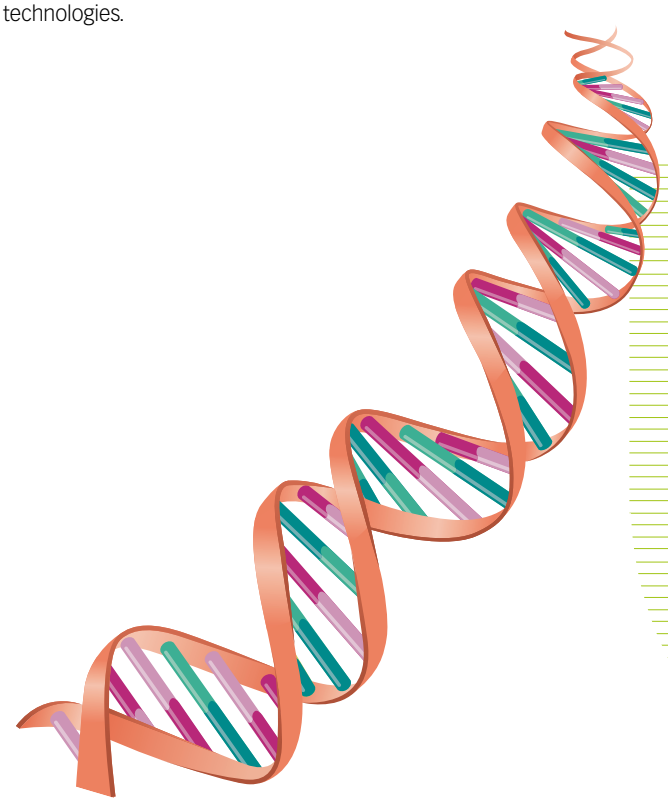
ACTION / THEORY

UV systems disinfect by inactivating pathogenic microorganisms such as viruses, bacteria and parasites which may be in the water and may cause waterborne diseases. In the broad light Spectrum, the UV-C wavelength (200-280 nm) has been proven to be the most efficient wavelength to inactivate microorganisms by damaging the nucleic acids (DNA or RNA), which prevents the organism's ability to reproduce. The germicidal effectiveness of a UV system depends on various factors such as UV transmission, flow rate and the applied UV dose, which is a function of the UV intensity delivered by the lamps and the exposure time in the reactor.



HOW DOES IT WORK?

UV-C light is created by a lamp filled with an inert gas and mercury. Electrical energy is applied to electrodes within this lamp which creates an electrical arc through the metallic vapor to generate UV radiation. Two main UV lamp technologies are available for water disinfection. Low pressure lamps have the ability to create a monochromatic radiation at 254 nm, close to the germicidal peak (264 nm). Medium pressure lamps create a broad spectrum of UV wavelengths from 200 to 300+ nm. Ozonia offers both of these powerful technologies.



PRODUCT FOCUS / PERFORMANCES

- UV is chemical free and produces no disinfection by-products (DBPs)
- UV can easily inactivate, even with low UV Dose, chlorine resistant microorganisms such as Cryptosporidium and Giardia
- UV can be part of a Multibarrier protection strategy in addition to other disinfection methods (such as Ozone systems)
- UV can be easily retrofitted into an existing treatment plant thanks to its compact size.

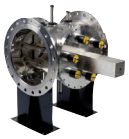
PRODUCT RANGE

A comprehensive range of UV systems for:

Drinking Water
Process Water
Wastewater

DRINKING & PROCESS WATER




FEATURES	Aquaray® LP	Aquaray® SLP-DW/PW	Aquaray® SMP-DW/PW	Aquaray® H_2O	Aquaray® LPTS
Type of reactor	Closed vessel	Closed vessel	Closed vessel	Closed vessel	Closed vessel
Installation	Horizontal & Vertical	Horizontal & Vertical	Horizontal	Horizontal	Horizontal & Vertical
Lamp technology	Low Pressure High Output Amalgam	Low Pressure High Output Amalgam	Medium Pressure High Output	Medium Pressure High Output	Low Pressure High Output Amalgam
Number of Lamps	1 to 4	1 to 20	1 or 2	6 to 12	1 to 4
Power consumption (per lamp)	120 W	200 W	1,5 or 3 or 6 kW	4 or 8 kW	200 W
Flow range (at 40 mJ/cm² and 95% UVT)	9 to 40 m³/h	25 to 940 m³/h	22 to 440 m³/h	1 500 to 8 600 m³/h	10 to 33 m³/h (at 120 mJ/cm² and 98% UVT)

APPLICATIONS						
Municipal Drinking Water	Disinfection	X	X	X	X	–
	AOP	X	X	X	X	–
Food and beverage	Disinfection	X	X	X	X	X
	Ozone destruction	X	X	X	–	X
Aquaculture	Disinfection	X	x	X	x	–
Power Generation	Disinfection	–	X	X	X	X
	TOC reduction	–	X	X	–	X
Cooling Water	Disinfection	X	X	X	X	–
Microelectronics	Disinfection	X	X	X	–	X
	Ozone destruction	X	X	X	–	X
	TOC reduction	–	–	X	–	X
Pharamaceutical	Disinfection	X	X	X	–	X
	Ozone destruction	X	X	X	–	X
	TOC reduction	–	X	X	–	X

Closed Vessel
Open channel

WASTEWATER

FEATURES	 AQUARAY® SLP-WW	 AQUARAY® SMP-WW	 AQUARAY® 40HO	 AQUARAY® 3X
Type of reactor	Closed vessel	Closed vessel	Open channel	Open channel
Installation	Horizontal & Vertical	Horizontal	Vertical	Vertical
Lamp technology	Low Pressure High Output Amalgam	Medium Pressure High Output	Low Pressure High Output	Low Pressure High Output Amalgam
Number of Lamps	1 to 20	1 to 4	40	36
Power Consumption (per lamp)	200 W	1,5 or 3 or 6 kW	165 W	400 W
Flow range (at 35 mJ/cm² and 65% UVT)	10 to 200 m³/h	22 to 346 m³/h	315 m³/h per module	800 m³/h per module

APPLICATIONS				
Wastewater disinfection	X	X	X	X
Reuse wastewater	X	X	X	X
Industrial wastewater treatment	X	x	X	x
CSO & SSO	X	X	X	X

PRODUCT FOCUS

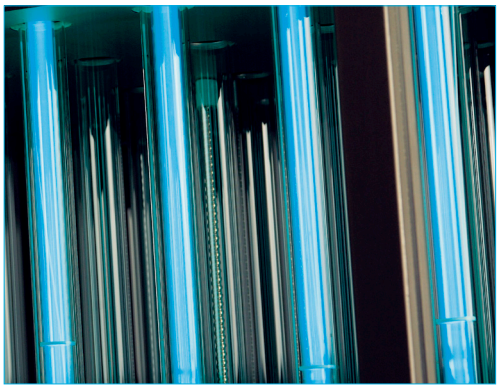
AQUARAY® H_2O

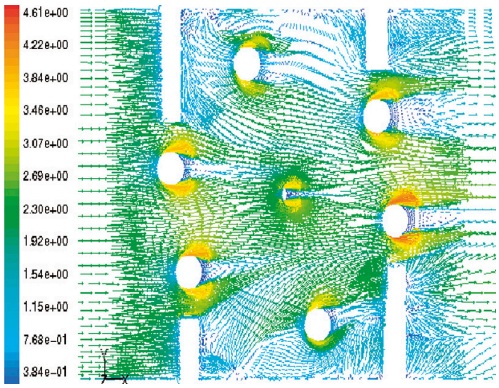
Optimized performance
The Aquaray® H_2O has been optimized with CFD modeling software to maximize UV dose and minimize head loss.

Energy conservation
Due to the electronic variable output ballast, the total power can be adjusted based on the demand.

Save space
To minimize the footprint, the Aquaray® H_2O uses Medium Pressure lamps with high power density.

Validated performance
The Aquaray® H_2O has been third party validated and obtained DVGW and USEPA certifications upon completion of strict bioassay testing.





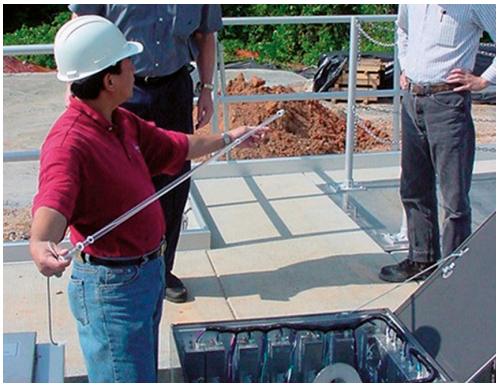
AQUARAY® 3X

Energy conservation
With a combination of variable-output electronic ballasts, highly efficient amalgam lamps and row-by-row lamp switching increments, the Aquaray® 3X ensures energy conservation by dose pacing based on flow rate.

Validated performance
The Aquaray® 3X has been third party validated and completed strict bioassay testing.

Easy maintenance
Due to the vertical design, the Aquaray® 3X includes easy access to the UV lamps and quartz sleeves. (no need to remove the UV module from channel)

Save space
To minimize the footprint, the Aquaray® 3X utilizes Low Pressure High Output Amalgam lamps in a vertical design.



PROVEN TECHNOLOGIES

More than 100 Aquaray® H_2O & more than 100 Aquaray® 3X installed Worldwide

Part of the Degremont group of companies, Ozonia's mission is to be the global leader in the application of disinfection and oxidation alternatives to meet the needs of the industrial and municipal markets. Ozonia designs and manufactures a wide range of Ultraviolet and Ozone equipment incorporating the most sophisticated electronics and lamp technologies available.

Recognized for technical superiority, our formula for success is to develop long-term customer satisfaction with technically advanced and cost-effective ultraviolet and ozone systems.

As a global corporation, human resources is one of our most important assets. At Ozonia, we continually encourage dialogue and exchange between our group companies, customers and affiliates to maintain a high level of personnel qualification in all fields.

SKILLS AND EXPERTISE

Quality Management

Ozonia 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 Bureau Vertitas.

ISO 9001
OHSAS 18001
BUREAU VERITAS
Certification

Installation, Commissioning & Training

Following the purchase phase clients can avail themselves of the Ozonia after-sales services. These services cover: installation, installation supervision, installation inspection, commissioning and on-site training of the operator's personnel. Additionally, Ozonia can organise training workshops in a classroom environment for larger groups.

Plant Service & Maintenance

Having placed their trust in Ozonia's equipment, it is only logical that clients expect a professional and competent after-sales service plus technical assistance in cases of emergency. Ozonia has the structure to ensure that clients get the best support. The services offered range from a hot-line breakdown service to regular plant service contracts – everything to ensure that our clients get the best from our equipment.

OZONIA UV

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