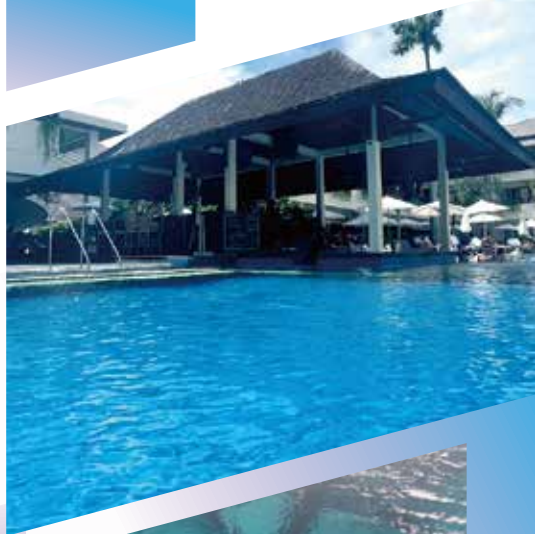




CRISTAL MATERIALS CORPORATION



UV-C LED Water Sterilization System

99.9%
Sterilization
Rate

2025 AQUATECH AMSTERDAM –
INNOVATION AWARD NOMINEE

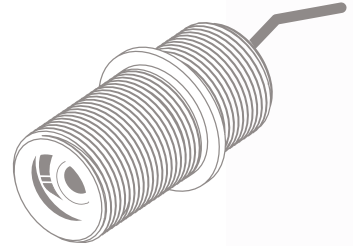


**Effectively Eliminates Pathogenic Microorganisms and
Purifies Water Quality**

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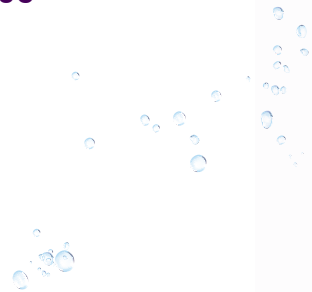


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UV-C LED Water Sterilization System



Operating Principle

01 Contaminated water enters

02 UVC-LED light sterilization destroys bacterial DNA

03 Purified and safe water is discharged



Quartz Optical Lens & Related Description

Silica Optics



Water Proof Module

UV-C LED

Water Cooling System



Patented Optical Design

Food Grade SUS 316

TW / USA Patents of Invention



Tested by authoritative laboratories SGS and SUPER LAB, the system demonstrates excellent sterilization performance under various flow rates, truly achieving “residue-free, instant sterilization” to ensure the safety of every drop of water.

Test Reports



Image	Model	Flow Rate	<i>E. coli</i>	<i>Staphylococcus aureus</i>	<i>Pseudomonas aeruginosa</i>
	WS G4	15 LPM	99.9%	99.9%	99.9%
	WS T5	75 LPM	99.9%	99.9%	99.9%



E. coli



Staphylococcus aureus

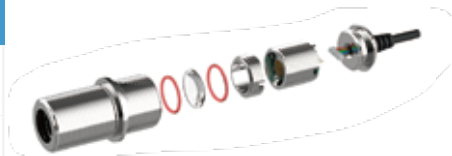


Pseudomonas aeruginosa

Eco-Friendly Design

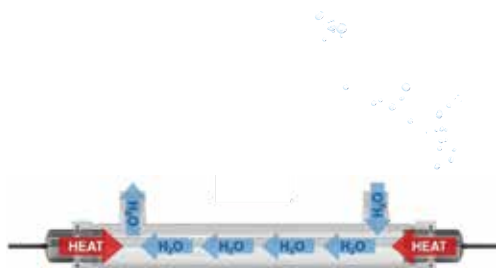
The NOVATICS UV-C LED Water Sterilization System features low energy consumption and instant activation. Compared with mercury UV lamps, it effectively reduces carbon emissions. Our mercury-free design prevents contamination, complies with global environmental standards, and ensures safe, sustainable operation.

Image	Power Consumption	Size	Lifetime	Toxic Material	Recycling Cost
 NOVATICS WS CORE				 MERCURY FREE	
 Mercury UV Lamp				 Hg	



Water Cooling Design

Our UV-C LED system enhances sterilization efficiency and reduces heat generation through advanced optical design. It adopts an internal water-cooling circulation for high-efficiency heat dissipation, without the need for fans or complex structures. This design stabilizes LED operating temperature, making it ideal for outdoor or high-temperature environments. It effectively minimizes light decay and energy loss, extends lifespan, and maintains consistent sterilization performance.

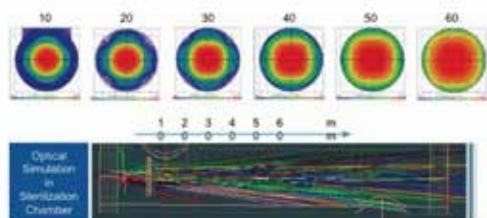


Water-Cooled LED Module

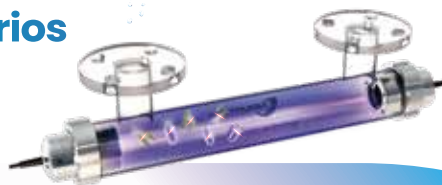
Designed for High-Flow Water Purification

Optical Technology

Through our patented optical design, we effectively amplify the actual irradiation efficiency of UV-C LEDs, precisely directing limited UV-C light to the target area. Compared with conventional UV-C LED systems, our solution offers higher sterilization performance, lower thermal loss, and a more compact structure — making it ideal for space-limited environments or applications requiring long-term stable operation.



Application Scenarios & Model Selection



Model:
WS T5



Model Reference Guide



WS G4

03 | 04



WS T5

02 | 03 | 05 | 06



WS G8

01 | 03 | 04 | 05 | 06



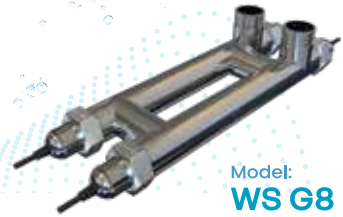
WS T30

02

A Single Glass of Water — A Brand Customers Can Trust

In beverage shops, ice makers can easily breed bacteria and algae due to poor water quality or aging pipelines, affecting ice hygiene.

In the food service industry, contaminated pipes and water sources may also compromise the safety of drinking water. If left uncontrolled, such issues can raise consumer concerns about the safety of beverages and food.



Model:
WS G8



One Solution for All Water Problems



Lower Cost



Energy Saving



Compact &
Easy to Install



Effective
Sterilization



ESG Friendly

Every Drink Begins with Clean Water



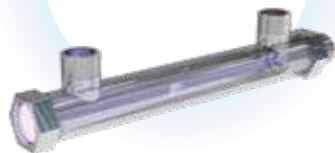
Effective Sterilization —
Extends Shelf Life



Residue-Free —
Safe for Direct Consumption



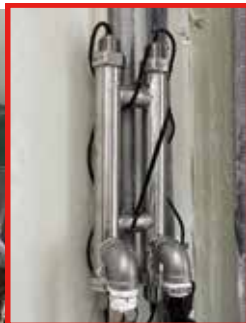
Our UV-C LED water sterilization system provides residue-free, high-efficiency disinfection to ensure pure and safe water quality, helping improve beverage quality and build consumer trust.



Case Study: Renowned Beverage Chain — Chiayi



Case Study: Tapioca Pearl Factory — Sanjhih



Eliminate Circulating Water Bacteria — Enhance Brand Image

Our water sterilization system effectively eliminates harmful bacteria and pathogens from aging pipelines, ensuring safe water for restaurants. It provides hygiene protection for customers and enhances the brand image of dining establishments.

Renowned Italian Restaurant in Zhunan



- 1.Reduce Food Contamination
- 2.Ensure Food Safety

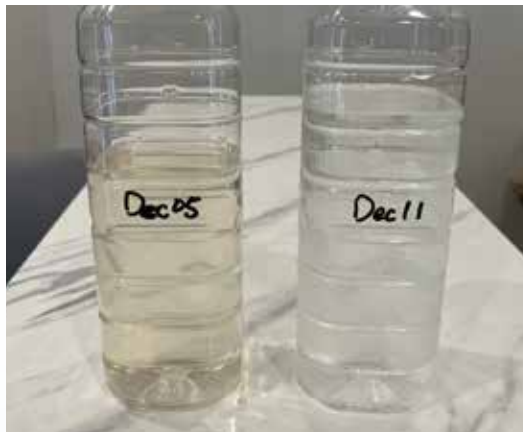
Famous Conveyor Belt Sushi Restaurant — Raw Fish Processing Water Sterilization



Pure Water — Keep Seafood Fresh

Water quality determines seafood freshness and customer trust.

UV-C LED technology requires no chemicals and effectively removes most microorganisms, improving aquatic survival rates, stabilizing water quality, and reducing chemical usage.



On-site Water Sampling Comparison — One Week

After one week of use, the water clarity improved significantly.

Case Study: Yilan Samsung Hydroponic Farm

Less Pollution, Higher Yield
Stable Water Quality · Bacteria Control ·
Reduced Chemical Use

Clean water quality is the key to a successful hydroponic farm.

UV-C LED effectively suppresses bacterial contamination, maintains stable water conditions, and promotes healthier crops with more consistent yields.



Water Bacterial Contamination

Sterilization Effect Verification

Our UV-C LED water sterilization system effectively removes bacteria, viruses, and algae, keeping the water clear and odor-free while reducing disease risk.

Compared with traditional UV lamps, it is more energy-efficient, durable, mercury-free, and eco-friendly.

Suitable for both freshwater and marine aquariums, it can be integrated with filtration systems to maintain safe, low-maintenance water quality.



**Reduce
Chemicals**



**Save
Energy**



**Longer
Lifespan**



**Easy
Installation**



**High
Efficiency**



**Eco-
friendly**

**Algae Removal ·
Sterilization ·
Residue-Free**



Under
microscope

Inlet



Under
microscope

Outlet

Brand Comparison

Image	Efficiency	Size	Lifespan	Toxic Materials	Sterilization Performance
 NOVATICS WS CORE				 MERCURY FREE	 High
 Mercury UV Lamp				 Hg	 Low

Case Study:

Taoyuan Landscape Pond

Algae Removal and Water Purification

Effective Algae Control in 3 Days



Before Treatment



Algae and bacteria growth cause turbid water and unpleasant odor.

24 hours



Algae began to decrease, water quality gradually improved.

48 hours



Water became noticeably clearer, with increased transparency.

72 hours



The bottom became visible, and most green algae disappeared.

96 hours



Water remained clear and stable, maintaining a healthy environment.



Under microscope



Under microscope

Case Study: Longtan Landscape Pond / Factory Fish Pond

From murky green to crystal clear in an instant

The cause of green algae and murky water is the rapid growth of algae fueled by nutrients such as fish feed, waste, and fertilizers, combined with sunlight exposure.

Adding plecos (algae-eating fish) to the pond can naturally create a self-purifying ecosystem, helping control algae and maintain clear water. If needed, we can provide complete solutions and professional training to help you build a healthy and stable aquatic environment.



3m³ Water Volume

Before



After (3 Days)



1 Month

The water is clear, though some green algae remain at the bottom.



2 Month

Most green algae have disappeared, and the water is clearer.



3 Month

The water is now completely transparent and crystal clear.

Case Study: Kaohsiung Korean School

Green Water Saver —
Guardian of Water Quality



Before Use

A large amount of algae grew in the water, causing a foul odor and leading to the death of aquatic organisms.



Day 2

The algae population decreased significantly, the water gradually became clearer, and the pond condition steadily improved.



Day 3

The water became completely clear, aquatic life returned to normal, and the algae were effectively controlled.



Case Study: Tongxiao Taiwan Salt – Yanzong Landscape Pond

Rapid Purification — Creating a
Pure Water Environment

Processed with Two
Sets of T5 Units

40m³ Water
Volume

Before



Water Condition

**Turbid Water, Foul
Odor in the Pond**

1. Water appeared dark and dull.
2. Fish were sluggish and inactive.
3. No improvement despite monthly chemical treatment.



After (2 Month)



Water Condition

**Water Condition
Clear Water, Lively Fish**

1. Water became transparent and the bottom visible.
2. Fish activity increased significantly.
3. No chemical treatment needed; water remained clean and clear.



Before Use

The pond had poor visibility, with a large amount of protein foam and oil film on the surface and thick, sticky water. The fish's body colors were unclear, as if they were covered by an oily film.



After 1 Week

Protein foam was greatly reduced, the surface oil film visibly improved, and water clarity increased significantly.



After 2 Months

After two months of use, the water became clear, and the colors of turtles, koi, and tilapia appeared more vivid. The sticky texture of the water completely disappeared.



After 3 Months

At the Taiwan Salt Tongxiao Tourism Park Yanzong Scenic Pond, after 3.5 months of UV-C LED system operation, the water quality showed excellent improvement.



**Safer with
Less Chlorine**

Case Study: SPA Swimming Pool

On-Site Survey & Preparation

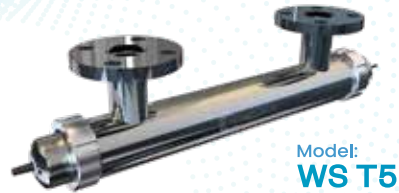
We first send staff to inspect the pool room, confirming the water flow, power, and equipment layout, then prepare the necessary materials for installation.

Professional On-Site Installation

Certified technicians install the UVC equipment on-site and integrate it with the existing system.

System Testing and Adjustment

After installation, water flow and equipment operation are tested and fine-tuned to ensure system stability and optimal sterilization performance.



Case Study: Taitung Chiben Villa





Can reduce chlorine usage in swimming pools by up to 90%.



Sterilization Effect Verification

Before installation, we collect water samples from the swimming pool as the initial baseline.

After installation, samples are collected periodically to monitor bacterial changes, confirming the actual sterilization performance of the UVC system.

This comparison process ensures effective sterilization and gives users greater confidence in water safety.

Without chlorine, UV off
(static for 12 hours)



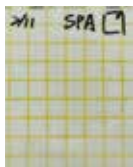
3x10⁶ CFU/mL

UV circulation only
(24 hours)



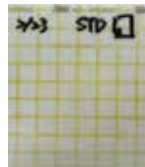
146 CFU/mL

UV circulation
+ 0.5 PPM chlorine



1 CFU/mL

Standard chlorine
usage (1.5 PPM)



2 CFU/mL

Taipei City Public Pool Standard: Bacterial count must not exceed 500 CFU/mL.



Case Study: Yilan — Kelin Aquaculture (Giant Grouper Farming)



Stable Water
Quality



Algae
Control



Reduced
Chemical Use

Sturgeon require high water quality, as pathogens, algae, and harmful microorganisms can affect their health.

Our UV-C LED system provides effective sterilization, ensuring clean water, reducing disease risk, and improving survival rates.



NOVATICS WS T5 — Hatching Rate Increased by 3 Times

Model: 4WS T5

Flow Rate: 3.5 m³/hr



Year	Condition	Egg Count	Hatch Count	Hatch Rate	Illustration
2022	NO UV TREATMENT	10,000 (rough)	353	3.5%	
2023	NOVATICS WS TEST	10,000 (rough)	1,178	11.8%	

Case Study: Jeju Island — Flounder Fish Farm



**Stable Water
Quality**



**Algae
Control**



**Reduced
Chemical Use**



**Increased Fish
Survival Rate**



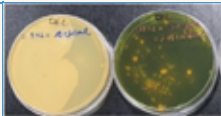
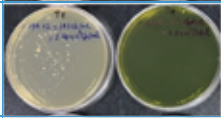
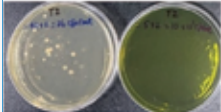
By using our UVC optical water sterilization system, the growth of bacteria and algae in fish ponds can be effectively reduced, minimizing the use of chemicals and promoting fish health.

The system significantly decreases bacterial counts in the water, enhancing water quality stability and fish survival rates, while ensuring food safety.



Model:
WS T5

Verification Test of General Bacteria and Vibrio Counts in Seawater – 2025/07/10 Second Experiment (Taiyo Aquaculture)

		BHI agar	TCBS agar
No UV Setting		Countless	2.78×10^2 CFU/ml
1 UV Setting		3.48×10^3 CFU/ml	2.2×10 CFU/ml
2 UV Setting		8.6×10 CFU/ml	1×10 CFU/ml

Case Study: Hualien Farglory Ocean Park

Aquatic Specialist – Pure Water Protects Marine Life Every Day



Stable Water
Quality



Algae
Inhibition



Reduced
Chemical Use



High Energy
Efficiency



Long
Lifespan



Compact and
Easy Installation



ESG
Friendly



Marine Tank Life
Support System

Aquarium Zone Life Support System



Traditional UV
Lamp Set —
160W



LED UV Lamp Set — 54W

Veterinary Test Result Summary and Comparison

Image	Efficiency	Size	Lifespan	Toxic Materials	Sterilization Performance
 NOVATICS WS CORE	54W	60 cm	1 year	 TOXIC MERCURY FREE	Over 1× higher (p < 0.05)
 Mercury UV Lamp	160W	120 cm	3–4 months	 Hg	Low

Case Study: Far Eastern Memorial Hospital – Medical Wastewater Sterilization



Compliant with ESG
Regulations



Reduces UV Disinfection System
Power Consumption by 60%



Joint Testing by National Taiwan
University Environmental Engineering &
Far Eastern Memorial Hospital



Applications



Food & Beverage

1. Ice-making equipment
2. Beverage dispensers
3. Coffee chains
4. Restaurants and food courts



Food Processing

1. Beverage factories
2. Central kitchens
3. Baking workshops
4. Fish processing plants



Hotels & Swimming Pools

1. Luxury hotels
2. Swimming resorts
3. Water parks
4. Fitness centers



Landscape & Aquaculture Pools

1. Interior design
2. Landscape engineering
3. Aquaculture systems
4. Engineering consultants



Medical & Healthcare

1. Maternity centers
2. Infant swimming pools engineering
3. Long-term care facilities
4. Dental clinics

Comprehensive water quality solutions for dining, food processing, swimming pools, and healthcare—ensuring every drop of water is clean and safe.

NOVATICS WS Series

Modular Design – Easy to Apply and Promote



Consuming Parts
UVC LED Optical Module Consumables



WS G-Series

WS T-Series

Commercial Use

Industrial Use



WS G4



WS T5



WS G8



WS T30



NOVATICS WS Series

UV-C LED Optical Water Sterilization System Features

- 

High-Efficiency Solution
- 

Easy Maintenance & Instant Use
- 

High Energy Efficiency
- 

Sustainable Purification
- 

Optical System Design
- 

Instant Activation
- 

Eco-Friendly & Energy-Saving
- 

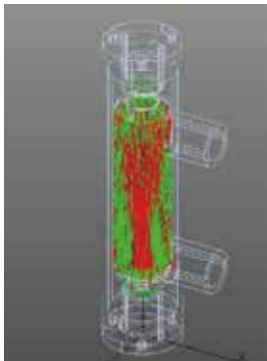
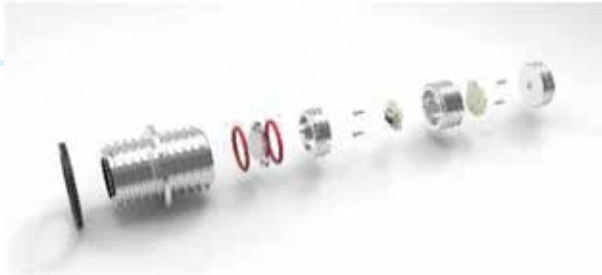
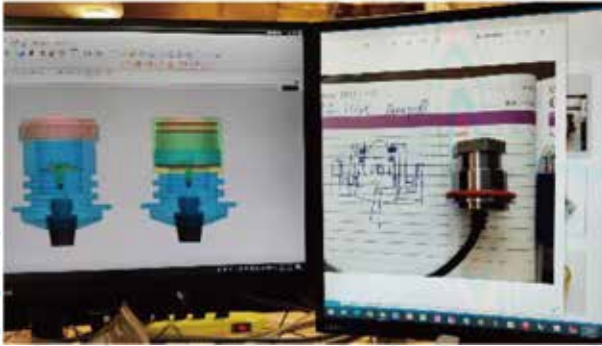
Mercury-Free
(No Mercury Used)



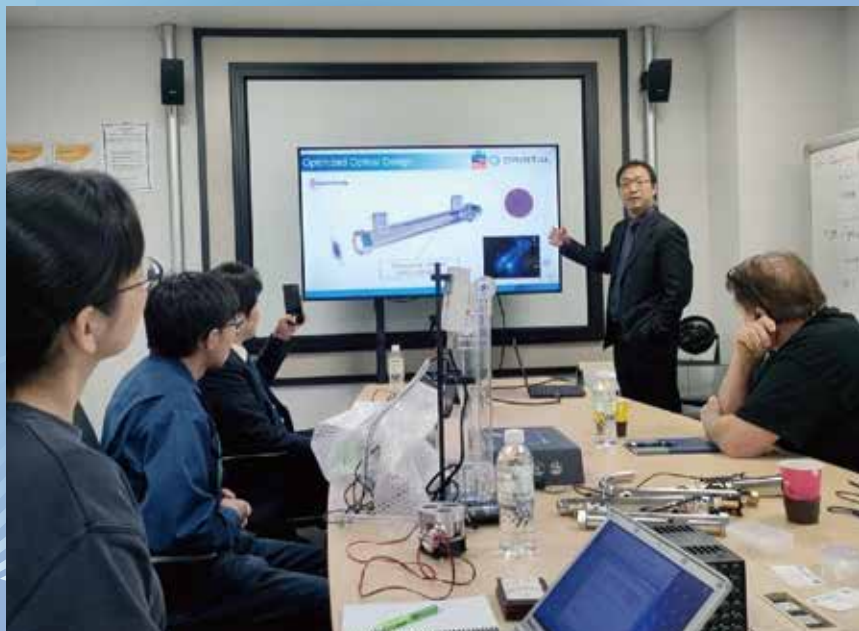
	WS G2	WS G4	WS G8	WS T5	WS T30
Max Flow	7.5 LPM / 0.5 CMH	15 LPM / 1 CMH	30 LPM / 2 CMH	75 LPM / 5 CMH	450 LPM / 30 CMH
LED Wavelength	275 nm				
LED Lifespan	10,000 hrs				
Inlet Diameter	1/2 in male	1/2 in male	3/4 in male	1.5 in flange	3 in flange
Input Voltage	100-240V AC	100-240V AC	100-240V AC	100-240V AC	100-240V AC
LED Power	6W	12W	24W	50 W	360 W
System Weight	1.2 kg	1.5 kg	3 kg	12 kg	75 kg
System Length	35 cm	35 cm	35 cm	60 cm	75 cm
Temp Range	5 – 45 °C				
Max Pressure	50 psi			100 psi	

NOVATICS Team Services

- Optical Design
- Fluid Dynamics Analysis
- Module Design
- Optical Manufacturing
- Mechatronic Integration Design
- System Integration Design



About Us



NOVATICS WS Module adopts an innovative UV-C LED system combined with a patented quartz optical design, effectively enhancing water purification efficiency while maintaining energy-saving performance.

The treated water retains its original taste, produces no ozone or heat, and ensures purity and safety.

The mercury-free structure minimizes environmental impact at the end of its lifecycle.

With a 99.9% sterilization rate, the system provides water safe for direct consumption and complies with multiple international drinking water standards.

The modular design of NOVATICS WS allows flexible expansion according to flow requirements, making it suitable for a wide range of environments and industries, including: households, commercial spaces, medical facilities, laboratories, food processing, swimming pools, aquaculture, aquariums, and wastewater treatment applications.



Eco-friendly Sustainable Energy-saving

High-efficiency Easy Maintenance

Mercury-free Pure Water



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