

TROJANUVFLEX™

Wastewater Disinfection

TROJAN  UV™

 Water
Confidence™



UV for Wastewater Disinfection and Water Reuse

UV light has been proven in installations around the world as an effective solution for disinfecting bacteria, protozoa, and viruses in wastewater so it can be safely discharged into receiving waters. A key advantage of UV is its ability to treat chlorine-resistant *Cryptosporidium* and *Giardia* protozoa, which if released into lakes and rivers increases the potential of contamination in communities that rely on these same bodies of water for their drinking water source and recreational use.

UV is a simple, safe and cost-effective disinfection solution. It's a chemical-free process that adds nothing to the water but UV light and therefore requires no transportation, storage or handling of toxic or corrosive chemicals. The contact time required for the UV process is mere seconds, so the footprint required for treatment is relatively small making it ideal for both retrofits and new construction.

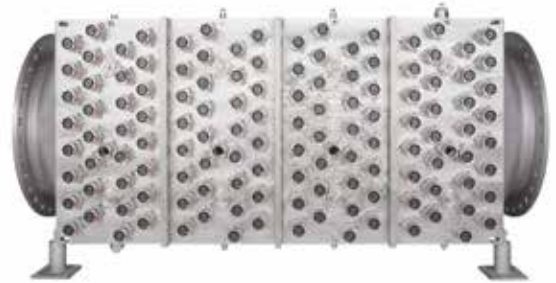
For the increasing number of water providers adopting wastewater reuse to conserve natural drinking water supplies, UV is an effective way to meet the stringent disinfection requirements demanded of these treatment facilities. TrojanUV systems are installed at treatment plants that distribute reclaimed wastewater for a variety of non-potable uses, including agricultural and landscape irrigation, construction, street sweeping and cooling towers.

Compact, Eco-efficient UV Disinfection for Wastewater

The TrojanUVFlex™ is our latest innovation and is designed with features to make installation and operation simpler, faster and more cost-effective than ever before. Built on our proven Solo Lamp™ Technology platform, TrojanUVFlex allows for energy-efficient high-intensity delivery of UV light in an extremely compact footprint. Advanced controls, monitoring, and validation provide ongoing Water Confidence™ to our customers.



TrojanUVFlex 200 Series



TrojanUVFlex 100 Series

Cost-Saving Cross-Flow Lamp Orientation. TrojanUV Solo Lamps are arranged in arrays engineered to minimize cost. Perpendicular cross-flow lamp orientation reduces operating costs by allowing independently operated sections of lamps to be turned on/off in response to changing treatment conditions and also ensures water continues to be treated by downstream lamps in the event an upstream lamp needs to be replaced.

Future Expansion Made Easy. Chambers can be manufactured with additional banks to accommodate future treatment capacity or for enhanced treatment objectives such as those needed for wastewater reuse. This ensures the system meets your current requirements while also planning for future needs.

Flexible Installation Options. The option to install chambers vertically or horizontally makes integration into existing piping straightforward and allows service access from any direction.

Advanced High Dose Validation. Chambers are validated in accordance with the National Water Research Institute (NWRI) and United States Environmental Protection Agency's Ultraviolet Disinfection Guidance Manual (UVDGM). The TrojanUVFlex has been validated to disinfect water with as low as 45% UV transmittance (UVT). This ensures that treatment is possible in almost any treatment environment.

UV Chamber

A stainless steel chamber houses the lamps and quartz sleeves in a unique cross-flow orientation. Its design has been optimized for highly-efficient treatment in a very compact footprint. Precise UV intensity sensors monitor lamp output optimizing power use and reducing overall energy consumption.

Sleeve Cleaning System (Optional)

Our mechanical sleeve cleaning system removes fouling to ensure the maximum amount of UV light enters the water and is available for treatment. It works automatically, without operator involvement, without draining the UV chamber, and without disrupting treatment. Wiper seals can be replaced easily from outside the UV chamber.

TrojanUV Solo Lamps

The TrojanUV Solo Lamp combines the benefits of low- and medium-pressure lamps, providing high UV output, low power consumption, low lamp count, long lamp life (>15,000 hours), and reduced maintenance. Lamps are located within protective quartz sleeves and are easily accessible for change-outs.



Power Distribution

The compact power distribution panels house rack mounted Solo Lamp drivers to power and control the UV lamps. To reduce power consumption and save costs, drivers control lamp sections which turn on/off based on real-time treatment conditions and can dim lamps from 100 to 30% power. They feature built-in diagnostic capability for easy troubleshooting and take only minutes to replace.



Local Control

A local control panel houses the UV controller which maintains the customer desired dose through real-time input signals for flow, UVT, and UV intensity. Dose is carefully monitored with return signals being sent to lamp drivers which adjust UV output to maintain energy efficient operation.

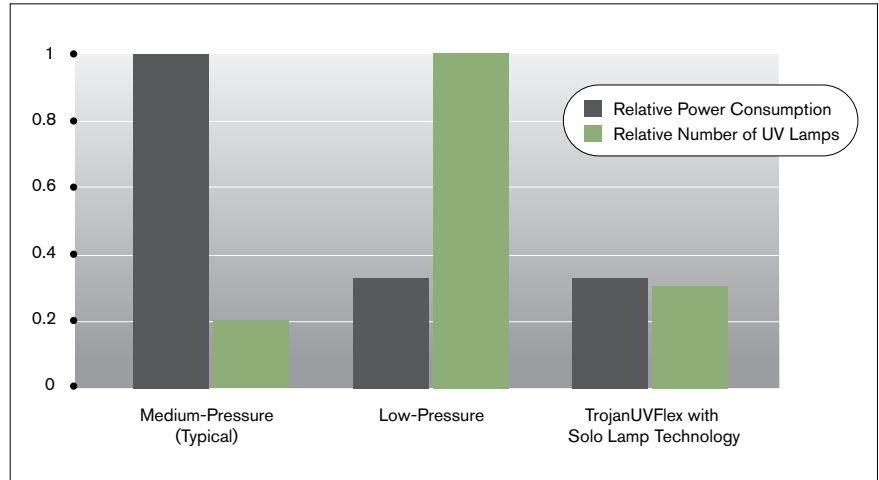


Revolutionary Lamp and Driver Technology



The best features of both low- and medium-pressure lamps

- High UV output and high electrical efficiency
- Low total lamp count (and associated components like drivers and sleeves) reduces maintenance costs
- Long lamp life (15,000 hours guaranteed)
- Solo Lamp driver has a high power factor and low total harmonic distortion
- Lamp drivers are rack mounted in panels for compact footprint and easy replacement



TrojanUV Solo Lamp systems combine the benefits of other lamp technologies – the low lamp count of medium-pressure systems with the high electrical efficiency of low-pressure high-output (LPHO) systems. The result is a compact, cost-effective installation that is easy and quick to maintain.

Compact, Modular UV Chamber

Significantly reduces footprint and installation cost

- Staggered, cross-flow lamp arrays maximize UV output and reduce chamber size
- Compact footprint simplifies indoor retrofit installations and reduces construction costs
- Horizontal or vertical installation allows service access from any direction
- Modular lamp sections enable expandability, redundancy and low power consumption
- Low headloss design reduces or eliminates pumping

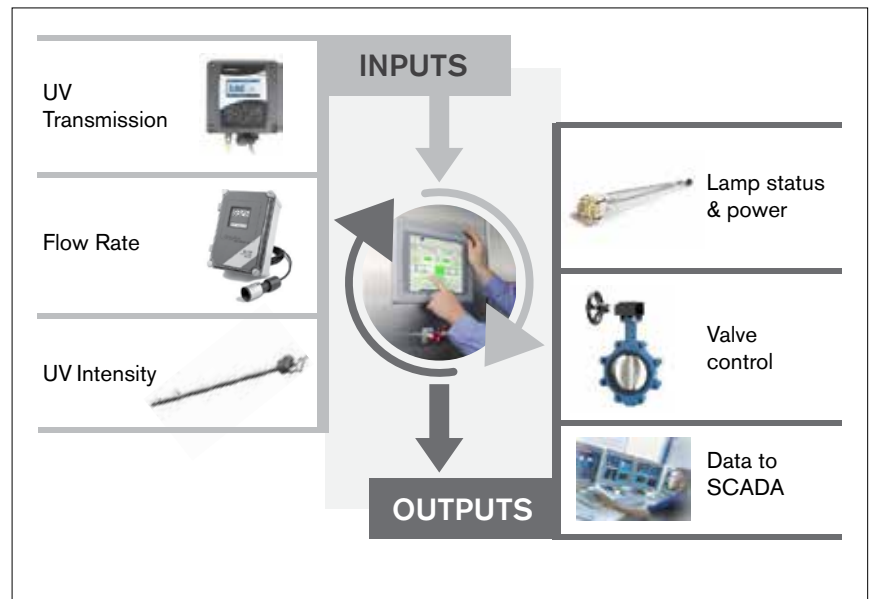


The chamber has been designed for high intensity delivery of UV light in an extremely compact footprint.

State-of-the-Art System Control

Confidently achieve treatment objectives while minimizing operational costs

- Controller processes multiple real-time inputs including flow rate, treatment objectives, UV transmission and system operational parameters (UV sensors and lamp data)
- Computes delivered dose and compares against treatment requirements
- Automatically controls number of lamps turned on and individual lamp power settings
- Optimizes energy use by modulating UV output to match treatment conditions



Real-time inputs are utilized in the computation of dose. The system dynamically adjusts lamp power and number of lamps to minimize operation and maintenance costs.

User-Friendly Experience

Designed to make the operator's job easier

- Access lamps, UV sensors, and quartz sleeves all from the outside of the chamber
- "Lamp on" LED indicator on lamp plug provides easy visual determination of lamp status
- Optional mechanical sleeve cleaning system prevents quartz sleeve fouling
- Wiper seals are quickly replaced from outside the UV chamber
- Integrated chamber hatches provide easy access for internal inspection or maintenance
- Graphic screens and icons make system operation intuitive for operators



All UV systems require periodic maintenance; but TrojanUVFlex allows fast access to all routine maintenance components (including wiper components) from outside the UV chamber. This minimizes maintenance time and increases efficiency.

Building Water Confidence

The TrojanUV line of products include open-channel and closed-vessel UV disinfection systems for municipal wastewater and drinking water, as well as UV advanced oxidation systems for the treatment of chemical contaminants in water. We have the largest municipal UV installation base in the world and are proud to play an important role in continually advancing UV disinfection technology and helping to build Water Confidence for communities and municipalities.

Experience. Over 10,000 municipal UV installations; treating 60 billion gallons of water every day (225 million m³/day).

Global Support. Local Service. Our comprehensive network of certified service providers offer rapid response and personalized attention for service, replacement parts and system optimization.

Guaranteed Performance and Comprehensive Warranty. TrojanUV systems include a Lifetime Disinfection Performance Guarantee* and comprehensive warranties for systems and parts.

| System Specifications | | |
|------------------------|--|--------------------------|
| System Characteristics | TrojanUVFlex 200 Series | TrojanUVFlex 100 Series |
| Lamp Type | TrojanUV Solo Lamp - Low Pressure High Output | |
| Lamp Power | 1000 Watts | 500 Watts |
| Lamp Driver | Electronic, variable power (30% to 100%) | |
| Chamber Material | 2205 duplex stainless steel | |
| Flange Size | 48 inch AWWA C207, DN1200 | 36 inch AWWA C207, DN900 |
| Pressure Rating | Up to 150 psi (PN10) | |
| Sleeve Cleaning | Mechanical cleaning (Optional) | |
| Network Connection | AB Ethernet I/P, ProfiNet, Profibus, Modbus TCP/IP, Modbus RTU RS485 | |
| Panel Material | Painted mild steel, 304 stainless steel, 316 stainless steel | |
| Validation | USEPA and NWRI | |

* When you use TrojanUV parts, we guarantee that your system will meet the disinfection requirement specified at purchase, provided that the system's original design parameters haven't changed (e.g., flow rate, UV Transmittance) and maintenance is completed per the UV System O&M manual. Should you experience a disinfection issue, our Service Technicians will work with you to resolve it as fast as possible.

To learn more about the brands and affiliates of Trojan Technologies, please visit www.trojantechnologies.com



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