



**evoqua**

WATER TECHNOLOGIES

ULTRAVIOLET  
DISINFECTION  
SYSTEMS

**THE MOST EFFECTIVE  
WAY TO INACTIVATE  
HARMFUL PATHOGENS  
IN YOUR AQUATICS AND  
RECREATIONAL WATER**



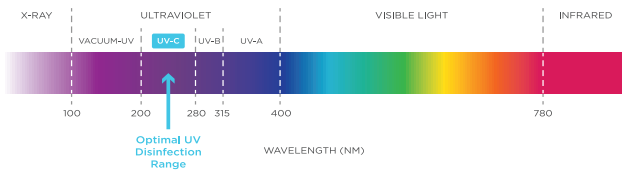
# Why Evoqua UV systems?

## TRANSFORMING WATER. ENRICHING LIFE.®

Evoqua is committed to helping the aquatics industry solve challenges impacting the safety and satisfaction of their bathers and guests. Thousands of ultraviolet (UV) disinfection systems are deployed across the globe, protecting bathers at many of the most well recognized aquatics venues. Years of experience and technical expertise are core to our success. Our engineers utilize the most advanced modeling and emulation tools to design superior solutions that set the standard for safety, efficiency, serviceability and installation flexibility.

## WHAT IS ULTRAVIOLET LIGHT?

Ultraviolet light is technically energy in the electromagnetic spectrum (100-400 nm) with wavelengths shorter than those visible to the human eye. UV is used in a wide variety of applications across many industries, including municipal treatment of drinking water. In aquatics, UV systems are used to accomplish disinfection and chloramine reduction.



The Electromagnetic Spectrum

## UV & DISINFECTION

UV light inactivates microorganisms such as bacteria, viruses, molds and other pathogens without the use of chemicals. UV light inflicts permanent damage to DNA/RNA contained in all living species. Once damaged, chlorine resistant organisms such as *Cryptosporidium* are unable to sustain routine cell functions such as respiration, food assimilation and replication. With cells rendered non-viable, the organism quickly dies.

Evoqua UV disinfection generator systems undergo third-party validation testing in accordance with the UVDGM (USEPA, 2006). Validated products are tested to confirm a minimum inactivation equivalent of 3 log (99.9%) for microorganisms in accordance with NSF/ANSI 50 and the UVDGM. Performance is not claimed nor implied for any product not yet validated; unvalidated products use single point summation calculations to provide delivered dose recommendations. Performance limitations depend on feed conditions, overall installed system design, and operation and maintenance processes; please refer to Operations Manuals. For more information: [contactus@evoqua.com](mailto:contactus@evoqua.com).

## ADVANTAGES OF UV DISINFECTION

- Reduces risk of recreational waterborne illnesses
- Improves air quality by reducing chloramines
- Reduces demand for treatment chemicals



## UV & CHLORAMINE REDUCTION

Chlorine in pool water reacts with organic compounds to form disinfection byproducts such as mono-, di-, and tri-chloramines. Volatile in nature, chloramines off-gas and concentrate at the water/air interface, where swimmers breathe, causing burning eyes and respiratory issues that can affect both performance and long-term health. Chloramines further dissipate into the natatorium causing corrosion and that offensive “chlorine smell” we are all familiar with.

## TYPES OF UV SYSTEMS

Both medium and low-pressure UV systems are used in aquatic applications. The term pressure refers to the pressure of mercury gas inside the UV lamp - and ultimately wavelength(s) of light produced. Both low and medium pressure UV systems produce waves in the 200-280 nm “UV-C” spectrum. Monochromatic low-pressure UV systems emit a single 254 nm energy wave whereas polychromatic medium pressure UV systems emit energy waves across the entire UV-C spectrum. As a result, energy emitted by medium pressure UV systems break down all three chloramine species and demonstrate higher germicidal disinfection efficiencies.

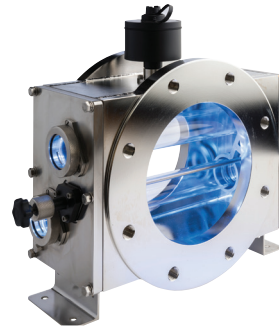
## WAFER® UV SYSTEM

The Wafer® UV disinfection system is specifically designed for the aquatics industry. Not only is this model the most compact UV solution available today, it features leading-edge technologies including a hydraulically optimized treatment chamber and polychromatic medium pressure lamps - making it the most efficient and highest performing UV system. Innovative design paired with advanced technologies delivers a system capable of inactivating 99.9% of microorganisms while also reducing chloramines.

The Wafer UV System's unique UV chamber makes it the most compact system available today. At about one third the size of comparable UV systems, an installed length between flanges of under 8" and a significantly reduced maintenance envelope, the Wafer System delivers a compelling UV solution for new installations and retrofits that will fit in even the tightest of pump rooms.

Innovative TwistLok™ lamps and PulseLok technology facilitate Wafer commissioning and maintenance. TwistLok lamps make lamp changes quicker, easier and safer with plug & play connections and a mechanical safety interlock. With an improved seal arrangement, quartz maintenance is simplified while reducing the risk of breakage. An ultra-compact automatic wiper incorporating PulseLok technology provides a one-button push calibration with highly accurate positional location. The addition of a UV monitor wiper removes foulants from the UV window during each wiper cycle, ensuring accurate dosage measurement throughout the life of the lamp. Elimination of belts and pulleys make removing parts for lamp maintenance unnecessary, further enhancing serviceability.

Controlling the Wafer System is the Spectra controller, providing a wide range of capabilities including programmable set points, data stream monitoring and process interlocks. System power can be varied from 30-100% to supply only the amount required to efficiently achieve disinfection. Remote monitoring is possible using a web browser or mobile device. Data including UV intensity, flow rate and faults can be logged and exported for archiving and/or process optimization.



## WAFER UV SYSTEM BENEFITS & ADVANTAGES

- Enhances bather safety & satisfaction
- Reduces chloramine formation
- Improves air quality
- Small installation footprint
- Can be oriented horizontally or vertically
- Improved power control for maximum performance & efficiency
- Reduces chemical use & handling
- Safer & easier to maintain
- NSF-50 certified for 3 log Cryptosporidium inactivation
- Third-party validated
- Compliant with Model Aquatic Health Code

## SERVICE & SUPPORT

With UV becoming a best practice for reducing the risk of Recreational Water Illness outbreaks, states are increasingly adopting codes such as the Model Aquatic Health Code. Such codes require UV generators to deliver a specific level of disinfection, or dose. If the dose falls below a predetermined level, recirculating systems are often programmed to automatically shut down, thereby suspending operations. Getting service and/or replacement parts quickly is therefore critical. Evoqua has partnered with the best providers of preventative and reactive service in each state to ensure your UV system operates at peak performance and efficiency. We manufacture in the USA with our factory located in Tewksbury, MA.

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— ENRICHING —  
LIFE



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Disinfection efficacy and microbial control will vary based on the facility and influent water quality, ambient conditions, the specific treatment products incorporated and system design, operating conditions, and maintenance practices. Contact Evoqua for more details.

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