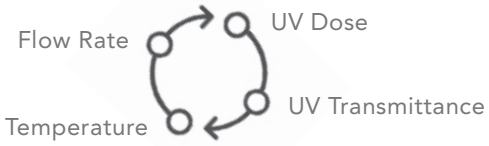
Right-sizing UV system solutions

Dial in flow rate, transmission and dosage for optimum UV chamber efficiency.

Four essential measurements:

Ultraviolet light has grown in use across a wide range of water treatment applications. Whatever the application, UV systems employ the same basic process: as water flows through a chamber lamps generate UV at a dose that crosslinks deoxyribonucleic acid (DNA) rendering microorganisms unable to reproduce and therefore harmless.

Just as different organisms require a range of UV energy levels to disrupt DNA, different applications require varying UV dose levels depending on end use. UV systems can be tailored for use in TOC removal from ultra-processed water as well as to remove ozone from processed water. UV disinfection offers an efficient, chemical-free, scalable solution in a wide range of industrial, commercial and municipal applications. Since UV treatment doesn't affect taste or pH levels, it's ideal for use in applications where typical chlorine disinfection can't be used.



Determining the optimum level of UV disinfection for a given application involves a mix of four critical performance variables: flow rate, required UV dose, percentage of UV transmission and operating temperature.

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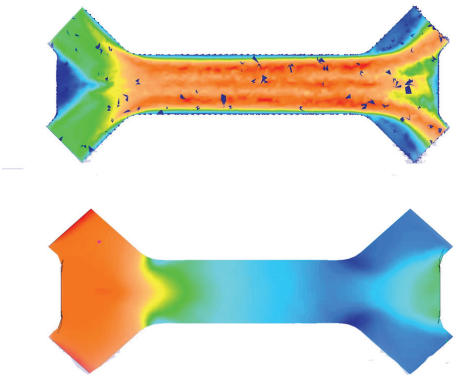
Reflex UV Chambers

Flow rate determines the exposure time of the water column to UV light as it passes through the chamber. Flow rates for RefleX UV Chambers and systems are variable and range up to 500 gpm depending on the application.

The longer the chamber or slower the flow rate, determines the amount of time raw water is exposed to UV light. The longer the exposure, the higher the UV dose. UV exposure times are calibrated with specified flow rates for a given manufacturer's chamber or system to assure proper UV dosage – similar to contact time needed for chlorine use.

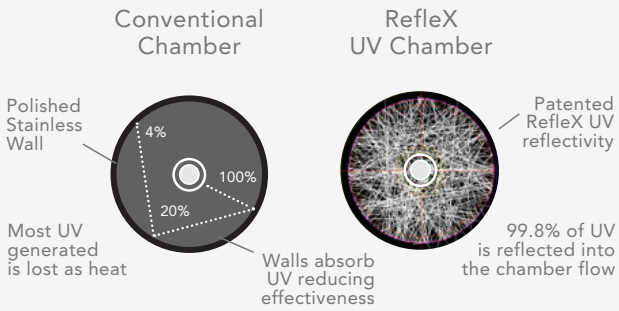


RefleX Chamber design creates a highly turbulent flow for uniform treatment without shadowing or dead spots.

UV dose is a measure of the amount of UV energy a raw water column is exposed to over time. Raw water quality and flow, UV light intensity and exposure, and UV transmittance each contribute to the level of UV dose.

UV dose requirements vary by application, industry and disinfection regulations. The standard for most applications range from 30 mJ/cm2 to 40 mJ/cm2.

UV light intensity depends on the size and type of lamp, or in the case of RefleX UV Chambers, the added chamber reflectivity which can reduce the number, size and type of lamps needed for comparable performance.



Higher reflectivity means higher effectiveness with uniform UV distribution throughout the chamber reducing shadowing and potential live transfer.

UV transmittance (UVT) is a measure of how much UV light can penetrate water being treated. The less light that is transmitted through the water, the lower the percentage of UVT.

Water hardness, tannins, waterborne particles, suspended solids, as well as chamber design and structural elements can contribute to equipment degradation and system performance. Turbidity can hide pathogens potentially causing post UV contamination.

Understanding UTV is essential in determining the ideal level of chamber performance and efficiency.

Water temperatures if outside the typical operating range of 50 -100° F – or above or below 20 - 80° C – additional analysis and fine tuning may be required to determine proper flow rate, system efficiencies and performance.

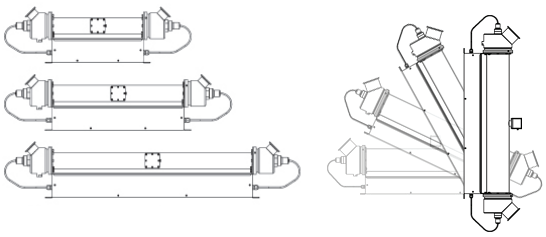
Look for design flexibility.

While flow, metrics are helpful in the initial sizing of a UV system, other important variables will drive system design including:

Water source
Biological challenges
Application requirements
Pre-treatment or filtration
Circulation and treatment cycles

The size and performance versatility of RefleX UV Chambers offer design flexibility for the most demanding environments and rigorous requirements – from retrofit, to system expansion and new installation.

Whatever the skid or system design, RelfeX UV Chambers provide the option of vertical or horizontal installation, including rotating plumbing connections and variable UV monitor placement.



Compact RefleX UV Chambers offer a full range of performance and installation options for space-saving skid and system designs.

Sizing up chamber features.

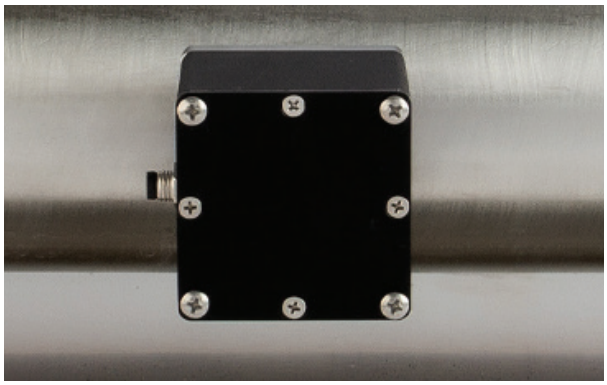
While most UV systems use the same basic process – and many systems appear the same, there can be significant differences that affect footprint, capacity and performance.

Typically, UV chambers and systems are introduced toward the end of a series of treatment or storage devices where UVT will be the highest. Chamber housings should be stainless steel to protect against corrosion and contaminants. Wetted materials should be of the highest quality.

Component materials can vary based on application to require non-metal construction.

Look for stainless steel with plasma-fused welds for contaminant-free components.

Monitoring systems are a highly valuable, yet an "add-on" feature for most UV systems. Many conventional monitoring systems use percentage meters that don't measure actual intensity over time, and only typically look at one spot on one lamp.

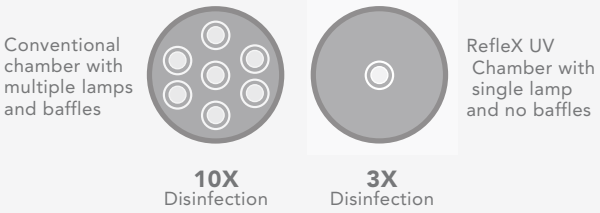


RefleX UV Chambers include NIST-traceable UV-intensity monitors that measure the entire chamber for reliable, real-time dosage assurance.

Chamber reflectivity adds up.

RefleX UV Chambers represent years of refinement by NeoTech Aqua Solutions engineers to improve chamber reflectivity and performance. These advances enable efficiencies including fewer or smaller lamps requiring less power – in a smaller, cooler running footprint.

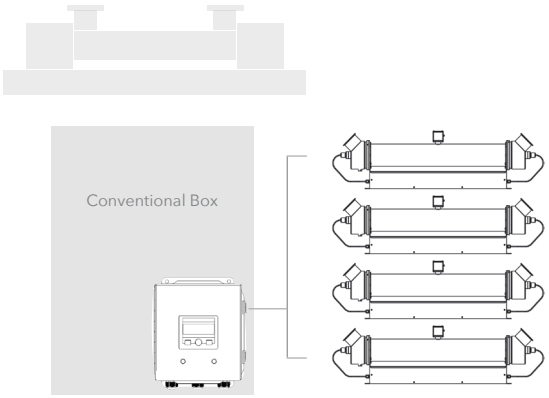
The patented technology and flow design inside RefleX UV Chambers reflect 99.8% of UV light generated back into the water. Improved reflectivity enables unmatched efficiencies in skid and system size, performance and operating costs.



Most UV generated in standard systems is lost as heat leading to more lamps, baffles, wipers, replacement and maintenance.

Think 70% smaller.

RefleX UV Chambers out-perform standard UV systems by every measure: Size, design flexibility, fewer lamps, less mercury, less energy, cooler running temperatures – all adds up to less maintenance, lower operating costs and increased treatment efficiency.



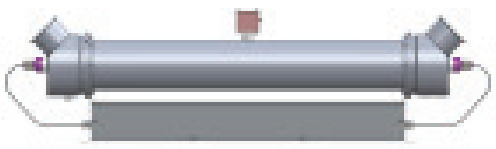
Typical control boxes only operate one chamber at a time. Compact RefleX controllers can run up to four chambers independently in a smaller footprint.

Start with a brighter idea.

99% chamber reflectivity creates significant efficiencies in designing and configuring UV systems. However demanding the environment or rigorous the requirements, RefleX UV Chambers offer more performance options and energy efficiency in less space.

Accurate flow, UV dose, UV transmittance and temperature metrics are the logical starting point in designing effective and efficient UV solutions. Let us show you how RefleX UV Chambers can meet your UV specific system and performance requirements.

RefleX UV Chambers offer a full range of design flexibility and performance options. For more information contact us at info@reflex-us.com or call 858.571.6598 or Toll-Free at 888.716.5040.



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RefleX UV Chambers