

**EXPERTS IN  
ULTRAVIOLET  
DISINFECTION**

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**800 WATT AMALGAM RANGE**  
UVLX & UVLW UV SYSTEMS

THE 800 WATT AMALGAM DESIGN PROVIDES THE HIGHEST UV OUTPUT WITH THE FEWEST NUMBER OF LAMPS, IN THE SMALLEST FOOTPRINT FOR LOW PRESSURE UV SYSTEMS IN THE UV INDUSTRY



THE EXTENDED 16,000 HOUR LAMP LIFE & 100% TO 30% VARIABLE POWER MAKES THE 800 WATT AMALGAM ONE OF THE MOST COST EFFICIENT UV SYSTEMS IN THE WORLD

## ULTRA-HIGH OUTPUT 800 WATT AMALGAM UV SYSTEMS

### Performance Advantages

- ✓ Independent 3rd party validated performance
- ✓ Effective at water qualities as low as 20% UVT
- ✓ Validated performance from 50% UVT+
- ✓ High capacity treatment up to 3,500 m<sup>3</sup>/hr
- ✓ Extended lamp life of 16,000 hours
- ✓ Automatic power stepping 100% - 30% power
- ✓ Automatic self-cleaning for quartz thimbles
- ✓ Hydraulically optimised low head-loss design
- ✓ High disinfection efficiency - 1 to 5 log

### Operational Benefits

- ✓ Simple to install and easy to operate
- ✓ Significantly reduced maintenance requirements
- ✓ Access hatches for easy and quick access
- ✓ Single sided maintenance / access
- ✓ Quick release enhanced safety 'Twistlok' Lamps
- ✓ Robust, chemical free automatic wiper system
- ✓ Lamp changes without removing wiper motor
- ✓ Wiper rings can be replaced without removing wiping carriage from chamber

### Installation Advantages

- ✓ Smaller, quicker and easier installation
- ✓ Closed system design, installs directly into pipe work
- ✓ Asymmetric lamp design removes need for baffles
- ✓ Horizontal and vertical installation options
- ✓ Multiple flange size, type and mounting options
- ✓ Significantly reduced footprint requirements
- ✓ No requirement for complex civil structures
- ✓ No requirement for concrete trenches, pen stocks, level control and flow modifiers.

## 800 Watt Amalgam Range - UVLX & UVLW Series

### High Disinfection Efficiency

The 800 Watt Ultra High Output Amalgam lamp provides one of the most efficient UV lamp designs available in the UV industry. In terms of usable UV energy for disinfection (UVC light at 254 nm), each 800 Watt amalgam UV lamp provides approximately the same UV output as three times 330 Watt low pressure amalgam UV lamps.

By utilising this lamp technology, UV systems can typically be over 60% smaller in comparison to standard low pressure amalgam solutions. In many cases the increased treatment capacity provided by the 800 Watt output eliminates the need for additional UV systems that would act in a duty / assist configuration providing significant CAPEX reductions.

### Increased Lamp Life:

The 800 Watt amalgam UV lamp features an extended usable lamp life of 16,000 hours. Compared to the industry standards of 9,000 to 12,000 hours, this feature allows operators to run their UV plants for around 6 months longer before scheduled maintenance is required. This extended lamp life makes the 800 Watt amalgam design one of the most OPEX competitive solutions in the world.

### Asymmetric Lamp Positioning

Through extensive CFD analysis and field testing, the 800 Watt UV chamber design matches hydraulic flow profiles with the UV lamp intensity fields inside the UV reactor, eliminating the requirement for large baffle plates and flow modifiers. This unique concept has allowed for significant improvements in disinfection efficiency, increasing treatment capacities by up to 30%, whilst using significantly less power and reducing head loss.

### Optimised UV Chamber Design

The 800 Watt amalgam UV chambers include a range of key design features, that significantly improve the systems disinfection efficiency and treatment capacity, by optimising the hydraulic performance. Featuring end-feed chamber designs, reduced inlets and chamfered outlets, the 800 Watt UV chamber design significantly reduces turbulence and short circuiting through the UV reactor, and decreases associated head loss.

### Enhanced Variable Power

The 800 Watt amalgam UV lamp features a specially designed secondary heating circuit that allows the UV lamp to run at operational powers of only 30% power without losing stability.

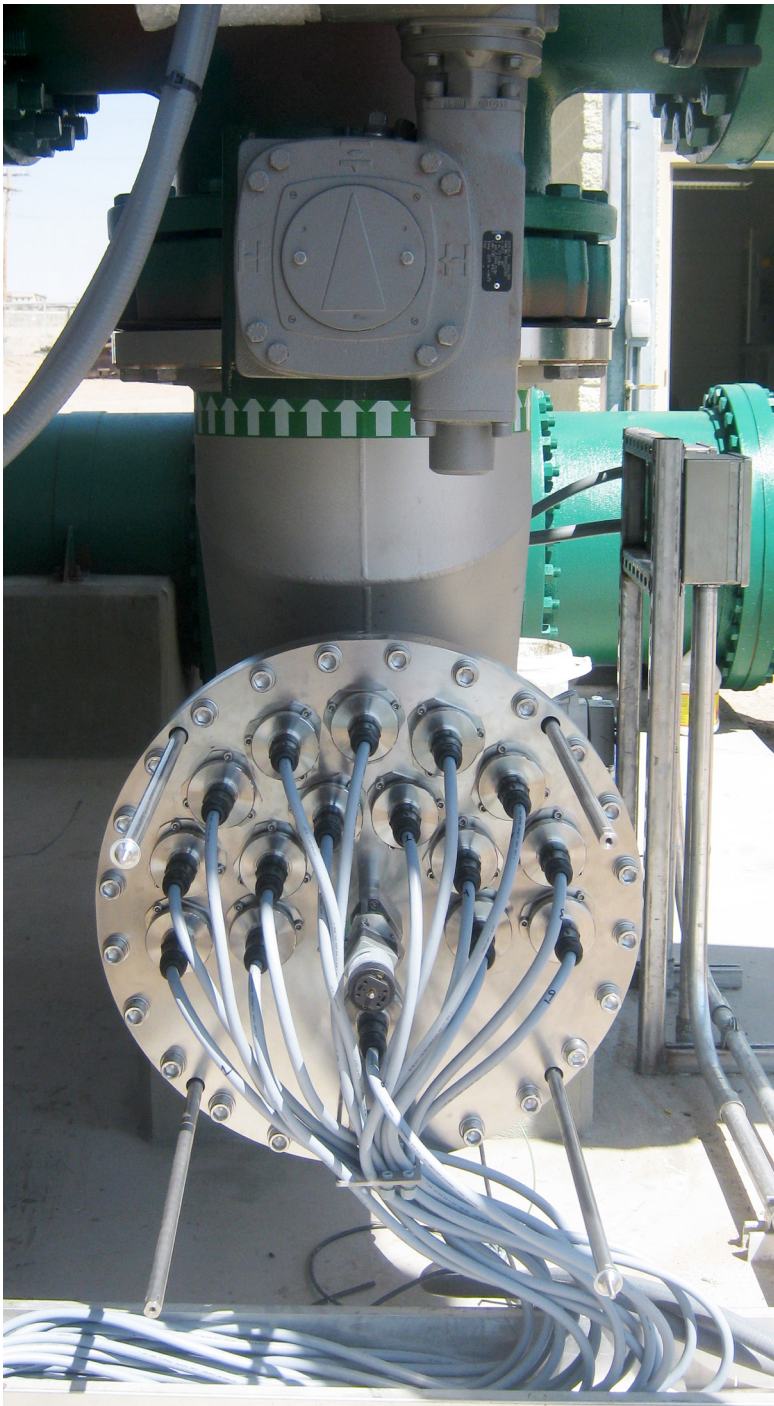
Compared to 330 Watt lamps which can become unstable and extinguish below 60% power, the 800 Watt amalgam lamp will safely operate between 100% power and 30% power (70% turndown), providing significant flexibility to operators wishing to match the operational power of their UV plant to varying flow rates and seasonal water quality parameters, providing significant reductions in operational power costs (OPEX).

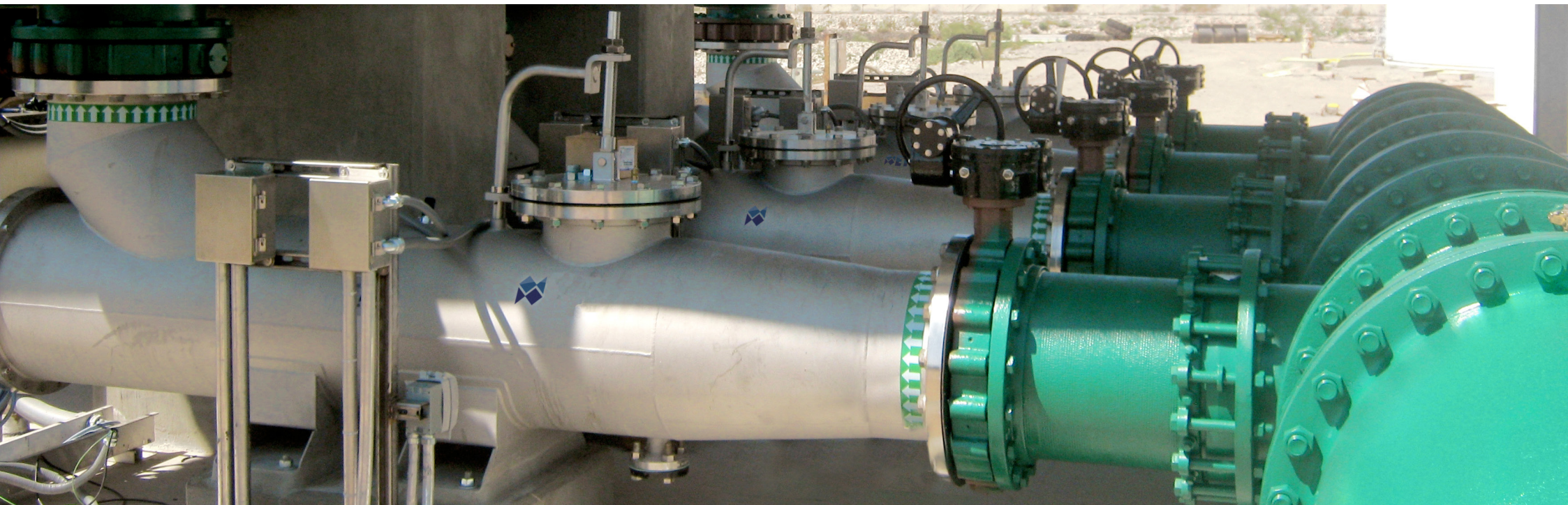


### Reduced Components & Spares

By using UV lamps that are 3 times the UV output of conventional low pressure UV lamps (330 Watt), the UVLX and UVLW ranges that feature the Ultra High Output 800 Watt amalgam UV lamps require over 60% fewer lamps, quartz, power supplies (ballasts) and seals. This significantly reduces maintenance costs and service time, and can reduce operational costs (OPEX).

**HYDRAULICALLY OPTIMISED  
UV CHAMBER DESIGN  
& INTELLIGENT LAMP  
POSITIONING SIGNIFICANTLY  
IMPROVES PERFORMANCE  
& REDUCES HEAD LOSS**





## UVLX SERIES - US EPA UVDGM VALIDATED

The UVLX series has been purposely designed for clean water applications, such as potable drinking water and large flow industrial process water treatment projects. With 4 models in the UVLX range, featuring 3, 6, 16 and 30 lamp configurations, the UVLX range offers a state-of-the-art, premium UV disinfection solution for flow rates of 100 m<sup>3</sup>/hr to over 3,500 m<sup>3</sup>/hr in a single, high output, low foot print package.

All UVLX 800 Watt amalgam UV systems feature independent validation based on bioassay testing with live surrogate microorganisms (T1 & Ms2) at a range of water qualities to guarantee the UV systems' performance against microorganisms such as *Cryptosporidium*, *Giardia* and *Adenovirus*. Independent testing and validation is based on the US EPA Ultraviolet Disinfection Guidance Manual (Long Term 2 Enhanced Surface Water Treatment Rule).

Unlike alternative validation protocols, such as DVGW or ONORM, which only test to a single UV dose set point of 40 mJ/cm<sup>2</sup>, the US EPA UVDGM validation method allows for the selection of multiple data points. The result is a highly flexible performance validation that allows for guaranteed UV doses between 10 mJ/cm<sup>2</sup> RED and 120 mJ/cm<sup>2</sup> RED. This is of particular importance when aiming for a log reduction of microorganisms e.g. 3.0 Log (99.9%) reduction of *Cryptosporidium*.

By adopting the US EPA UVDGM Validation, UV systems can be sized to provide the correct amount of UV intensity in direct relation to the specified UVT% and microorganism. In the case of UVT% values higher than 90% T10, the power savings are typically 50% when compared to the DVWG and ÖNORM solutions, which can only offer 40 mJ/cm<sup>2</sup> in any circumstance.

Required Validated mJ/cm <sup>2</sup> RED UV Dose for 3.0 Log Reduction (99.9%) of <i>Cryptosporidium</i>			
UVT%	US EPA	DVGW	ONORM
95%	16.56 RED	40 RED	40 RED
90%	20.76 RED	40 RED	40 RED
85%	24.12 RED	40 RED	40 RED
80%	26.64 RED	40 RED	40 RED
75%	28.32 RED	40 RED	40 RED
70%	30.06 RED	40 RED	40 RED
65%	41.85 RED	N/A	N/A
60%	43.71 RED	N/A	N/A

UV System	UVLX-3800-10	UVLX-6800-14	UVLX-16800-20	UVLX-30800-30
<b>Performance</b>				
3rd Party Validation	US EPA UVDGM (United States Environmental Protection Agency Ultraviolet Disinfection Guidance Manual) 2006			
Certification	CE Marked			
UV dose range	10 mJ/cm <sup>2</sup> to 120 mJ/cm <sup>2</sup> RED (Reduction Equivalent Dose)			
<b>UV lamps and monitoring</b>				
Lamp power	800 W	800 W	800 W	800 W
Lamp number	3	6	16	30
Lamp life	16,000 hours			
Lamp design	TWISTLOK™ quick release, enhanced safety - 800 Watt ultra high output amalgam low pressure			
Validated UV monitoring	Validated ÖNORM UV monitor - AT-900 (calibrated) - IP66			
Variable power	100% power to 30% power (variable automatic dose pacing)			
<b>UV Chamber</b>				
Connection size (mm)	DN200 / 8"	DN250 / 10"	DN400 / 16"	DN600 / 24"
Connection type	BS4504 PN10 RF Flange			
Design pressure	10 Barg design (15 Barg test)			
Material construction	316L stainless steel			
Lamp and wiper access	Single ended access			
Quartz type	High purity quartz thimble			
Mounting	Legs			
Wiper system	Automatic wiper system (optional)			
Temperature probe	AT-487 (PT-100) - IP66			
Vent & drain ports	Yes			
Access hatch	Yes			
Ingress protection	IP66			
Installation	Vertical or horizontal			
<b>Technical</b>				
Communication options	Ethernet / Modbus / Data Stream / ICSS Integration (other fieldbus options available)			
Lamp power supply	800 Watt electronic ballast			
Power consumption	2,600 W	5,200 W	14,080 W	26,400 W
Mains power	230 V (210 V to 240 V options)		400 V (380 V to 480 V options)	
Power phase + neutral	1 Phase + Neutral + Earth		3 Phase + Neutral + Earth	
Frequency	50 Hz or 60 Hz			



## UVLW SERIES - NWRI (WASTEWATER & WATER REUSE) VALIDATED

The UVLW series has been specifically developed for poor quality water applications, such as low quality surface water, wastewater, storm water, industrial wastewater, final effluent discharges and wastewater reuse.

The 800 Watt amalgam UVLW series features optimised UV lamp configurations and intelligent lamp positioning to ensure even UV dose distribution in water qualities as low as 20% UV Transmittance (UVT). With 9 models in the UVLW range, featuring 6 lamp to 45 lamp configurations, the UVLW series provides a high performance, high capacity UV disinfection solution for flow rates of 50 m<sup>3</sup>/hr to over 3,700 m<sup>3</sup>/hr in a single, high output, small foot print package.

A key feature of the UVLW performance is independent 3rd party validation based on bioassay testing with live surrogate

microorganisms (T1 & Ms2) at a range of water qualities and UVT's to guarantee the UV systems performance against microorganisms such as *E Coli*, *Faecal Coliforms*, *Sulphate Reducing Bacteria (SRB's)* and *Cryptosporidium*.

Independent testing and validation is based on the NWRI (National Water Research Institute) Protocols, 3rd Edition 2012 for Wastewater & Water Reuse. The NWRI guidelines, also known as California Title 22 standard, closely follow the requirements for modern drinking water plants and provide the worlds' only performance standard for wastewater treatment. A key feature of the NWRI guidance is the inclusion of protocols that allow wastewater to be effectively reused for a range of applications, such as industrial process water, irrigation water for crops and surprisingly, direct feed water for drinking water plants, without the need for any environmental barrier.

NWRI VALIDATION  
FOR WASTEWATER & WATER  
REUSE PROVIDES GUARANTEED  
DISINFECTION PERFORMANCE  
AT A RANGE OF  
WATER QUALITIES

UV System	UVLW 6800-10	UVLW 6800-14	UVLW 8800-14	UVLW 16800-20	UVLW 20800-20	UVLW 22800-24	UVLW 30800-24	UVLW 30800-30	UVLW 45800-30
<b>Performance</b>									
3rd Party Validation	NWRI (National Water Research Institute) Drinking Water & Water Re-use 3rd Edition (2012)								
Certification	CE Marked								
UV dose range	10 mJ/cm <sup>2</sup> to 120 mJ/cm <sup>2</sup> RED (Reduction Equivalent Dose)								

<b>UV lamps and monitoring</b>									
Lamp power	800 W	800 W	800 W	800 W	800 W	800 W	800 W	800 W	800 W
Lamp number	6	6	8	16	20	22	30	30	45
Lamp life	16,000 hours								
Lamp design	TWISTLOK™ quick release, enhanced safety - 800 Watt high output amalgam low pressure								
Validated UV monitoring	Validated ÖNORM UV monitor - AT-900 (calibrated) - IP66								
Variable power	100% power to 30% power (variable automatic dose pacing)								

<b>UV Chamber</b>									
Connection size (mm)	DN200 / 8"	DN250 / 10"	DN250 / 10"	DN400 / 16"	DN400 / 16"	DN500 / 20"	DN500 / 20"	DN500 / 20"	DN500 / 20"
Connection type	BS4504 PN10 RF Flange								
Design pressure	10 Barg design (15 Barg test)								
Material construction	316L stainless steel								
Lamp and wiper access	Single ended access								
Quartz type	High purity quartz thimble								
Mounting	Legs								
Wiper system	Automatic wiper system (optional)								
Temperature probe	AT-487 (PT-100) - IP66								
Vent & drain ports	Yes								
Access hatch	Yes								
Ingress protection	IP66								
Installation	Vertical or horizontal								

<b>Technical</b>										
Communication options	Ethernet / Modbus / Data Stream / ICSS Integration (other fieldbus options available)									
Lamp power supply	800 Watt electronic ballast									
Power consumption	5,200 W	5,200 W	7,040 W	14,080 W	17,600 W	19,360 W	26,400 W	26,400 W	39,600 W	
Mains power	230 V (210 V to 240 V options)				400 V (380 V to 480 V options)					
Power phase + neutral	1 Phase + Neutral + Earth				3 Phase + Neutral + Earth					
Frequency	50 Hz or 60 Hz									

# LISTENING TO & WORKING WITH OUR CUSTOMERS FOR OVER 30 YEARS

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