TROJAN UV TORRENT™

DRINKING WATER TREATMENT

TROJAN UV TORRENT™

Drinking Water Treatment. No Compromises.

Revolutionary technology platform from the industry leader

UV's environmental and water quality benefits for disinfection of drinking water are proven and embraced by communities large and small. Offering broad-spectrum protection against a wide range of pathogens, including bacteria, viruses and chlorine-resistant protozoa (such as *Cryptosporidium and Giardia),* UV is a reliable, cost-effective part of a multi-barrier treatment strategy.

Until today, municipalities have had to weigh the benefits of a compact installation with fewer UV lamps against a more electrically-efficient system containing over five times more lamps. Now, our revolutionary TrojanUV Solo Lamp™ Technology offers the advantages of both existing medium-pressure and low-pressure lamp technologies. Incorporated into the TrojanUVTorrent™, the advantages become clear – lower life cycle costs, easy maintenance and reduced environmental impact.

Reducing maintenance requirements and costs while incorporating the most efficient technologies available, the TrojanUVTorrent leads the way for large-scale drinking water disinfection. No compromises.

Key Benefits

TrojanUVTorrent

Revolutionary lamp technology. TrojanUV Solo Lamps provide unprecedented cost and maintenance advantages.

Compact footprint. TrojanUV Solo Lamp Technology enables a significantly reduced footprint for both the UV chambers and panels.

Modular reactor design. Strategically-designed groups of UV lamps and modules increase efficiency and operational flexibility.

Chemical and mechanical sleeve cleaning. Without removing equipment or disrupting treatment, the dual-action ActiClean™ system provides superior, automatic lamp sleeve cleaning.

Flexible design and operation. Chambers can be installed vertically or horizontally, making it simple to integrate into plant design. Low head loss configuration and sophisticated controls enable cost-effective disinfection of a wide range of flow rates per treatment train.

Sustainable disinfection solution. Significantly lower carbon footprint than alternate UV systems. Lowest environmental impact through 20-year life cycle assessment evaluating manufacturing, operation and disposal.

Global support. Our comprehensive network of certified service providers offers fast response for service and spare parts.

Guaranteed performance and comprehensive warranty. Our systems include a Lifetime Disinfection Performance Guarantee.

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Small footprint disinfection for large applications

Service Entrance

The single service entrance utilizes a dual-safety system and allows easy access to internal chamber components (UV lamps, quartz sleeves). Operators can access low-voltage components (wiper drive, UV intensity sensors) without de-powering the chamber. Each lamp connector contains a safety switch that automatically disconnects power to the lamp if the connector is removed before the lamp is turned off.

UV Intensity Sensor

Highly accurate sensors monitor germicidal UV output within the chamber. Lamp output is adjusted automatically to maintain required UV dose while optimizing power consumption. Routine checks of duty sensor integrity can easily be performed with a portable sensor monitor, minimizing time spent on calibration checks.

Access Hatch

The suitably-positioned access hatch with hinged door provides access to the interior of the UV chamber.

Power Distribution Center (PDC)

The compact PDC contains the lamp drivers and system control components. Lamp drivers are highly efficient, generate very little waste heat, and use a state-of-the-art digital signal processor to provide advanced diagnostic capabilities. The compact panel is approximately one-fifth the size of a comparable low-pressure high-output (LPHO) lamp system and half the size of a medium-pressure lamp system. Each of these features contributes to the small footprint and ease of maintenance.

Operator Interface

The touchscreen HMI allows local monitoring and control of each UV chamber. Operators can quickly view system status, alarms and set-points through the intuitive graphical interface.

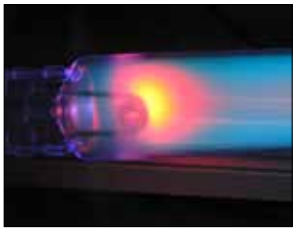
ActiClean Sleeve Cleaning System

Our dual-action cleaning system uses mechanical wiping in conjunction with a cleaning gel contained within wiper collars surrounding the quartz sleeves. This advanced system operates automatically, without operator involvement, reducing maintenance and ensuring maximum UV output. UV lamp sleeves and intensity sensors are cleaned regularly without disrupting disinfection.

TrojanUV Solo Lamps

SOLO LAMP TECHNOLOGY

The TrojanUV Solo Lamps are the core of the UV system. With both high UV output and high electrical efficiency, they provide unprecedented cost and maintenance benefits by simultaneously reducing total lamp count and power consumption. Lamps are located within protective quartz sleeves with easy access through the service entrance.

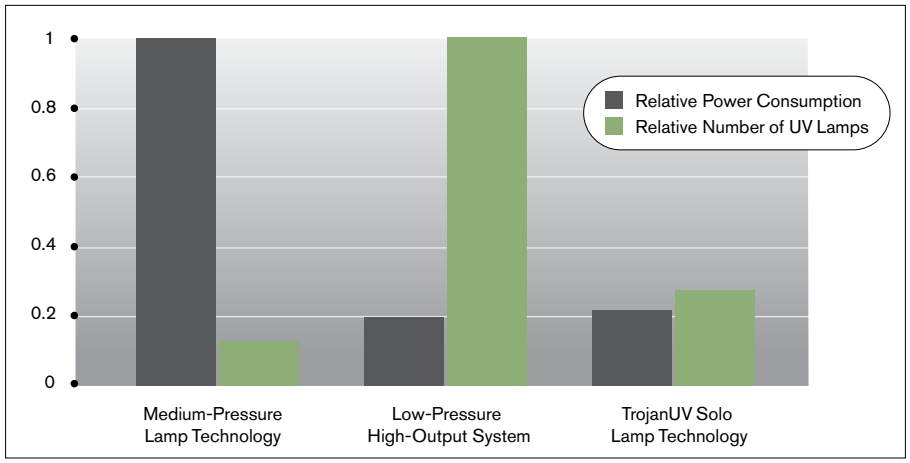


Revolutionary TrojanUV Solo Lamps

Minimize lamp count, maintenance requirements and power consumption

Benefits:

- High UV output lamp technology without compromising electrical efficiency or space requirements
- Long lamp life (guaranteed to 15,000 hours)
- Incorporates cost-saving feature of lamp dimming (100 to 30%) to conserve energy when UV demand is low (during periods of low flow or high water clarity)
- Electrical power consumption approximately 1/3 of medium-pressure lamp systems



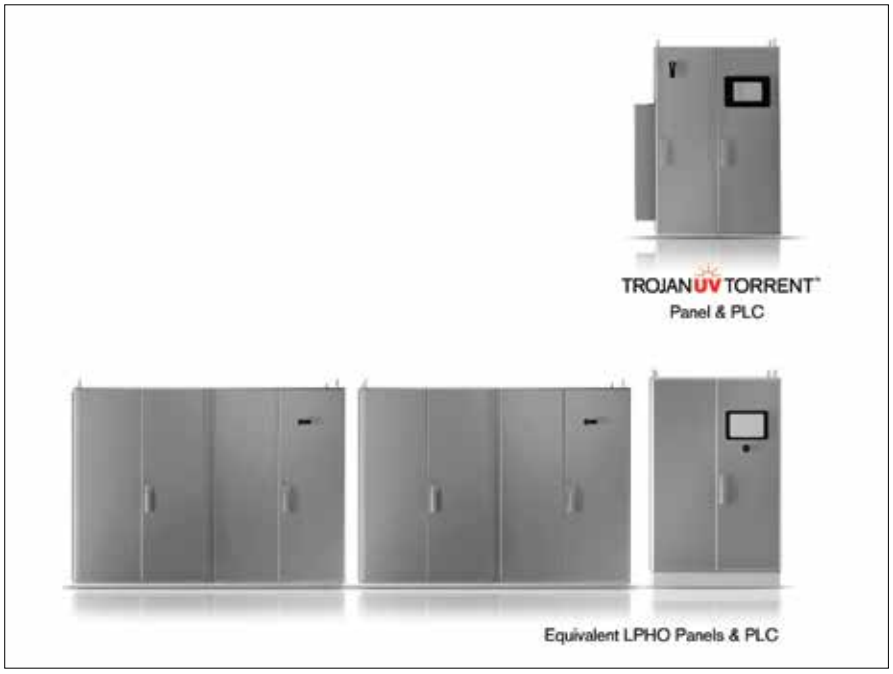
TrojanUV Solo Lamp systems combine the benefits of other lamp technologies – the low lamp count of medium-pressure systems with the high electrical efficiency of LPHO systems. The result is a compact, cost-effective installation that is easy and quick to maintain.

Compact Panel Design

Dramatic footprint reduction simplifies design and installation

Benefits:

- Lamp drivers and Programmable Logic Controller (PLC) components housed in a single floor-mounted panel
- One panel per chamber – reduces overall footprint and increases layout flexibility
- High-efficiency lamp drivers reduce excess heat
- Advanced lamp drivers use digital signal processing, providing state-of-the-art diagnostic capabilities
- Lamp drivers are easy to access and simple to replace if required. Power and communication signals connect automatically when lamp driver is inserted – no manual wiring necessary

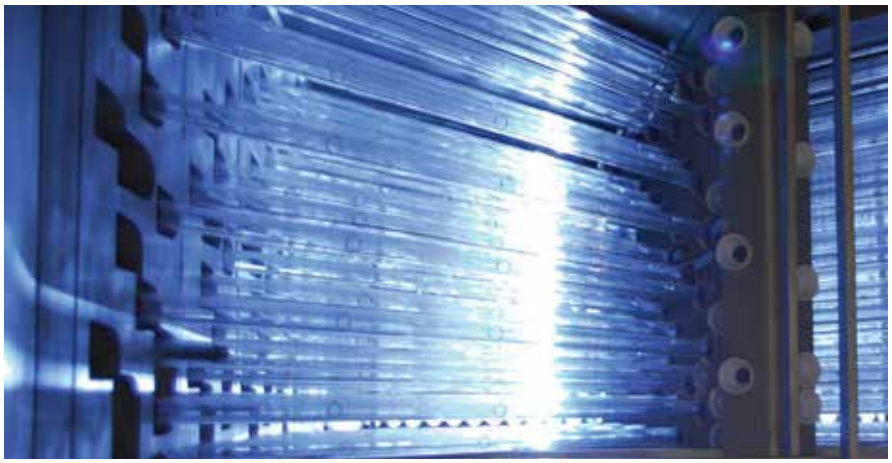


Advanced Hydraulic Design

Lamp orientation increases efficiency and simplifies maintenance

Benefits:

- Head loss is reduced, enabling treatment of higher flow rates in a single chamber
- Superior reliability due to high structural integrity of angled lamp orientation
- Lamps and sensors are easy to access and quick to replace
- Efficiency of angled UV lamp orientation proven through full-scale validations



Angled UV lamp orientation reduces head loss and optimizes disinfection performance. Developed and proven for the world's largest UV disinfection facility treating drinking water.

Built for Reliable Performance and Easy Maintenance

Incorporates design features proven to reduce maintenance

Benefits:

- ActiClean wiping system removes fouling automatically, without operator involvement
- Lamp sleeves are easily inserted using the sleeve insertion tool
- UV intensity sensor calibration checks are performed at the chamber service entrance using a hand-held monitor
- Touchscreen HMI features intuitive graphical display for all system operating parameters
- Safety features ensure operators can work confidently with the UV system

The hand-held UV Intensity sensor monitor allows operators to quickly and easily measure duty and reference sensor calibration.

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System Specifications

UV Reactor	8SL48 / 16SL48	24SL48 / 32SL48 / 40SL48	64SL48 / 80SL48 / 96SL48
Number of Lamps	8 - 16 per chamber	24 - 40 per chamber	64 - 96 per chamber
Input Power per Lamp & Lamp Type	1.0 kW input low-pressure		
Expandability *Reactor Chamber Size Remains Constant	Ability to expand banks by eight (8) lamp increments from 8 8SL48, 16SL48	Ability to expand banks by eight (8) lamp increments from 24 24SL48, 32SL48, 40SL48	Ability to expand banks by sixteen (16) lamp increments from 64 64SL48, 80SL48, 96SL48
Reactor Material	316 SS		
Junction Box Rating	UL Type 4X		
Sleeve Wiping Type	**Standard :** Automatic mechanical/chemical **Options :** No wiping system		
Power Distribution Center (PDC)			
Quantity	One (1) per chamber		
Driver	Electronic - one ballast drives two lamps		
Power Level	30% to 100%		
Cabinet Cooling	Air conditioner		
Electrical - Voltages	**Options :** 208/120V 3 phase, 4 wire + gnd, 60 Hz 240V 3 phase, 3 wire + gnd, 60 Hz 400/230V 3 phase, 4 wire + gnd, 50 Hz 415/240V 3 phase, 4 wire + gnd, 50 Hz 480/277V 3 phase, 4 wire + gnd, 60 Hz	**Options :** 240V 3 phase, 3 wire + gnd, 60 Hz 400/230V 3 phase, 4 wire + gnd, 50 Hz 415/240V 3 phase, 4 wire + gnd, 50 Hz 480/277V 3 phase, 4 wire + gnd, 60 Hz	**Options :** 240V 3 phase, 3 wire + gnd, 60 Hz 400/230V 3 phase, 4 wire + gnd, 50 Hz 415/240V 3 phase, 4 wire + gnd, 50 Hz 480/277V 3 phase, 4 wire + gnd, 60 Hz
Maximum Distance Between Chamber and Panel (Running Distance) & Conductor Type	75 ft (23 m) wire conductor		
HMI	AB PV700+		
Network/SCADA Interface	AB Ethernet		
Dose Control	USEPA UVDGM 2006 calculated dose		
Remote Monitoring	Yes		

TrojanUV is part of the Trojan Technologies group of businesses.

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