TROJANUVFLEX™

Water Reuse
Drinking Water

TROJAN UV™

Water Confidence™

TROJAN UV FLEX™

Compact, eco-efficient UV disinfection and UV-oxidation for water reuse and drinking water

Climate change, prolonged drought, growing populations and the resulting water stress are driving water reuse and impaired water treatment around the world. Water sources we rely upon every day are increasingly impacted by pathogens and natural and man-made contaminants such as *Cryptosporidium*, 1,4-dioxane, and volatile organic compounds such as trichloroethylene (TCE). UV light alone, or in combination with an oxidant, is increasingly recognized as an eco-efficient technology for destroying these biological and chemical contaminants and enabling municipalities to produce water suitable for potable and non-potable uses.

The TrojanUVFlex™ is the state-of-the-art UV solution for large drinking water applications and high-level reuse. Proven and reliable components like the TrojanUV Solo Lamp™ are incorporated into a flexible, compact configuration. The latest advancements in controls, monitoring and validation are employed, enabling municipalities to provide Water Confidence™ to their customers.

Key Benefits

TrojanUVFlex

Low lamp count and high electrical efficiency. The 1000 Watt TrojanUV Solo Lamp combines the benefits of low- and medium-pressure lamps, providing unparalleled cost and maintenance advantages.

Compact Footprint. Optimized chamber design and modular TrojanUV Solo lamp arrays enable cost-effective installation in extremely compact spaces.

Easy Operation & Maintenance. With fewer lamps, drivers and other associated components, maintenance is reduced and reliability is maximized.

Proven Components. UV sensors, wiping system, lamp connectors, drivers and panels have demonstrated reliability in our suite of TrojanUV systems.

Flexible Advanced Treatment. Can be designed for simultaneous UV disinfection and advanced oxidation - with either hydrogen peroxide or sodium hypochlorite.

Destroys Harmful Contaminants. Ideal for treatment of NDMA, 1,4-dioxane and other contaminants – producing water that meets or exceeds drinking water standards.

State-of-the-Art Controls. A smart, flexible control system optimizes energy use and oxidant concentration while ensuring UV dose and treatment objectives are being met.

Critical Control Points Available to Demonstrate Performance. Control System monitors, provides trending and enables reporting of all regulatory requirements including dose, oxidant concentration and contaminant reduction.

Delivering Water Confidence. TrojanUV Systems include a Lifetime Performance Guarantee and industry-leading warrantees for systems and parts.

TROJAN UV FLEX™

Compact, eco-efficient UV disinfection and UV-oxidation for water reuse and drinking water

UV Chamber

A stainless steel chamber houses the lamps and quartz sleeves in a unique configuration perpendicular to flow. Its design has been optimized for highly-efficient treatment in a very compact footprint. Precise UV intensity sensors monitor lamp output optimizing power use & reducing overall energy consumption. A mechanical wiping system for the quartz sleeves is optional.

TrojanUV Solo Lamp Technology

TrojanUV Solo Lamps offer high UV output, high electrical efficiency and the lowest total lamp count. At 1000 Watts each, they are the most powerful amalgam lamp in the industry. The low lamp count and long lamp life (15,000 hours guaranteed) offer both maintenance and cost benefits. Lamps are located within protective quartz sleeves and are easily accessible for change-outs.

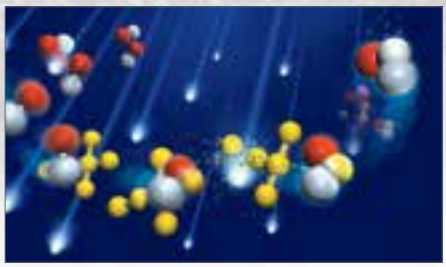
SOLO LAMP™ TECHNOLOGY

Power Distribution Center (PDC)

The compact PDC panels house rack-mounted Solo Lamp drivers to power and control the UV lamps. Lamp drivers have a high power factor, low total harmonic distortion and lamp dimming from 100 to 30% power – to reduce power consumption and save costs. The lamp driver and PDC design enables the smallest footprint in the industry and driver replacement that takes only minutes.

System Control Center (SCC)

The SCC houses components required for overall system control. A sophisticated system optimizes the disinfection and UV-oxidation processes including UV lamp operation, oxidant dosing and on/off status. Continuous monitoring and logging of operational & water quality parameters such as UV transmittance, flow rate and UV intensity provides the inputs needed for control. Features a user-friendly, color touchscreen interface.



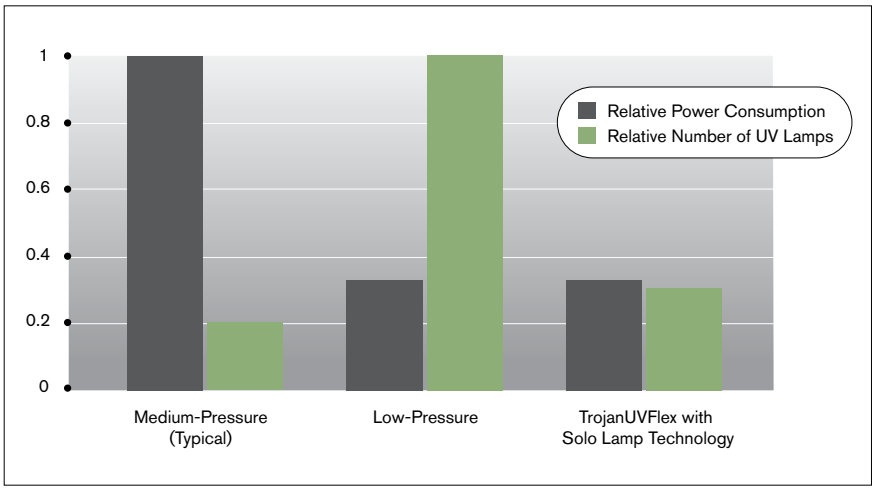
Oxidant Dosing

Fully functional with either hydrogen peroxide (H_2O_2) or chlorine (Cl_2) to produce hydroxyl radicals needed for the advanced oxidation process (as shown). TrojanUV engineers will assist to evaluate water quality and optimize dosing to balance performance and total costs.

Revolutionary Lamp and Driver Technology

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

- Energy-efficient, 1000 Watt TrojanUV Solo Lamp
- High UV output and high electrical efficiency
- Lowest total lamp count (and associated components like drivers, sleeves etc.)
- Long lamp life (15,000 hours guaranteed)
- Solo Lamp driver has a high power factor, low total harmonic distortion and cost-saving dimming from 100% to 30% power
- 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

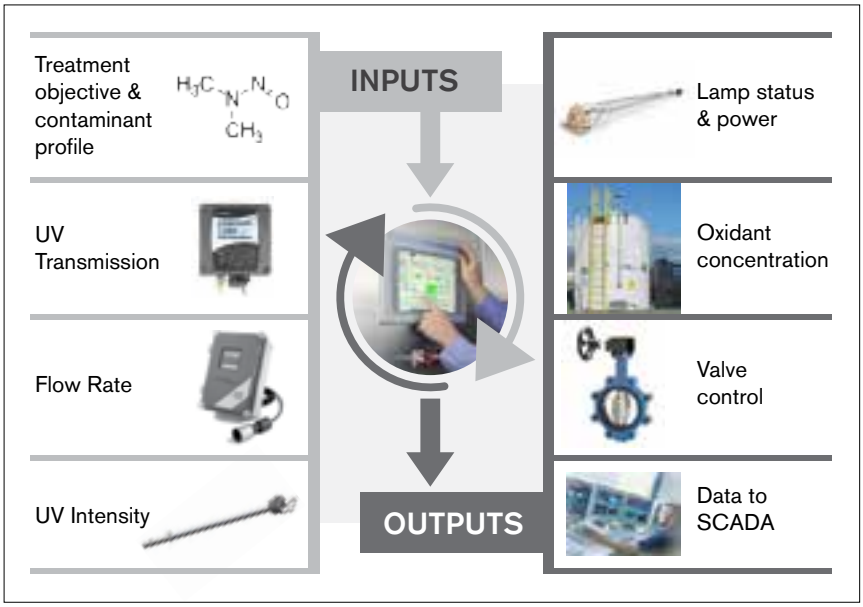
- Lamp array optimized for highest UV dose delivery in the smallest footprint
- Lamps are perpendicular to flow reducing overall train length
- Flexible UV chamber can be installed horizontally or vertically
- Modular lamp sections enable expandability, redundancy and lowest power consumption
- Low headloss design reduces or eliminates pumping
- Overall footprint reduced by 40-50% vs. other high-efficiency UV-oxidation systems

The chamber has been designed for delivery of high UV doses in an extremely compact footprint (40% to 50% that of other high efficiency UV-oxidation systems).

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 log reduction of contaminants and compares against treatment requirements
- Automatically controls number of lamps required, lamp power settings and oxidant dose
- Optimizes energy use, oxidant dosing and quenching (if applicable)
- Displays Critical Control Points through SCADA and local and/or remote HMIs



Real-time inputs (left) are utilized in the computation of contaminant log reduction and the associated Electrical Energy per Order (EEO). The system dynamically adjusts lamp power, number of lamps, and oxidant concentration to minimize operation and maintenance costs.

Unrivaled User Experience

Designed to make the operator's job easier

- Access lamps, connections, sensors and quartz sleeves all from the outside of the chamber
- "Lamp on" LED indicator on lamp connector provides easy visual determination of lamp status
- Optional wiping system keeps quartz sleeves clean; wiper seals can be replaced from outside the UV chamber
- Chamber contains large hatches to provide access to internal sections
- Critical Control Points available for display at local and/or remote HMI screens, through SCADA and through data logging
- Graphic screens and icons make system operation intuitive for operators.

All UV systems require periodic maintenance; but TrojanUVFlex, with the lowest lamp count and smallest footprint, has been designed to minimize maintenance and make tasks ergonomic and intuitive.

Building Water Confidence

UV is an effective, safe, and environmentally-friendly way to disinfect and remove harmful chemical contaminants from water. It provides broad-spectrum protection against a wide range of pathogens, including bacteria, viruses and chlorine-resistant protozoa such as *Cryptosporidium* and *Giardia*. When used in combination with an oxidant such as hydrogen peroxide, UV can destroy environmental containments such as taste and odor, algal toxins and 1,4-dioxane. Since 1977, TrojanUV has led the way developing and supplying solutions for some of the largest applications using sustainable, cost-effective UV light.

Experience. Over 10,000 municipal UV installations; treating 60 billion gallons of water every day (225 million m^3/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 Performance Guarantee and industry-leading warrantees for systems and parts.

System Specifications

System Characteristics	TrojanUVFlex
Lamp Type	TrojanUV Solo Lamp - Low Pressure High Output
Lamp Power	1000 Watts
Lamp Driver	Electronic, variable power (30% to 100%)
Chamber Material	2205 duplex stainless steel
Flange Size	Optional 48 inch AWWA C207, DN1200 36 inch AWWA C207, DN900
Pressure Rating	Up to 150 psi (PN10)
Sleeve Wiping	Optional mechanical wiping
Network Connection	AB Ethernet I/P, ProfiNet, Profibus, Modbus TCP/IP, Modbus RTU RS485
Panel Rating, Material	Optional Type 12, Type 4, Type 4X / painted mild steel, 304 stainless steel, 316 stainless steel
Validation	DVGW, USEPA (Pending)

TrojanUV is part of the Trojan Technologies group of businesses.

Head Office (Canada)
3020 Gore Road London, Ontario, Canada N5V 4T7
Telephone: (519) 457-3400 Fax: (519) 457-3030

Trojan Technologies Deutschland GmbH
Aschaffenburger Str. 72, 63825 Schöllkrippen, Germany
Telephone: +49 6024 634 758 0 Fax: +49 6024 634 758 8

www.trojanuv.com

For a list of our global offices, please visit **trojanuv.com/contactus**.

TROJAN UV™
A TROJAN TECHNOLOGIES BUSINESS