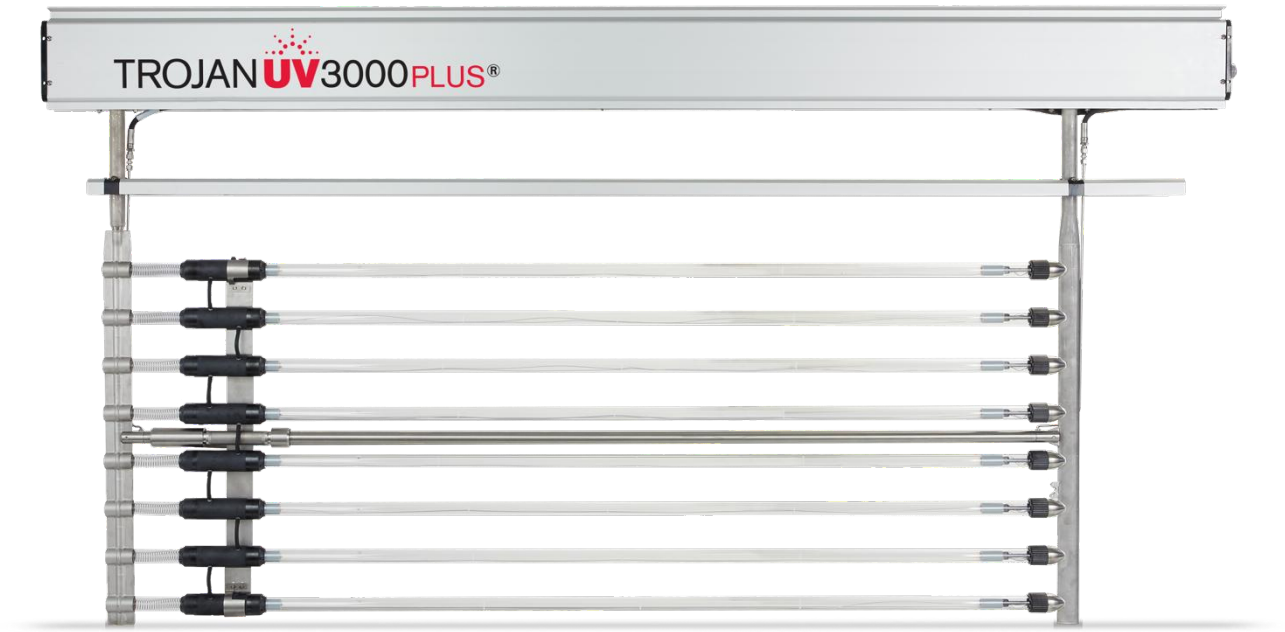


TROJAN UV3000PLUS®

PHASED SYSTEM UPGRADES - PROPOSAL

12/18/2025

Prepared for:
City of Joplin MO
Turkey Creek WWTP

Confidential – Company Proprietary
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Trojan Technologies

Trojan Technologies provides water treatment technologies and solutions and with over 45 years of experience and 11,000 installations is a global leader in UV treatment systems. We continue to support our large installed base with a global network of associates, representatives and channel partnerships. With every client partner we work to provide solutions to improve performance and extend equipment life while maintaining compliance saving our customers cost, energy and resources.

Introduction

Trojan Technologies is pleased to present this proposal for upgrading your existing UV system to the next generation of TrojanUV3000Plus. As your facility approaches the end of its lifespan, we understand the significant costs involved in designing and installing a new UV system. By opting for core component upgrades instead, you can retain your existing infrastructure at a fraction of the cost of the new construction, while benefiting from the latest features and minimizing operational risks and costs associated with aging equipment.

Program Overview

Our phased system upgrades program allows plant owners and operators to extend the life of their TrojanUV3000Plus systems by offering a strategic alternative to complete system replacement by gradually upgrading core components:

- **System Control Center (SCC) Upgrades:** Enhance real-time monitoring, operational efficiency, and compliance with industry standards. The SCC acts as the central hub for system operations, ensuring efficient and reliable UV disinfection.
- **Hydraulic System Center (HSC) Upgrades:** Optimize the ActiClean sleeve wiping system, improving UV treatment efficiency while minimizing maintenance downtime. The HSC integrates pumps, valves, and control systems for hydraulic operations.
- **Bank of Modules Upgrades:** Integrate latest Gen 3 TrojanUV3000Plus modules featuring Integra™ technology for enhanced lamp and sleeve assembly providing plug & play compatibility, ensuring maximum UV penetration and operational reliability.

Maximizing Value - Enhance System Performance, Efficiency, and Longevity

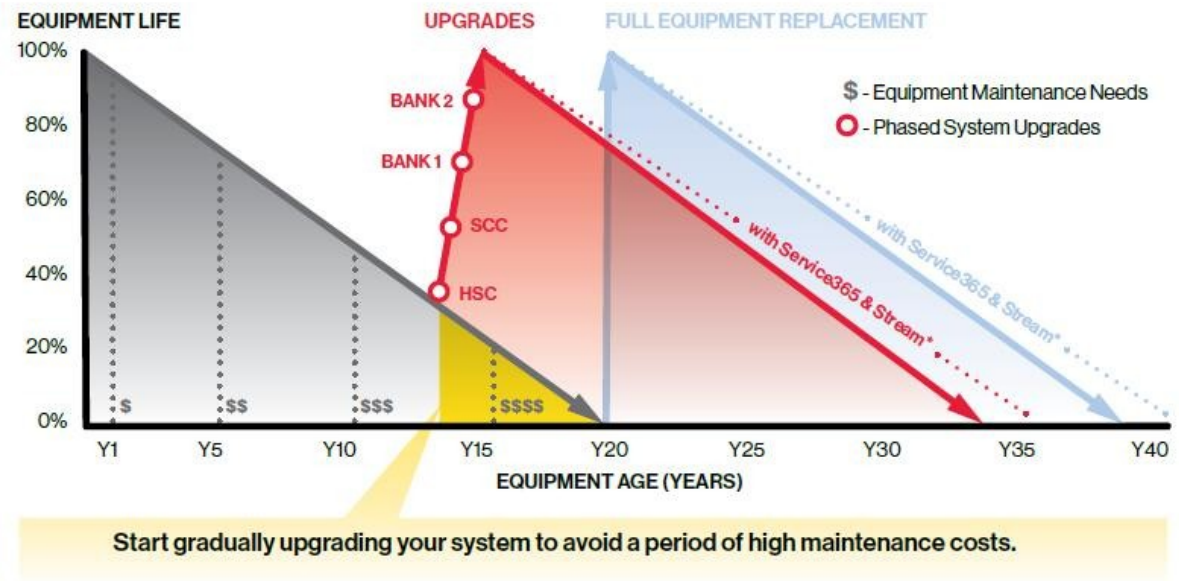
Core component upgrades represent a cost-effective alternative to full plant replacements, with potential costs offset when strategically timed. Upgrade your TrojanUV3000Plus system with advanced SCC, HSC and UV modules to realize a multitude of advantages.

- **Extend System Lifespan**: Modernize core components to prolong the operational lifespan of your TrojanUV3000Plus system.
- **Boost Operational Efficiency**: Benefit from advancements in SCC, HSC and modules, reducing downtime and operational costs associated with maintenance and failures with advanced cleaning systems and modular, plug & play installation.
- **Ensure Compliance**: Upgrade to meet regulatory standards and operational requirements with state-of-the-art components and integrated technology.
- **Improved performance and reliability:** Latest SCC, HSC, and UV modules ensure peak performance and reliability, meeting or exceeding industry standards.
- **Future-Proof Your Investment**: Stay ahead with the latest advancements, ensuring your system remains efficient and effective in the face of future technological advancements.

Phased Upgrades: Illustrative Example

The below chart illustrates an example of the aging trajectory of a TrojanUV3000Plus system over its lifespan. As equipment ages from year 1 to year 20, the percentage of remaining operational life gradually decreases, while maintenance costs tend to increase. The chart highlights the effectiveness of Trojan's phased upgrade program, demonstrating how strategic upgrades - such as replacing the HSC, SCC, and bank of modules within a span of 1 – 3 years when the system is over half of its lifespan – can significantly extend and restore its operational life.

In addition to phased upgrades, Trojan Technologies offers Service365™, providing comprehensive service level agreements to ensure ongoing system performance and reliability. Through Stream™ connection, our remote digital monitoring service, Trojan maintains continuous oversight of your UV system, proactively identifying issues and optimizing performance to further extend equipment lifespan. Please contact your Trojan Account Manager for more information.



***Service365™:** Multi-year preventative maintenance service-level agreements. **Stream™:** Remote monitoring digital platform

Choosing Trojan Technologies phased system upgrades program is a proactive step toward maintaining the effective and reliable performance of your UV disinfection system. The TrojanUV3000Plus® has consistently demonstrated reliability and effectiveness, underscored by our commitment to continuous improvement through the evolution and release of our next-generation products.

By upgrading your Gen 2 TrojanUV3000Plus system to align with the latest Gen 3 standards, featuring enhanced features designed to streamline operations and address asset aging and obsolescence concerns, you can renew your existing system's capabilities. This approach ensures sustained reliability, operational efficiency, and compliance with evolving industry standards, thereby safeguarding your investment for the future.

Product Information

The TrojanUV3000Plus® has been a cornerstone of the Trojan Ultraviolet product line for over 20 years, renowned for its reliability and effectiveness in wastewater treatment. The product has been continuously refined and improved, the latest generation was released in 2022, integrating advanced features overtime across all components, including System Control Center (SCC), Hydraulic System Center (HSC), and UV modules.

Validated Performance and a Lifetime Performance Guarantee

The TrojanUV3000Plus® system, across all generations, is built upon rigorous real world microbial testing and third-party bioassay validations that conform to USEPA and NWRI guidelines.

- Each system is designed and sized to ensure optimal performance and regulatory compliance.
- Includes extended warranty with a validated end-of lamp-life factor maintaining 98% transmittance after 12,000 hours.
- Ensures sleeve transmittance of at least 95% through the ActiClean® sleeve cleaning technology.

Customer benefits:

- **Compliance Assurance:** Conforms to industry standards, provides confidence in meeting permit requirements and regulatory compliance.
- **Peace of Mind:** Backed by our unmatched Lifetime Performance Guarantee, leveraging insights from over 2500 TrojanUV3000Plus installation combined with our validated performance to ensure continued performance excellence.

Amalgam Lamps

- The latest generation of UV3000Plus utilizes the same proprietary 250-watt amalgam lamps and electronic ballast technology for stable UV output using less energy than competitive technologies.
- Third party validated to maintain 98% UV output after 12,000 hours, ensuring consistent UV dose delivery.

Customer Benefits: Reliable dose delivery and prolonged lamp life, and lower lamp count.

Integra™ Lamp Assembly



The traditional method of replacing UV lamps involves purchasing lamps, quartz sleeves, and fittings separately, which are then assembled on-site by operators. This process is not only time-consuming but also complex. To address this issue, Trojan Technologies has innovated with its patented Integra lamp technology. This innovative design features a factory-sealed integrated lamp and sleeve assembly, where the lamps and sleeves are pre-assembled and sealed into a single unit complete with easy screw caps. This integration not only simplifies the replacement process by reducing the number of parts to manage but also cuts lamp installation time by more than 50%. Additionally, the entire unit is recyclable without the need for disassembly, enhancing both convenience and environmental sustainability.

Customers Benefits: Fewer breaks and leaks, easier maintenance, simple to order & inventory.

Automatic Lamp Sleeve Cleaning

The ActiClean® system, unique in the industry, uses both mechanical wiping and chemical cleaning which cleans 50% more effectively than mechanical wiping alone ensuring consistent UV dose delivery. The ActiClean® system has been third party validated to maintain 95% UV transmittance without disruption to operations.

The latest generation UV modules have improved cleaning system with longer canisters that hold twice the amount of cleaning gel for fewer refills and longer contact time during wiping from improved cleaning performance. Hose connections are larger and stronger, and the canister layout is optimized reducing the potential for clogs and breakage.



Customer Benefits: Minimized downtime for cleaning operations, consistent UV performance, and reduced maintenance efforts.

Modular Design with Plug & Play Compatibility

The TrojanUV3000Plus® is designed for easy maintenance and simple installation through its modular components. The self-contained 6P rated UV modules protects cables, lamps and electronic ballasts from effluent and UV light while using convective natural cooling to ensure lasting performance.

The latest generation modules are directly compatible with 2007 generation TrojanUV3000Plus systems. The module is factory assembled and tested, allowing for seamless installation and replacement in minutes.

Customer Benefits: Lower installation costs, minimal start-up issues, and product longevity.

Support and Service

We are your partner in UV treatment. Plant owners and operators have access to our comprehensive support including 24/7 technical service assistance 24/7 through a toll-free number, local service, analytical services, in-stock replacement parts, and a global network of trained and certified technicians.

You can leverage the experience of Trojan with guided troubleshooting and continuous support to maximize uptime and efficiency.

UVSystem Design Info

The updated TrojanUV3000Plus core components will support the exiting UV systems treatment objectives at Turkey Creek WWTP Joplin MO summarized below.

Peak Design Flow:	**35 MGD**
UV Transmittance:	**65 %** (minimum)
Total Suspended Solids:	**30 mg/l** (tss mg/l average basis, grab sample)

Treatment Limit:	**126 per 100 ml,** based on a day **30 days** of consecutive daily grab samples
Design Dose:	**45 mJ/cm2** (bioassay validated)

The new modules will have the same configuration as your existing system which is detailed below.

TrojanUV3000Plus 2022 System Configuration	
Number of Channels:	**2**
Total Number of Banks	**4**
Number of UVI Sensors	**1 per bank**
Number of Modules per Bank	**9**
Number of Lamps per Module	**8**
Lamp Spacing	**4** inch
Total Number of Integra Integrated Lamp Assemblies	**288**

Scope of Supply/Work

Following is the scope of the proposed phased system upgrades plan:

S.No.	Existing Component Name & Model	Recommended Upgrade Component Name & Model	Benefits
1	Hydraulic System Center – Model: Gen 3 Compact HSC	Hydraulic System Center – Model: Replacement Kit to upgrade to Gen 4 2022 (1-8 banks per HSC) with Wago controller	Upgrade to current technology

2	System Control Center **Controller Type:** Allen-Bradley L35 **HMI:** AB Panelview Plus 7 (7") Indoor Rated (or) Other	System Control Center **Controller Type:** Allen-Bradley Company Logix L33ER **HMI:** AB PanelView Plus 7 (12" Outdoor rated)	Replace obsoleted PLC
3	**Bank 1 & 2:** Modules – 8 lamp 4" spacing, 9 modules per bank	Bank 1 & 2 Modules with Integra Lamp/Sleeve technology	Latest technology & fewer parts to track, remove, and reassemble. Factory-sealed lamp/sleeve assembly; Plug & Play Install – reduces the risk of moisture/water intrusions that causes corrosion and damage to electrical components. Easier integration and maintenance
4	**Bank 3 & 4:** Modules – 8 lamp 4" spacing, 9 modules per bank	Bank 3 & 4 Modules with Integra Lamp/Sleeve technology	

Pricing

	Item Description	QTY	Price (USD)
1	**Hydraulic System Center (HSC)**		
1.1	G4 2022 with Wago PLC Replacement Kit	1	$7,900
1.2	Programming	1	included
1.3	Installation & Start-up	1 days	$1,695.00
		TOTAL for HSC Upgrade	$9,595.00
2	**System Control Center (SCC)**		
2.1	AB L33ER PLC AB Panelview Plus HMI	1 1	$28,525.42 $8,500.80
2.2	Programming	1	Included
2.3	Installation & Start-up	1 days	$1,695
		TOTAL for SCC Upgrade	$38,721.22
3	**Bank of Modules (for each bank)**		

3.1	TrojanUV3000Plus Modules (including UVI sensors as configured)	8 standard modules / bank 1 UVI sensor module / bank	$12,312 per standard module $14,550 per sensor module
3.2	TrojanUV3000Plus Spare Module	0	
3.3	Spare Integra Lamp Assembly 4 Pack (PN 316670-004)	3	$5,526.23
3.4	Start Up and Installation	2 days	$3,390
		TOTAL per Bank of Modules Upgrade:	$121,962.23
		No. of Banks/Channel	2
		No. of Channels	2
		TOTAL for ALL BANKS Module Upgrade	$487,849
Total for Phased System Upgrades (incl. HSC, SCC, and all bank of modules)			$536,164.92 Freight cost – will be applicable

This price excludes any taxes that may be applicable and is valid for 90 days from the date of this letter.

Quoted equipment is supplied as loose shipped equipment. All electrical, mechanical or civil works is within the Buyer scope of supply along with any item not mentioned within the Trojan scope outlined above.

Installation and start up services are based on estimates of typical site layouts and operating conditions. If actual labor time substantially vary, we will calculate additional work based on standard labor rates.

Equipment Warrantees

1. Trojan Technologies warrants all components of the system (excluding UV lamps) against faulty workmanship and materials for a period of 12 months from date of start-up or 18 months after shipment, whichever comes first.
2. UV lamps purchased are warranted for 12,000 hours of operation or 3 years from shipment, whichever comes first. The warranty is pro-rated after 9,000 hours of operation. This means that if a lamp fails prior to 9,000 hours of use, a new lamp is provided at no charge.

Electronic ballasts are warranted for 5 years, pro-rated after 1 year.

Delivery

Brochure

Terms and Conditions