aquaray® range

UV disinfection systems

applications
• municipal wastewater
• municipal drinking water
• industrial process water
• aquaculture
• ozone destruction
The Purification and Disinfection Systems business group is the SUEZ global supplier of ozone, UV and membrane systems.

With three R&D centres, and four manufacturing facilities in North America, Europe and China, we can deliver to any customer’s specifications.

SUEZ has delivered over 1,000 aquaray® UV systems, including some of the world’s largest drinking water and wastewater systems.

Trust SUEZ to deliver the highest quality ozone, UV, and membrane technology solutions to meet even the most difficult treatment challenges.

**where can it be applied?**

- **municipal drinking water**
  - aquaray® 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 light is particularly effective against chlorine resistant microorganisms. To reduce the risk of waterborne diseases, a growing number of countries are implementing strict limits on pathogens through new regulations.
  - The aquaray® SLP and H2O range have been third party validated and obtained DVGW and USEPA certifications upon completion of strict bioassay testing.

- **municipal wastewater**
  - To protect the environment (e.g. 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 applications such as land irrigation.
  - For the past 20 years, SUEZ has provided thousands of aquaray® UV disinfection systems for:
    - secondary or tertiary treatment disinfection
    - CSO & SSO applications
    - reuse

- **industrial process water**
  - SUEZ provides open-channel and closed-vessel UV systems for a variety of industrial applications including:
    - food & beverage
    - electronics
    - pharmaceutical
    - cosmetics
    - aquaculture
    - cooling tower water

**UV technology focus**

- UV is chemical free and produces no disinfection by-products (DBPs)
- UV can easily inactivate, even with low UV dose chlorine resistant microorganisms
- 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 due to its compact size

**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 light spectrum, the UV-C wavelengths (200-280 nm) have been proven to be the most efficient to inactivate microorganisms by damaging nucleic acids (DNA or RNA) which prevents an organism’s ability to reproduce. The germicidal effectiveness of a UV system depends on various factors such as UV transmittance, 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 the lamp which creates an electrical arc through the metallic vapour 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. SUEZ’s product line aquaray® offers both of these powerful technologies.
## Aquaray® HiCAP

The Aquaray HiCAP is designed for medium to large flow wastewater applications. The small footprint of Aquaray HiCAP makes it ideal for retrofitting an existing chlorine basin with minimal modifications.

### Opti-Dim Flow Pacing
- Flow pacing reduces power consumption by dimming and reducing the total number of lamps in operation to match flow conditions.
- 360° UV intensity sensor readings take real-time data to monitor the UV system.

### Eye-Shield
- Offers protection from UV light.
- Platform for operators to stand on and perform lamp changes.

### Modular Vertical Lamp System (VLS)
- Modular increments of lamps allow accurate sizing and increased flexibility for design and expansion. Available in a variety of lamp configurations.
- CFD modellled and 3rd party validated to minimize headloss and maximize disinfectant.
- High efficiency low-pressure high output lamp.
- 12,000 - 15,000 hour lamp lifetime.
- Individual motorized wiping system for each UV module to prevent a system-wide wiping failure.

### Power Supply Unit (PSU)
- 400-480V, 3Ph +N,+G, 50-60Hz Option of NEMA 4x (IP66) or NEMA 12 (IP54) enclosure.
- PSU enclosure contains electronic ballast, UV I/O board, controller.
- Human Machine Interface (HMI) allows operators to control and displays lamp, module and channel information.
- Ethernet connection allows remote access for troubleshooting.

## Applications

### Municipal Drinking Water Disinfection
- X

### Food and Beverage Disinfection
- X

### Aquaculture Disinfection
- X

### Power Generation Disinfection
- X

### Cooling Water Disinfection
- X

### Micro Electronics Disinfection
- X

### Pharmaceutical Disinfection
- X

## Features

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<tr>
<th>Aquaray®</th>
<th>Aquaray® SLP-WW</th>
<th>Aquaray® HLS</th>
<th>Aquaray® 40HO</th>
<th>Aquaray® 3X</th>
<th>Aquaray® HiCAP</th>
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<tbody>
<tr>
<td>Type of Reactor</td>
<td>Closed Vessel</td>
<td>Packaged System or Open Channel</td>
<td>Open Channel</td>
<td>Open Channel</td>
<td>Open Channel</td>
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<tr>
<td>Lamp Technology</td>
<td>Low-Pressure High-Output Amalgam</td>
<td>Low-Pressure High-Output</td>
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<td>Low-Pressure High-Output</td>
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<tr>
<td>Flow Range [m³/h]</td>
<td>10 to 200 up to 350</td>
<td>315 (per module)</td>
<td>800 (per module)</td>
<td>800 (per module)</td>
<td>1,500 (per module)</td>
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## Drinking & Process Water

<table>
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<th>Features</th>
<th>Aquaray® LP</th>
<th>Aquaray® SLP</th>
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<th>Aquaray® LPTS</th>
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<td>Medium-Pressure High-Output</td>
<td>Medium-Pressure High-Output</td>
<td>Low-Pressure High-Output Amalgam</td>
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<tr>
<td>Flow Range [m³/h]</td>
<td>10 to 40</td>
<td>40 to 700</td>
<td>20 to 400</td>
<td>1,300 to 8,600</td>
<td>10 to 30</td>
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skills and expertise

Part of the SUEZ group of companies, SUEZ’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. SUEZ 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 SUEZ, we continually encourage dialogue and exchange between our group companies, customers and affiliates to maintain a high level of personnel qualification in all fields.

SUEZ 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 & training

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

plant service & maintenance

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

product focus

aquaray® HiCAP

The aquaray® HiCAP utilizes high efficiency 1,000-watt Low Pressure High Output Amalgam lamps in a vertical design to provide a higher UV dose for a given flow rate. The higher dose enables a smaller footprint and lower lamp count compared to traditional UV systems.

easy maintenance

The aquaray® HiCAP has a vertical lamp design which provides the smallest possible footprint without compromising accessibility to components. An eyeshield installed between banks offers not only UV protection but also provides a space to safely perform maintenance.

UV lamps can be replaced without removing UV modules from the channel. A remote Power Supply Unit (PSU) with rack mounted ballast cards makes changing ballasts quick and easy.

low operating costs

The Opti-Dim automatic control system used in the aquaray® HiCAP combines turning lamps on and off row-by-row with lamp output dimming to optimize power consumption and lower lamp replacement costs.

aquaray® H₂O

optimized performance

The aquaray® H₂O has been optimized with CFD modelling software to maximize UV dose and minimize head loss.

energy conservation

Due to the electronic variable output ballast, the total power can be adjusted to your requirements.

save space

To minimize the footprint, the aquaray® H₂O uses Medium Pressure lamps with high power density.

validated performance

The aquaray® H₂O has been third party-validated and obtained DVGW and USEPA certifications upon completion of strict bioassay testing.

30 years of experience
SUEZ’s aquaray® UV product range provides high quality open channel and closed vessel UV solutions for a variety of municipal and industrial applications. aquaray® UV solutions use low-pressure and medium-pressure UV technology packaged in small footprints to reduce the impact on your plant.

We have over 20 years of experience delivering UV solutions including some of the world’s largest drinking water and wastewater UV disinfection systems.

Trust SUEZ to deliver the highest quality UV technology solutions to meet even the most difficult treatment challenges.