INDUSTRIAL UV SYSTEMS

Avant™ Series

State-of-the-art UV Water Treatment System for Ultrapure Water (UPW) Applications

Aquafine®



MEDITECNA
Instrumentación | Proyectos | Servicios

Aquafine® Avant™

Improved Performance

Up to three-times more flow compared to the prior series system to satisfy the stringent low level TOC requirement for high flow UPW plants.

Compact Footprint

Use of high-performance lamp and sleeve material reduces the footprint by up to 75%—lowering the installation costs and maintenance expenses.

User-friendly Operator Interface

Intuitive interface enables at-a-glance system status checks. Avant makes the job easier for engineers and plant operators.

Predictive Diagnostics

The advanced control features provide predictive maintenance alerts when the lamp approaches end of lamp life and shows unusual power consumption or operating pattern to help in preventing downtime.



Meet Stringent TOC Reduction with a Small Footprint, Predictive Diagnostics and Significant OPEX Savings



The Avant series is a highly advanced product line that provides robust and reliable TOC reduction in up to a three times smaller footprint than prior series. The Avant Series utilizes less energy and provides full flexibility for skid-mounted designs, with the ability to mount six reactors in up to 75% smaller footprint compared to our previous offering.

Fewer UV units to maintain and significantly less lamps result in extremely low power consumption.

Avant's advanced control features provide predictive maintenance alerts to help prevent unplanned maintenance costs and downtime. Monitoring lamp characteristics of individual lamps, the system alerts plant operators when the lamp approaches end of lamp life, and shows unusual power consumption or operating patterns.

Global Support with Local Service
Aquafine's extensive network of local certified service providers offers fast response for service and spare parts for the microelectronics industry.

The Avant specializes in reducing trace chemicals; total organic carbon (TOC), chlorine and chloramines.

Avant incorporates innovations, and best-in-class components, to reduce the total cost of ownership and drastically simplify operation and maintenance. It is the ideal solution for UPW plants in need of revolutionary UV technology.

Avant is an advanced UV system designed with decades of experience in TOC applications. There are two models offered for TOC reduction: Avant and Avant High Performance (HP). Avant High Performance utilizes a unique lamp and sleeve combination that helps to significantly improve the unit's overall performance.

Ultraviolet (UV) Technology

Ultraviolet (UV) light is a versatile, reliable approach to address numerous requirements in industrial water applications

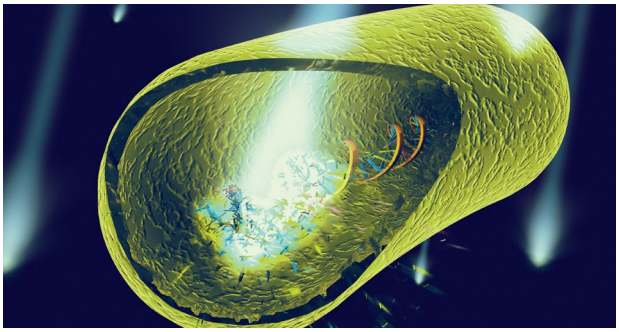
UV for TOC Reduction

UV is used for the effective reduction of organics, commonly referred to as TOC (total organic carbon). Reduction of TOC is accomplished by incorporating a 185 nm UV system, appropriately designed and sized, as well as strategically located in conjunction with other equipment. Carbon dioxide is a typical by-product of a TOC reduction process, resulting in a drop in the resistivity of water.

While most organic molecules are oxidized into carbon dioxide and water molecules, other more resistant species become weakly ionized or charged, after absorbing the UV. This is why polishing deionization (DI) beds are typically placed downstream of the TOC reduction units, so that they not only remove the charged/ionized organics, but also restore the resistivity to the water.

UV for Microbial Inactivation

This is the most common application of UV in water treatment. A microelectronics water system could have several locations where UV equipment would be installed. Some typical locations would be post-carbon filter and pre-RO (reverse osmosis). When installed downstream of the carbon bed and/or directly upstream of the RO unit, a UV system can significantly reduce the microbial counts by inactivating the microbes present in the influent stream. Inactivation is also recommended for the process distribution loop and prestorage tank.



UV light attacks the microorganisms genetic material (DNA) preventing replication and infection.

UV for Chlorine and Chloramines Reduction

While the addition of chlorine and chloramines to city water may control microbial contaminant levels, they have undesirable effects on the degradation of membrane filtration or RO. Popular methods of removal, such as carbon beds or chemical injection, have proven to be problematic. Sodium metabisulfite involves replacing one chemical with another and creates food for microorganisms, while carbon beds can be inefficient, vulnerable to channeling, and provide breeding grounds for microorganisms. UV solves these problems while reducing chlorine, using a small footprint, and reducing maintenance costs.

Aquafine Performance Guarantee and Support

As an added incentive to keep your Aquafine equipment operating at its optimum level, Aquafine provides a Lifetime Performance Guarantee for the equipment. A Lifetime Performance Guarantee means that the UV system will achieve the targets for which it was designed and sized on the original sales order of the equipment, which considers operational parameters such as UVT of the fluid, maximum flow rate, operating pressure, fluid temperature, among others.

A Lifetime Performance Guarantee will only be applicable with the use of genuine OEM replacement parts. This guarantee is valid for the life of the equipment and it is available for both new and existing equipment when applicable conditions are met.



Customer support is available from our Authorized Distributor Network and from our 24/7 Technical Service Group. For questions regarding your application needs, please contact your local Authorized Distributor or Aquafine for more information.

*Required dose may vary depending on application. Please contact Aquafine for proper sizing.

System Design

State-of-the-art UV water treatment system for UPW applications

Programmable Logic Controller (PLC)

The controller continuously monitors and controls UV system functions including safety conditions. Off-spec conditions will generate critical and non-critical alarms.

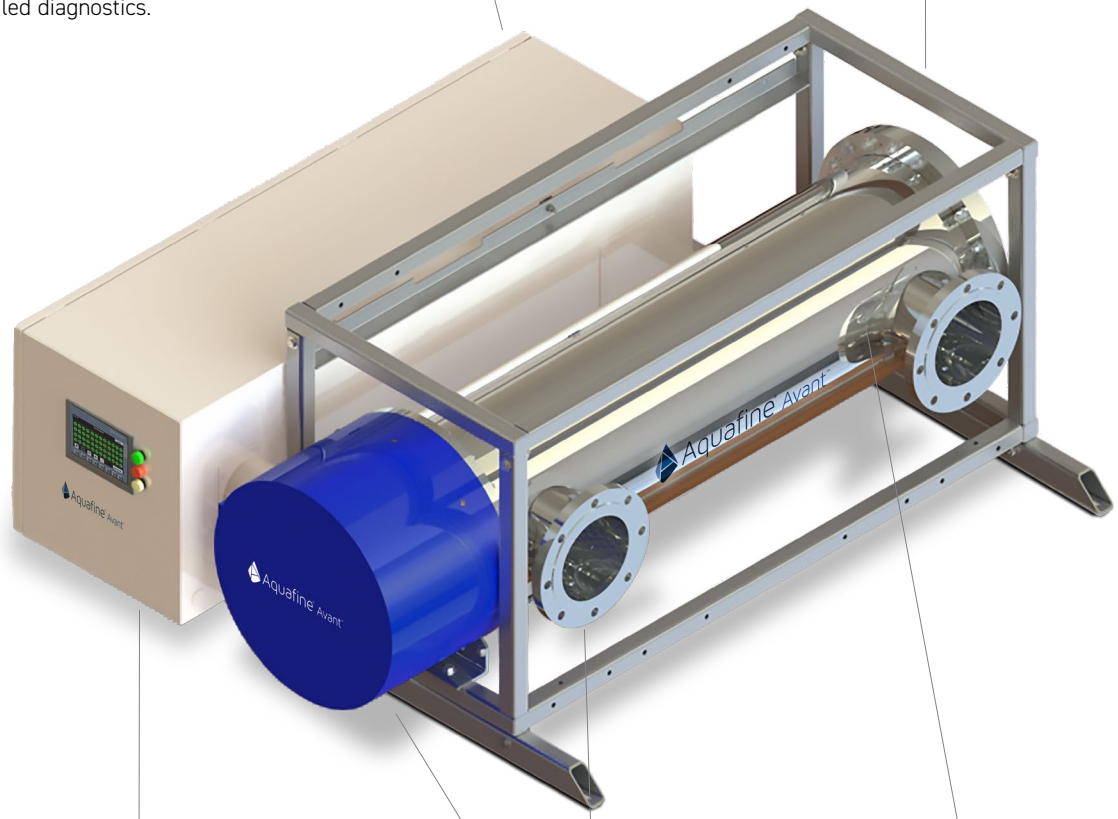
An intuitive 7" touch-screen HMI allows the operator to configure various settings with ease. The easy-to-navigate HMI screen displays the status of individual lamps including detailed diagnostics.

Configurable Inlet/Outlet

Water can flow in either direction allowing the units to adapt to customer's piping requirements.

UV Intensity Sensor*

UV sensors measure the intensity of UV light within the chamber while the system is in operation: this sensor monitors the performance of the UV Lamps and is supplied.



Panel Enclosure

The painted carbon steel variant is a Type 1/IP51 panel. The panels are available in skid-mounted or stand-alone variations.

Stand-alone panels can be upgraded to Type 12/IP54 or a stainless-steel Type 4X/IP56 version.

End Cap

The end cap protects and isolates connections for components such as lamps and sleeves. Power is automatically disconnected if the end cap is removed thereby ensuring a safe working environment for operators.

UV Chamber

Electropolished 316L stainless steel chamber to fit into existing piping galleries or tight spaces.

Lamps

High efficiency, high output lamps are energy efficient, to provide superior system performance, and save operating costs due to reduced electric consumption. Single ended lamps are located within protective quartz sleeves with easy access from the service entrance.

* Part of upgrade package

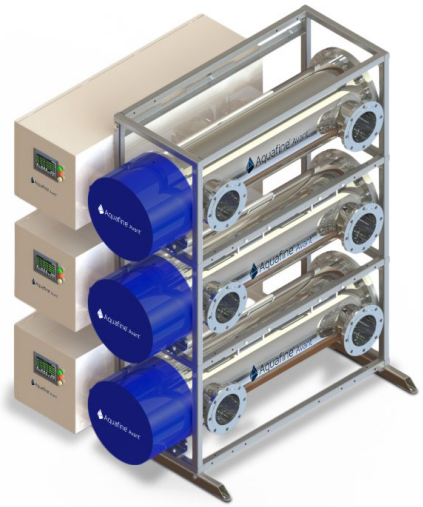
High Performance, Compact Footprint

Save space, and treat more flow

Avant-High Performance Series from Aquafine is a cutting-edge TOC reduction product line that provides improved performance up to three times our previous series and most conventional UV TOC products.

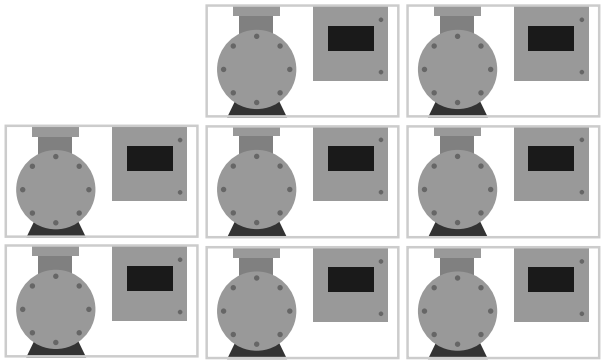
The reduction in UV units not only helps to save in upfront capital investment, but also significantly reduces the installation expenses.

Avant's modular skid configuration allows multiple units to be stacked, taking advantage of Aquafine's technology in a compact and easily expandable footprint.

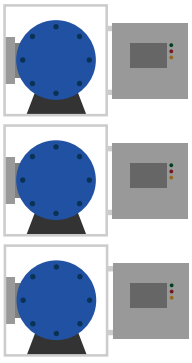


Avant High-Performance (HP) series uses **special grade quartz sleeve** and lamps that significantly **reduce** the number of UV units by **up to 75%.**

8 X SCD-H



3 X Avant HP





62.5%
Footprint Savings!

Improved Performance

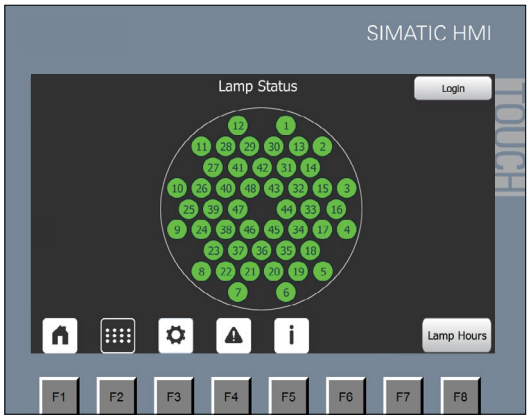
Up to three-times more flow compared to the prior series systems.

Compact Footprint

Use of high-performance lamp and sleeve material reduces the footprint by up to 75%—lowering the installation costs and maintenance expenses.

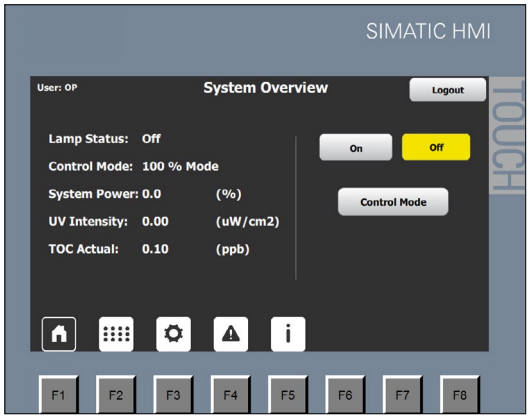
State-of-the-Art Controls and Predictive Maintenance

User friendly operator interface with touch screen for easy operation and monitoring



Advanced Lamp Control

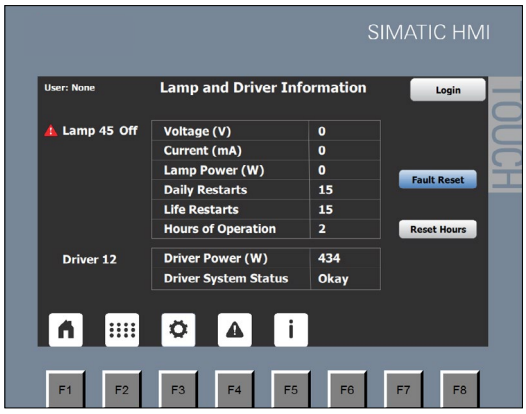
The system control for the Avant allows for the system to be operated in three modes; 100% On, Manual Dimming and Grouping. The Grouping mode allows a set number of lamps to be turned off, allowing treatment to be optimized under changing conditions. This enhanced power control allows operators to meet their treatment targets while minimizing their electrical consumption and operating expenses.



Smart Driver Technology

The advanced controls and smart driver technology are combined for enhanced diagnostic capabilities and equipment protection in the event of a fault.

The smart driver recognizes lamp failures, preventing the driver from being damaged by trying to turn on a lamp that is no longer operational. Individual lamp and driver monitoring, including power draw information, allows operators to better troubleshoot and stay ahead of unplanned failures.



Remote System Monitoring

In addition to the Predictive Maintenance Tool and Smart Driver Technology, the Avant series offers a comprehensive view of lamp and driver health for operational safety and evaluating condition of the system.

Communication protocols included in the base models enable users to continuously monitor all available system information from a remote location, which reduces operational expenses and allows for immediate action if an issue arises.

User-friendly Operator Interface

Intuitive interface enables at-a-glance system status checks. Avant makes the job easier for engineers and plant operators.

Predictive Diagnostics

The advanced control features provide predictive maintenance alerts when the lamp approaches end of lamp life and show unusual power consumption or operating pattern to help in preventing downtime.

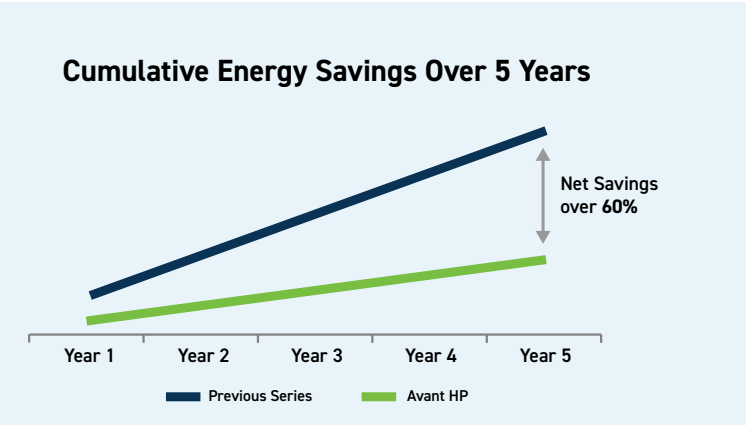
Lower Operating and Maintenance Expense

Significant reduction in number of lamps to replace and maintain on annual basis

We understand that increasing flow requirements creates the need for larger UPW plants, which increases the overall operating expenses. The extremely efficient lamp technology significantly cuts down on the number of lamps needed to cover the needs of high flow UPW plants. This allows the plant operators to significantly save on energy expenditures, lamp replacement costs, and maintenance expenses.

In the comparison scenario below, our new product line, Avant only required 37.5% of lamps or power consumption compared to the old product line (SCD-H). Avant met the same performance level to reduce TOC levels below 2 ppb with significantly lower power consumption.

	SCD-H	AVANT
Unit Quantity	8	3
Annual Power Consumption	531,050 KW	209,121 KW



Aquafine Invests in Innovation

Aquafine® Colorguard® UV Lamps

Optimize TOC reduction with Aquafine Colorguard UV lamps featuring high-quality synthetic quartz. The performance of a UV-based TOC reduction system can be greatly affected by the choice of quartz material used in the lamps and sleeves. High quality synthetic quartz, with appropriate production methods, can result in significant decreases in required system size and power. Aquafine Colorguard UV lamps offer best-in-class performance. The percentage of genuine Aquafine UV lamps which fail is less than .05%–Aquafine's record is unmatched.



High Energy Savings

Lower Lamp Replacement Costs

Easy Maintenance

Proven Core Components

AVANT SERIES | TOC REDUCTION

MODEL NAME		AVANT 20	AVANT 36	AVANT 44	AVANT 48
LAMPS					
185nM		Standard			
Lamp Power		155 W			
Quartz Material	Avant	Natural			
	Avant HP	Synthetic			
Number of UV Lamps		20	36	44	48
Lamp Type		Low Pressure High Output			
FLOW RATE					
Maximum Hydraulic Flow gpm (m3/hr)		386 (87.6)	867 (196.9)	867 (196.9)	1500 (340.6)
Minimum Hydraulic Flow gpm (m3/hr) at 25deg C		1.5 (0.36)	2.4 (0.54)	2.9 (0.66)	3.2 (0.73)
For Application Specific Sizing, please contact Trojan Technologies					
TREATMENT CHAMBER					
Chamber Length Inches (mm)[1]		79 (2006)			
Chamber Diameter Inches (mm)		12 (305)	14 (356)	16 (406)	18 (457)
Standard I/O Size Inches (mm)		4 (101)	6 (152)	6 (152)	8 (203)
I/O Type		Standard: ANSI Custom: Sanitary			
Pressure Rating		Up to 150 psi [PN10]			

ELECTRICAL REQUIREMENTS								
Electrical Supply	System Power (kVA)	System Current (A)	System Power (kVA)	System Current (A)	System Power (kVA)	System Current (A)	System Power (kVA)	System Current (A)
208Vac, 3PH, 50/60Hz 3W + GND	3.9	12	6.8	19	8.3	24	9	25
220-240Vac, 1PH, 50/60Hz, 2W + GND	3.9	18	6.9	31	8.3	38	9	41
240Vac, 3PH, 50/60HZ, 3W + GND	4	11	6.9	17	8.3	21	9.1	22
380/220Vac, 3PH, 50Hz, 4W + GND	3.9	7	6.9	11	8.3	13	9	15
400/230Vac, 3PH, 50Hz, 4W + GND	3.9	6	6.9	11	8.3	13	9.1	14
415/240Vac, 3PH, 50Hz, 4W + GND	4	6	6.9	10	8.3	12	9.1	14
440Vac, 3PH, 50/60Hz, DELTA	4	7	6.9	12	8.3	15	9.1	16
480/277Vac, 3PH, 60Hz, 4W + GND	4.3	6	7.2	9	8.7	12	9.4	12

CONTROL POWER PANEL - MODULAR (STANDARD)	
Material & Rating	Standard: Painted Carbon Steel (TYPE 1 - IP 51)
Dimensions H×W×D Inches (cm)	23 × 66 × 23 (59 × 168 × 59)

CONTROL POWER PANEL - STAND ALONE (OPTIONAL)			
	MATERIAL AND COATING	**COOLING**	**INSTALLATION LOCATION**
STANDARD	Painted Carbon Steel (UL or CE TYPE 12 - IP 54)	Forced Air and Vent	Indoor Only
OPTIONAL	304 Stainless Steel (UL or CE Type 4X - IP 56)	Forced Air and Vent, With Shroud	
Dimensions H×W×D Inches (cm)	65 × 35 × 19 (166 × 90 × 50)		
Conduit Length	Standard: 9 feet Optional: 15 feet		
Certifications			

NOTES: Dimensions are for informational purposes only and not to be used for design. Refer to system layout drawings.
1. Overall Length with End Cap Installed

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

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