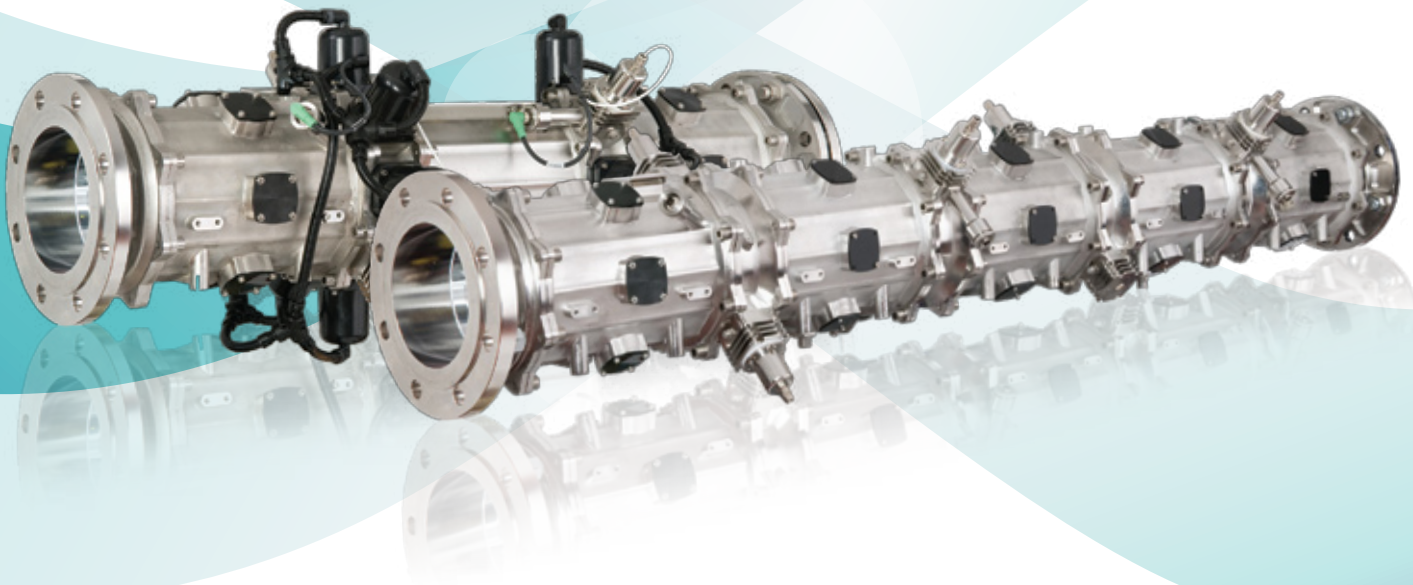


# Hydro-Optic Disinfection™ Solutions



## The RZ163 series

Atlantium's new modular UV based disinfection system

Best microbial results vs. any other system, thanks to our patented design – Total Internal Reflection

Fully automated dose control – for varying water conditions

Online lamp and UVT monitoring makes sure what you see is what you get – always



Atlantium brings UV disinfection to new levels of effectiveness. Third party validation according to USEPA protocol achieves more than 5 log reduction of microbes

Total Reliability

Environmentally friendly solution, reduces chemical usage, energy and water waste

## The Hydro Optic Disinfection Advantages

### Uniform UV dose distribution - Unparalleled disinfection performance

– hydraulic properties and UV light patterns ensure all microorganisms in the system’s quartz disinfection chamber receive a uniform UV dose, achieving consistently high levels of microbial inactivation (see Figure 1)

- **Minimal head loss and unimpeded water flow** – inline system provides water with smooth and obstacle free disinfection chamber (see Figure 2). There are no brushes to break down or baffles to accumulate biofilms

**Atlantium’s proprietary medium pressure high intensity UV lamp** – ensures broad spectrum germicidal UV output for maximum effectiveness

**Real-time control and monitoring – Required dose is automatically adjusted** based on continuous, real-time measurement of lamp intensity, water flow and UV transmissivity; water consistently receives the required dose and uses less energy than the traditional setpoint systems

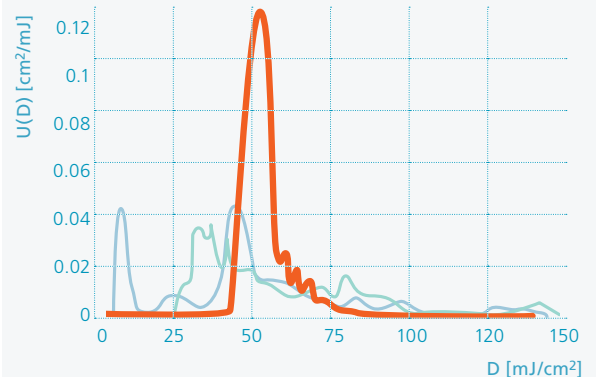
- **Tracking & reporting** – Logging capabilities – logs and records dose, UV transmissivity, water flow and lamp intensity data in real time. The system generates reports with the touch of a button
- **UV dose displayed is the actual dose delivered** – system displays validated dose (RED) required for the inactivation goal

**Operation & Maintenance - Quick and easy!** System designed to significantly reduce maintenance and down time

- **Temperature** independent operation
- **Continuous ultrasonic cleaning** – deters deposit formation
- **Reduced Cleaning in Place cycles** – as a result of decreased deposits in the disinfection tube



### Calculated UV Dose Probability Density Functions\*



- Typical older reactor
- Typical modern reactor
- Atlantium RZ163 system

\* (UVT=92%; average dose = 50mJ/cm²; area under curves =1)

**Figure 1:** The RZ163 systems are characterized by a very narrow dose distribution histogram; inactivation of all targeted pathogens at the required dose is achieved with high energy-efficiency, especially at high dosages. In contrast, the broad dose distribution of the other reactors indicates that many microbes are receiving a lower than required dose; increasing the dose to achieve higher inactivation requires greater expenditure of energy.


## RZ-Series - Modular. Configure the best system for your needs

Atlantium’s latest implementation of Hydro-Optic Disinfection™ technology, the RZ Series, offers an easily integrated, modular system that is a great fit for a broad range of applications and disinfection requirements. Flexible configuration enables Atlantium to provide customers with precisely the system they need to achieve their goals.

Screens display the status of all the relevant system parameters in real-time and show the precise UV dose (RED) being delivered at any given moment.

## Sample selection of RZ163 models and specifications

(additional models to meet other flow rates requirements and specific applications available)

Type	Lamps	Max Power Consumption*	Flow Rate**	Flange	 ***	Weight
		kW	m <sup>3</sup> /h	Ø	Mm/In	Kg/Lbs
<b>RZ163-11</b>	1 x 1.7 kW	1.7	68	DN150	463-822-334 18-32.4-13	57 / 125
<b>RZ163-12</b>	2 x 1.7 kW	3.4	130	DN150	463-1175-335 18-46-13	85 / 187
<b>RZ163-14</b>	4 x 1.7 kW	6.8	260	DN150	574-1880-361 23-74-14	134 / 295
<b>RZ163-22</b>	4 x 1.7 kW	6.8	265	DN150	463-1122-336 18-44-13	156 / 343
<b>RZ163-24</b>	8 x 1.7 kW	13.6	520	DN150	463-1880-361 18-74-14	248 / 546

\* Lamps only: MPHI UV lamps; typical relative drive: 75%  
Power consumption varies according to dose; control system automatically adjusts consumption from 40% to 100% based on real-time measurement of water's flow rate and UVT

\*\* Flow rate at UVT=90%, RED=40mj/cm<sup>2</sup>, end of lamp life

\*\*\* Measurements are flange to flange

## All Models

<b>Additional equipment</b>	A complete set of accessories can be purchased separately from Atlantium. A flow switch/Flow meter is required with every system.
<b>Disinfection Chamber material</b>	High grade fused silica (Quartz)
<b>Housing material</b>	St. St. 316L
<b>Controller</b>	Internal, with flat touch screen user interface; remote monitoring and and control capability
<b>Design Pressure</b>	145 psi (10 Bar); PN 10 is at 20° C
<b>Environmental temperature</b>	0°C to 70°C (32°F - 158°F)
<b>Operating temperature (water)</b>	4°C to 50°C (39.2°F to 104°F)
<b>Operating temperature (electrical cabinet)</b>	0°C to 55°C (32°F to 131°F)
<b>Electrical Requirements</b>	115/200/230/400/440/480 VAC. 1 phase for 163-11 and 163-12, 3 phase for all other combinations.

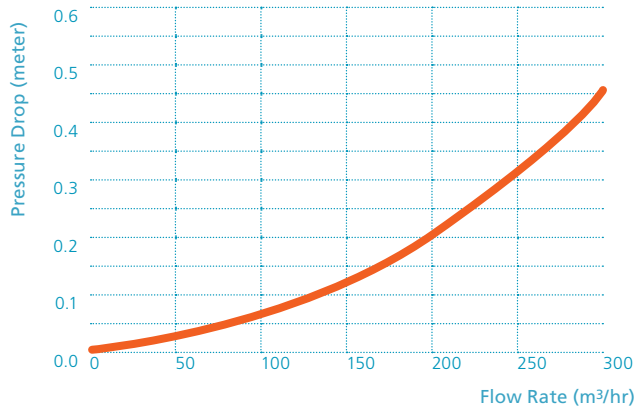
## Regulatory Compliance

- The system complies with the European Low Voltage Directive (LVD), 73/23/EEC for electrical safety
- Council Directive 98/83/EC of 3 November 1998 for the quality of water intended or human consumption
- Biocompatible materials are used in any body part that is in contact with water (for avoidance of irritation, sensitization and toxicity)
- CE compliant

## Why Hydro-Optic Disinfection technology is so effective

Atlantium's innovative technology adapts the principle of Total Internal Reflection to reinvent ultraviolet (UV)-based disinfection of water. The core of the system is a disinfection chamber made of quartz and surrounded by an air block. This configuration traps the UV light's rays [from customized medium-pressure high-intensity (MPHI) UV lamps] and forces them to repeatedly bounce inside the disinfection chamber – giving the light a longer path in which to disinfect all target microbes in the chamber. Microbes receive the required UV dose in a uniform manner wherever they are located, leading to very high levels of microbial inactivation.

## Pressure Drop as a Function of Flow Rate in the RZ163



**Figure 2:**

Low head loss is an important RZ163 feature

## Industrial / Commercial Applications



### Municipal

Drinking Water



### Aquaculture

Flow-through protection  
Re-circulation protection  
Aquariums\*

\* suitable for fresh or sea water



### Food & Beverage

Product water disinfection  
Firewall  
Chlorine replacement  
Post-GAC filter disinfection  
Membrane protection  
Ozone destruction  
Ozone replacement  
Process water disinfection



### Dairy

Product water disinfection  
Firewall  
Chlorine replacement  
Post-GAC filter disinfection  
Membrane protection  
Ozone destruction  
Ozone replacement  
Process water disinfection



### Pools & Spas

Chloramine reduction  
Pool water disinfection



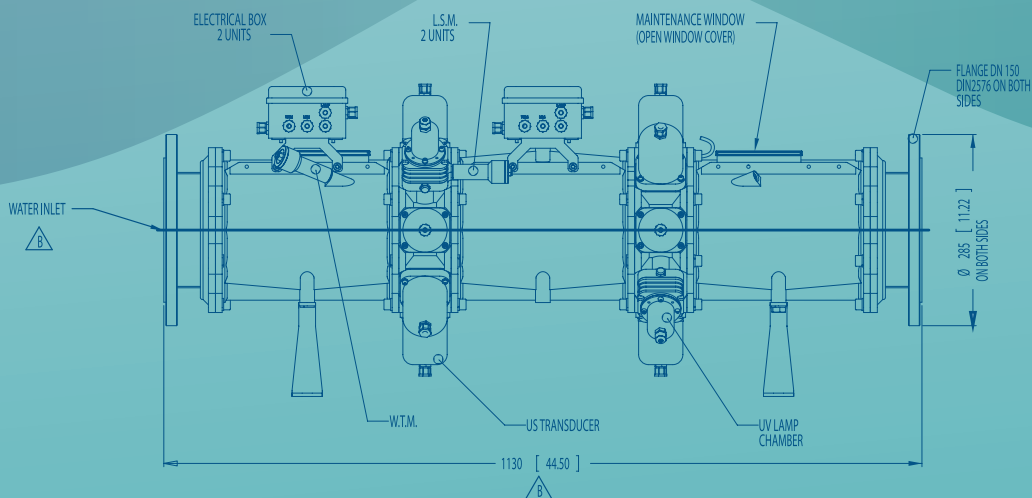
### Pharmaceutical

Product water disinfection



### Horticulture

Firewall  
Membrane protection



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