

# **ULTRAQUA**

## **UV DISINFECTION SYSTEMS**

**MANUFACTURER OF INDUSTRIAL SCALE UV-SYSTEMS FOR DISINFECTION OF  
FLUIDS AND ADVANCED OXIDATION PROCESSES**

**MORE THAN 5000 UV-SYSTEMS INSTALLED WORLDWIDE**

**WORLDWIDE UV-SPECIALIST NETWORK**

**CERTIFIED ÖNORM/DVGW VALIDATED SYSTEMS**

**ULTRATHERM UV LAMPS GUARANTEED FOR 16,000 H LIFETIME**





# HIGHLIGHTS

**Founded in 1996, Today one of the leading industrial high-quality UV System manufacturer**

**Headquarters: Aalborg, Denmark**

**Employees: 25**

**Highly educated engineers and designers**

**Constantly involved in R&D and research programs**

**Main markets**

- **Aquaculture**
- **Drinking Water**
- **Industrial fluids**
- **Wastewater**
- **Swimming Pools**

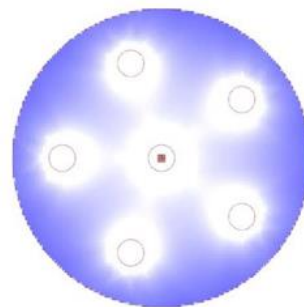
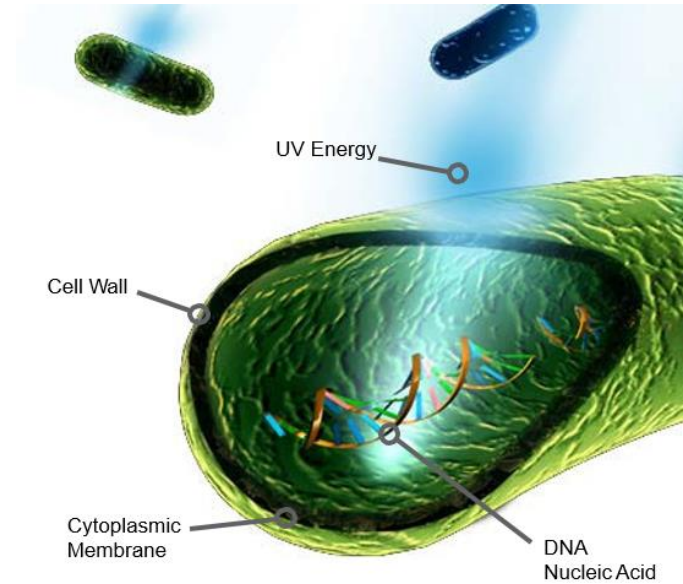
# UV DISINFECTION – HOW IT WORKS

UV light at the 254 nm wavelength penetrates the cell wall of the microorganism, such as viruses and bacteria.

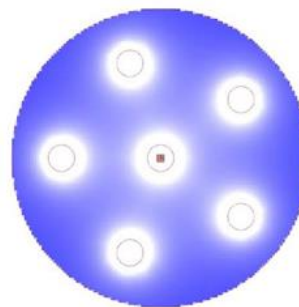
The microorganism is “inactivated” and rendered unable to reproduce or infect.

## DESIGN PARAMETERS FOR UV SYSTEMS

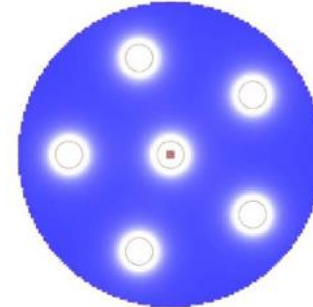
- Design flow, in  $\text{m}^3/\text{h}$
- Desired dose, in  $\text{mJ}/\text{cm}^2$
- UV transmission factor, UVT (\*Clarity of the water)



**100% UV radiation**  
UVT 95%



**58% UV radiation**  
UVT 85%



**24% UV radiation**  
UVT 60%

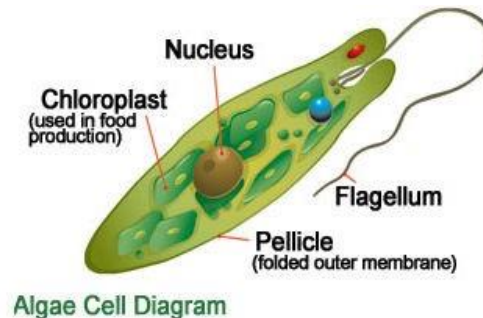
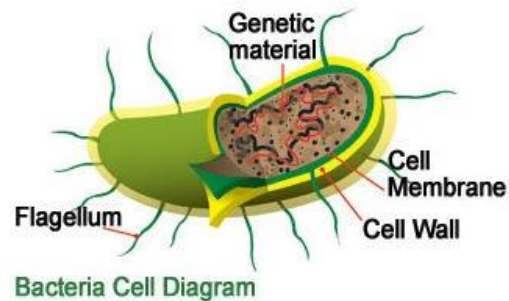
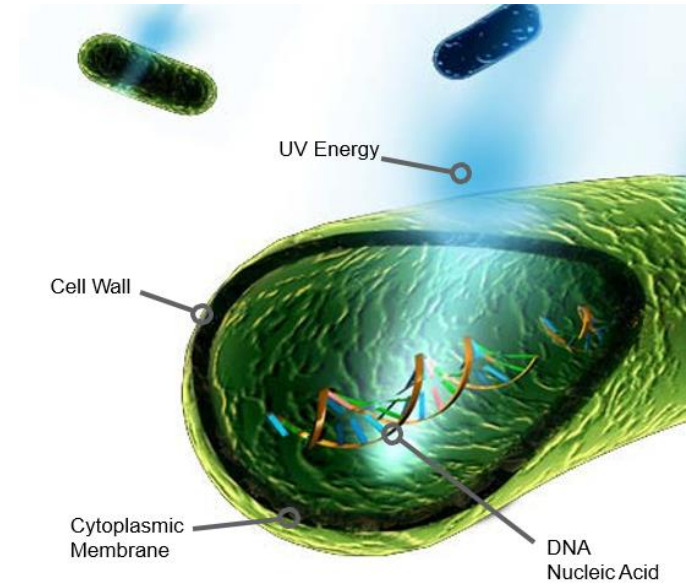
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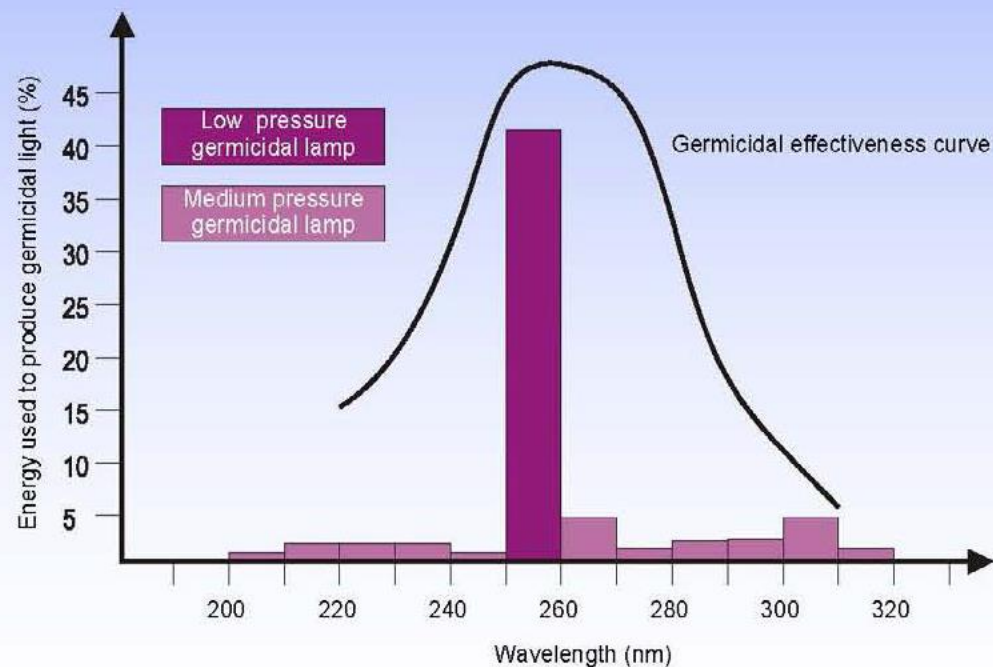
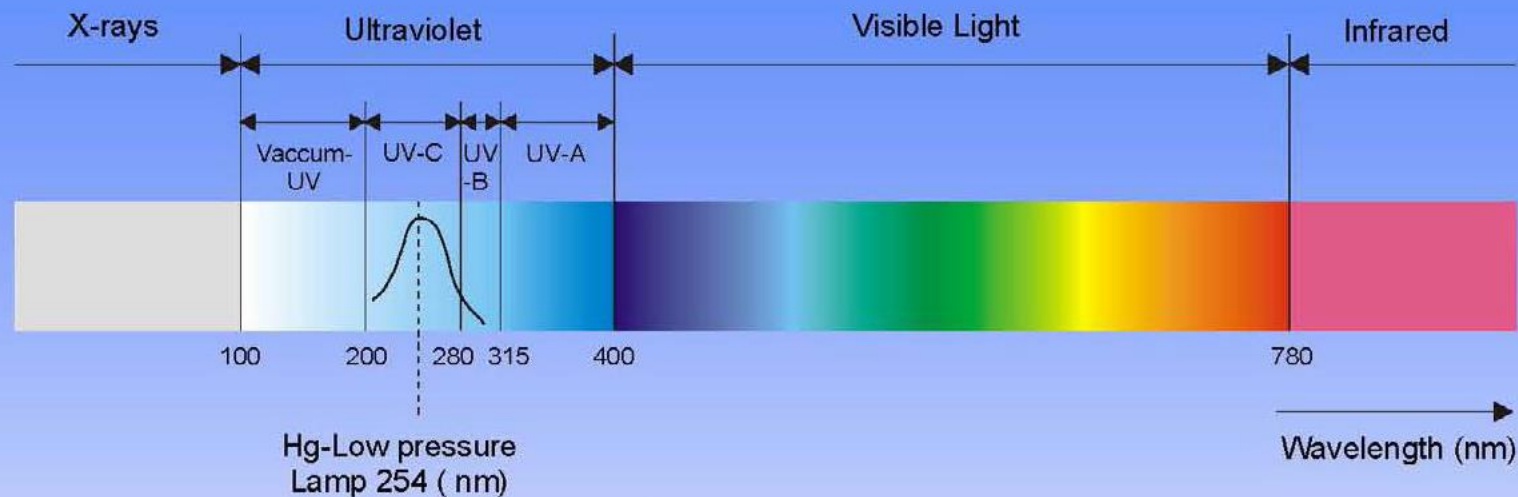
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## DESIGN PARAMETERS FOR UV SYSTEMS

- Design flow, in m<sup>3</sup>/h
- Desired dose, in mJ/cm<sup>2</sup>
- UV transmission factor, UVT (\*Clarity of the water)



# UV LIGHT



Ultra violet light efficiency from Low-pressure and Medium-pressure UV lamps.

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# ULTRAQUA REACTOR TYPE OVERVIEW

## Low-pressure systems

Are suitable for most water disinfection applications.

- ✓ Energy efficient
- ✓ Long UV lamp lifetime
- ✓ Excellent hydraulic performance
- ✓ Small UV dose variation

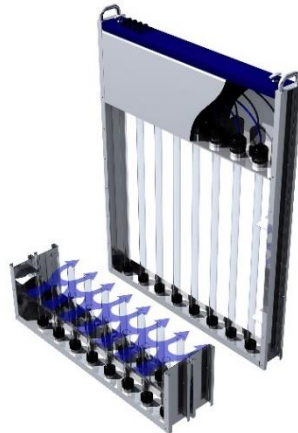
Material: Stainless Steel 316L / Polypropylene

Closed reactor flow: from 5 to 1000 m<sup>3</sup>/h

Channels system flow: from 10 to 10.000 m<sup>3</sup>/h



Closed reactor



Open channel reactor

## Medium-pressure systems

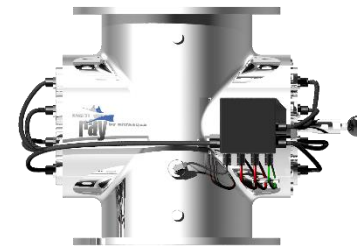
Best suited for advanced photo oxidation processes.

- ✓ Very low foot print
- ✓ Simple piping
- ✓ Very powerful lamp
- ✓ Very low head loss

Material: Stainless Steel 316L

System size: from 1kW to 12kW

Reactor flow: from 50 to 1000 m<sup>3</sup>/h



Closed compact reactor

# CLOSED REACTOR SYSTEMS

## Ultraqua SS Reactors

Optimized for most water disinfection applications.

- ✓ Material: AISI316L
- ✓ Electro-polished inside and outside
- ✓ Large DIN/ANSI flanges for low head loss
- ✓ Fully automatic cleaning system

## Ultraqua PP Reactors

Ideal for sea water and aquaculture.

- ✓ Material: Polypropylene DIN 8061/62
- ✓ Corrosion-resistant construction
- ✓ Digital UV Önorm approved sensors
- ✓ Stability under pressure



MR16-350SS VAL, 350m<sup>3</sup>/h  
Belsvik Norway



MR1-350PP, 50m<sup>3</sup>/h  
Salmon Fishfarm Denmark



MR14-440SS, 2x 750m<sup>3</sup>/h  
Puerto Varas Chile

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# STAINLESS STEEL CLOSED REACTOR SYSTEMS

## Reactor Types



One lamp systems  
With standard controller

- Ideal for smaller flows
- Easy setup
- Compact design
- 9.000h lamp lifetime
- Flow range 5-68m<sup>3</sup>/h



Multi lamp systems  
With standard controller

- 220W, 350W, 440W
- U - T or L-Line Series
- 16.000h lamp lifetime
- With DNI or ANSI flanges
- Flow range 100-950m<sup>3</sup>/h



Ultra Low UVT – ULU  
For special applications

- Fluids from 50-5% UVT
- Juice, Wine, Ice Tea,
- Horticulture, Brewing,
- Cooling water

# POLYPROPYLENE CLOSED REACTOR SYSTEMS

## Reactor Types



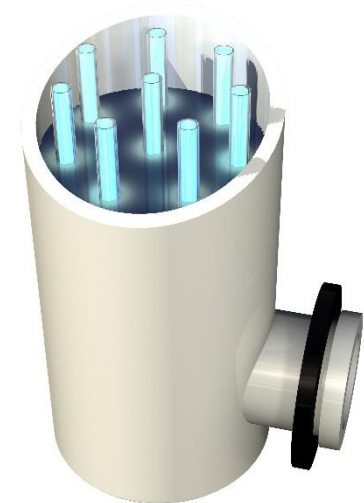
### One lamp systems With standard controller

- Ideal for smaller flows
- Compact design
- 9.000h lamp lifetime
- Flow range: 8-78m<sup>3</sup>/h



### Multi lamp systems With standard controller

- 220W, 350W, 440W
- 16.000 lamp lifetime
- Flow range: 60-700m<sup>3</sup>/h



### ACN Series For Low UVT Fluids

- 350W Series
- Reduce the dark areas
- High turbidity water
- Systems approved for treatment of water intake for aquaculture

# OPEN CHANNEL SYSTEMS

## Ultraqua Channel and Reservoir Series

Widely used for municipal wastewater treatment and large aquaculture systems.

- ✓ Material: AISI316L SS or PP
- ✓ Modular concept to fit any geometry and flow rate
- ✓ Accepts large water level variations
- ✓ Extremely low headloss
- ✓ UV monitoring and automatic cleaning system



MR50-350SS Channel in a large RAS facility, Switzerland



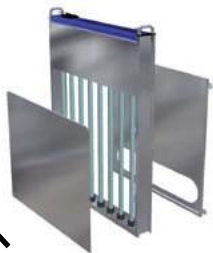
MR4-350SS Channel, with guide plates



MR34-350SS Advanced Channel

# HIGH FLOW RATES IN OPEN CHANNELS

## VARIOUS INSTALLATION PRINCIPLES IN OPEN CHANNELS

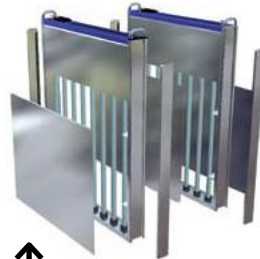


A) Solution for 1-3 frames  
Shown:

- 1 MonoRay SS channel unit
- 1 wall mount plate
- 1 flow guide plate

A

Flow is guided along lamps to ensure even exposure to UV



B) Solution for 1-3 frames  
Shown:

- 2 MonoRay SS channel units
- 2 sets of side mounting rails
- 3 flow guide plates

B

Flow is guided along lamps to ensure even exposure to UV

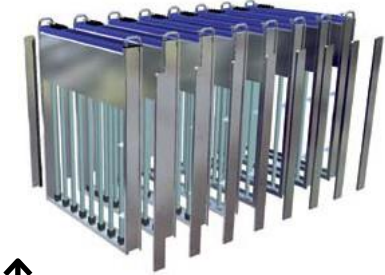


C) Solution for 2-5 frames  
Shown:

- 3 MonoRay SS channel units
- 2 sets of side mounting rails
- 1 perforated plate

C

Perforated plate creates mixing to ensure even exposure to UV

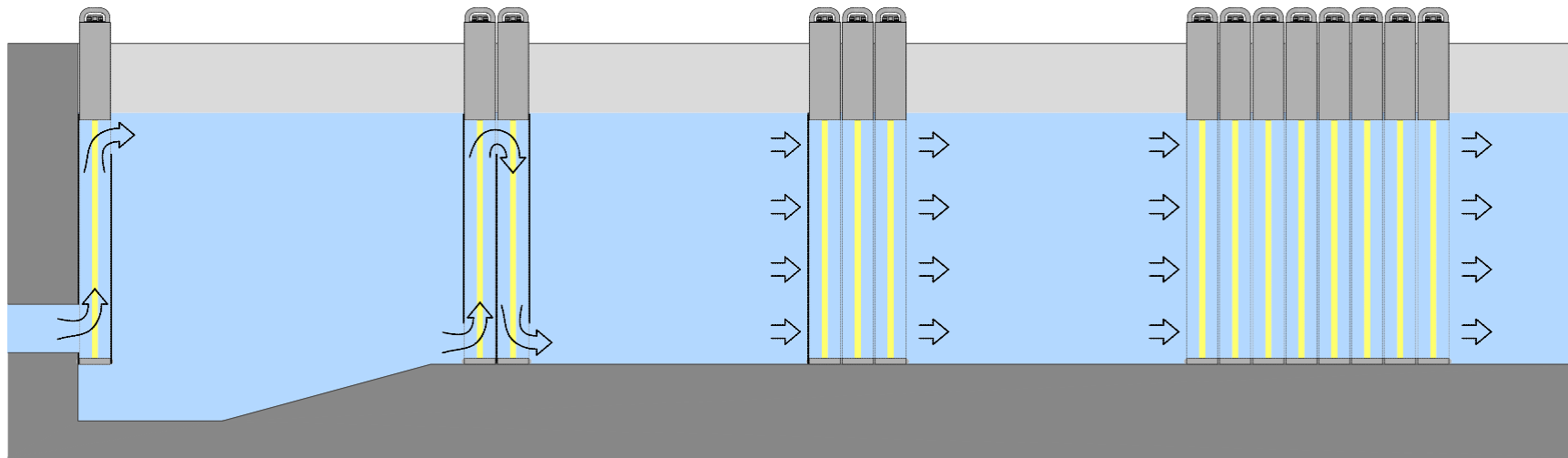


D) Solution for > 4 frames  
Shown:

- 8 MonoRay SS channel units
- 8 sets of side mounting rails

D

With more than four frames even exposure to UV is ensured by unit design



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# MULTIRAY MEDIUM PRESSURE SYSTEMS

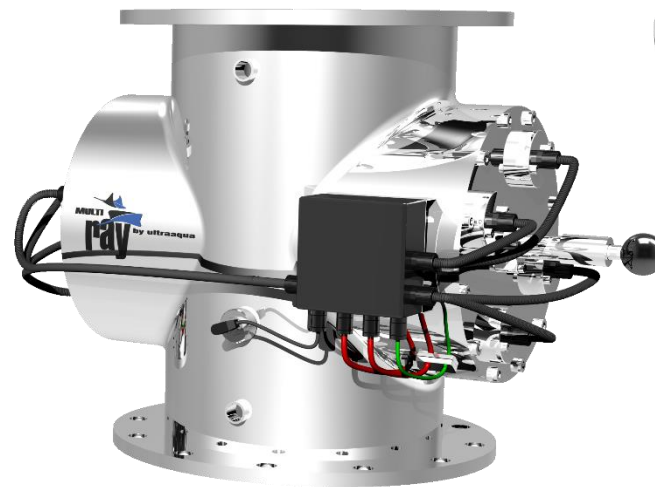
## Ultraqua Medium Pressure Series

Widely used in swimming pool applications and in advanced oxidation processes.

- ✓ Material: AISI316L SS
- ✓ Efficient degradation of chloramines
- ✓ 8.000h lamp lifetime
- ✓ Manual or automatic cleaning mechanism
- ✓ Flow range: 100-1000 m<sup>3</sup>/h



MP3000 - Oxievång Indoor Pool, Sweden



MP6000,  
2 x 3kW UV lamp



MP12000 Section,  
2 x 3kW UV lamp

# ULTRAQUA ULTRATHERM UV LAMPS

## Low-pressure high-output UV lamps

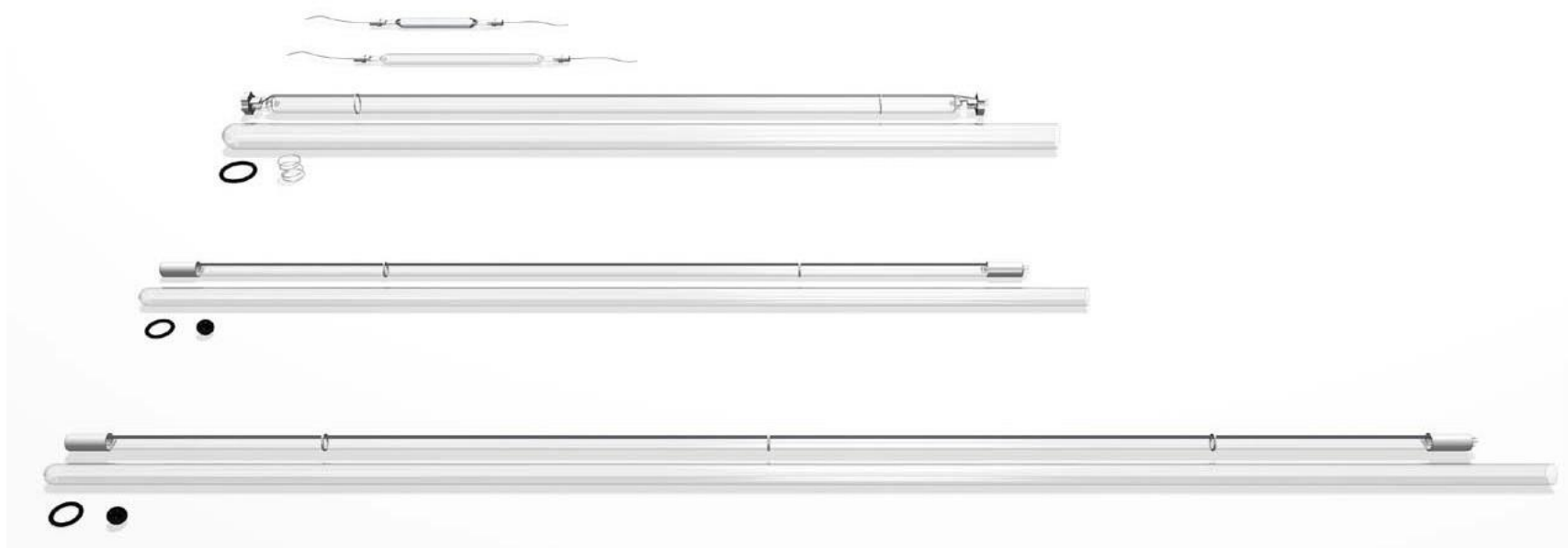
Are suitable for 75, 220, 350, 440 Series

- ✓ 75W, 220W, 350W, 440W
- ✓ Lifetime 16.000 hours
- ✓ Very easy maintenance
- ✓ 35% UV efficiency

## Medium-pressure UV lamps

Are suitable for MP Series

- ✓ 1kW, 2kW, 3kW
- ✓ Lifetime 8.000 hours
- ✓ Very powerful lamps
- ✓ Highest efficiency



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# AUTOMATIC CLEANING SYSTEM

## Fully automatic cleaning system

Built to last also in complex wastewater.

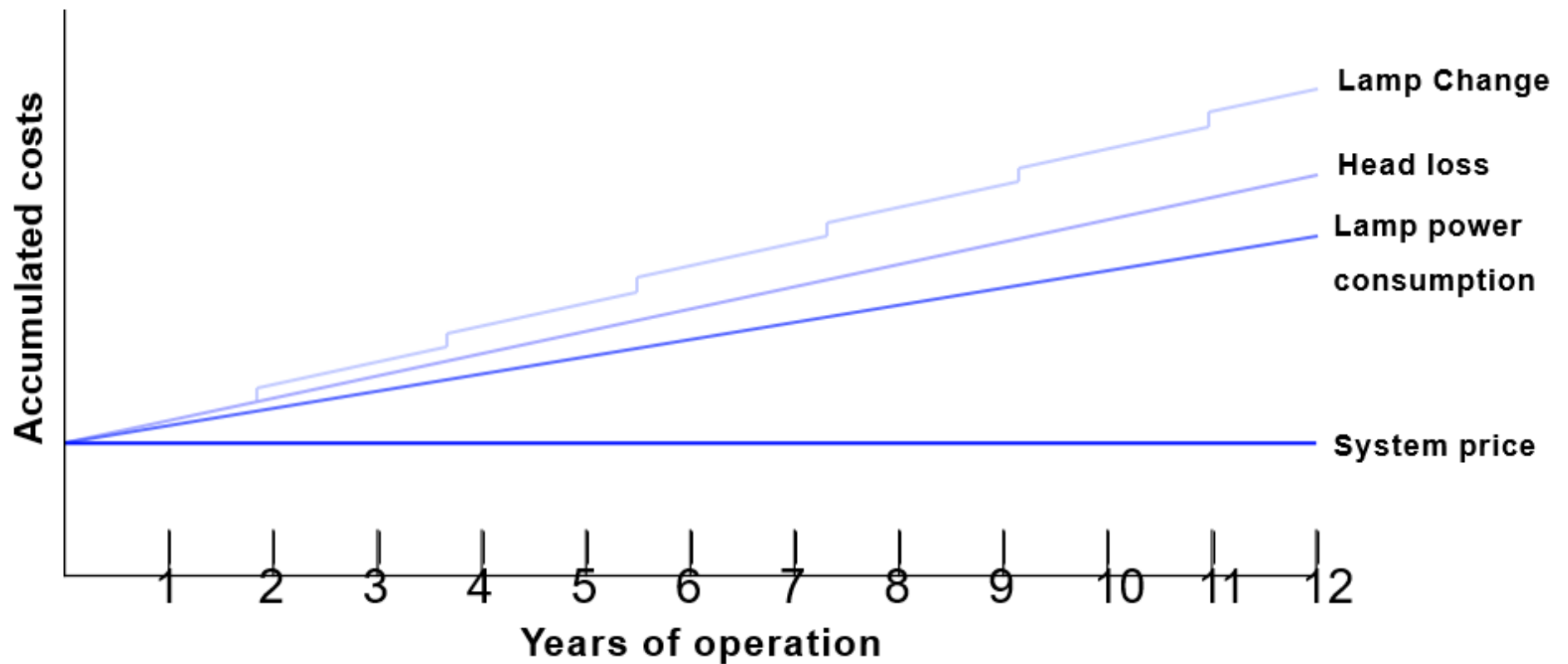
- ✓ Long life PTFE wiper rings
- ✓ High quality servomotor
- ✓ Very few components
- ✓ Fits 220, 350, 440 closed reactor Series
- ✓ Fits open channels Series

### Please note:

- Medium pressure systems are supplied with manual cleaning device as standard.
- Low-pressure UV systems are supplied without cleaning system as standard
- Validated low-pressure UV systems are always supplied with automatic cleaning system



# UV SYSTEM LIFETIME ECONOMY



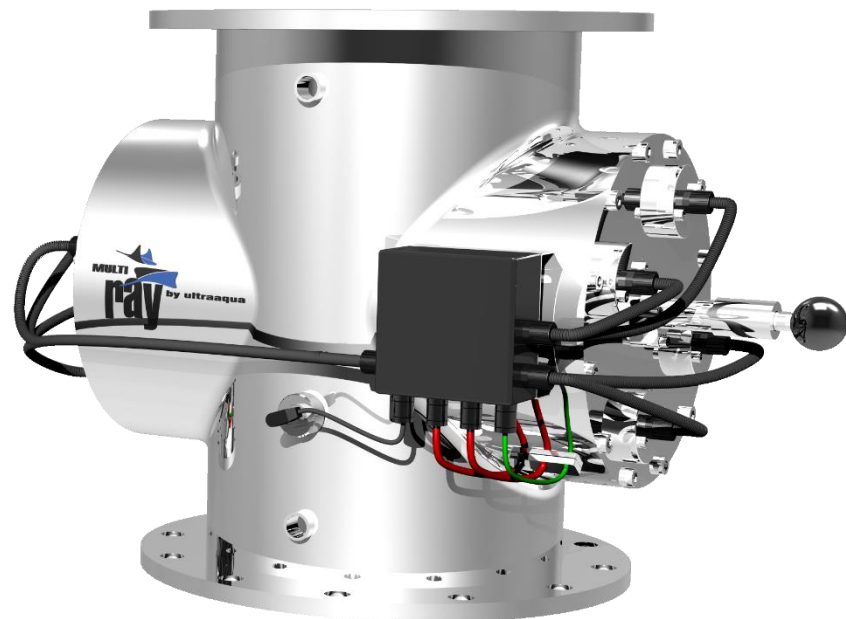
# FIND ULTRAAQUA AGENT IN CANADA



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