

Recreational Waters

Industry Specific Applications for UV Technology

Aquafine UV systems are engineered to focus the power of concentrated UV light with proven performance for disinfection and chlorine reduction in Recreational Water Systems worldwide.



APPLICATIONS | Disinfection, Chlorine & Chloramines Reduction

UV SERIES | MPR, TrojanUVLogic, Optima HX, SCD H

UV TECHNOLOGY FOR RECREATIONAL WATERS

For both public and private pools and splash water parks, disinfection plays a key role as a required treatment step. Swimming pool water must undergo treatment in order to remain clear and clean, free from harmful substances, bacteria, viruses, algae and other pathogens and suitable for use by swimmers. This necessitates the need for disinfectants such as chlorine to be added to the water to inactivate pathogenic microorganisms. Of particular concern in swimming pool waters are the formation of chloramines and chlorinated organic compounds that are known to give rise to swimming pool smell and eye, nose and throat irritation.

For most pool operators, chlorine is the disinfectant of choice, although there is growing awareness regarding the negative health impacts of chlorine and its by-products. On the other hand, unlike bacterial pathogens, *Cryptosporidium* oocysts are resistant to chlorine disinfection and can survive for days in treated recreational water venues. The popularity of recreational water venues, the number and geographic distribution of recent cryptosporidiosis outbreaks, and the resistance of *Cryptosporidium* to chlorination suggest that treatment strategies for recreational water facilities need to be improved.

Ultraviolet (UV) light represents a powerful technology that has been successfully deployed in swimming pools for several years. UV disinfection of pools and splash parks is complimentary way of providing an effective method of inactivating a wide range of waterborne pathogens including *Cryptosporidium*. UV water treatment disinfects and simultaneously destroys chloramines and chloro-organics instantly as the water passes through the treatment chamber. The use of UV disinfection for pools is particularly suitable for bathers who are sensitive to the usual swimming pool disinfectants or allergic to chlorine. UV is not designed to completely replace chlorine, but through an elimination of the need for periodic "shocking", well-maintained pools can see significant reductions in chlorine usage.

UV disinfection of pools and splash water parks are a chemical-free and a very effective method of inactivating a wide range of waterborne pathogens including Giardia Cyst and Cryptosporidium by UV light.

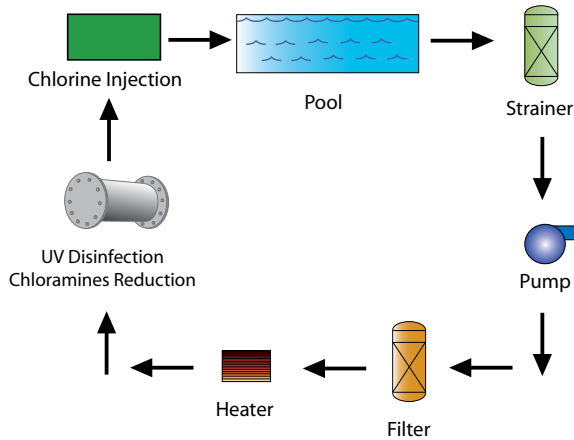
UV TECHNOLOGY

Aquafine UV systems are engineered to focus the power of concentrated UV light utilizing one or several specially designed Aquafine Colorguard UV lamps, recognized in the industry for unsurpassed performance and reliability. Aside from being environmental responsible, UV technology for water treatment produces no harmful by-products, imparts no taste or color and yet disinfects water to meet the highest standards in a variety of applications.

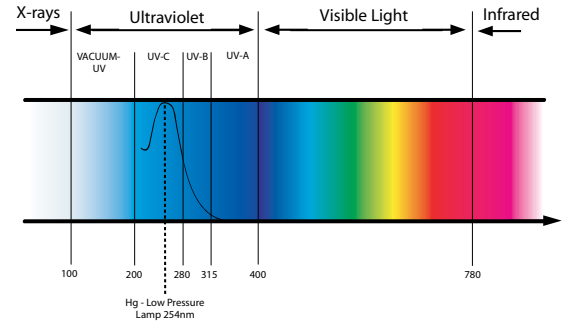
For questions regarding your application needs, please contact your local Authorized Distributor or Aquafine Corporation for more information.



RECREATIONAL WATER TREATMENT SYSTEM



Ultraviolet light is invisible to the human eye, but a highly effective, chemical-free way of inactivating microorganisms and reducing chemical compounds present in the water.



UV Applications in Recreational Waters

DISINFECTION

This is the most common application of UV light in water treatment. A properly sized UV system is designed to meet a minimum of 3 Log reduction a minimum of 30,000 micro-watt seconds (or $30\text{mJ}/\text{cm}^2$) at one year, the end-of-lamp life (EOL). Some typical locations of installation would be after filtration,

CHLORINE/CHLORAMINES DESTRUCTION

Bathers introduce organics to the water, such as bacteria, urine, sweat and other excretion products. Swimming pool water must undergo treatment, in order to remain clear and clean, free from harmful substances, bacteria, viruses, algae and other pathogens and suitable for use by swimmers. This necessitates the need for disinfectants such as chlorine to be added to the water to inactivate pathogenic microorganisms. Sweat and urine largely consist of water, ammonia and urea. When these products react with chlorine, unwanted reaction by-products can be formed which consist mainly of chloramines. Of particular concern in swimming pool waters are the formation of chloramines and chlorinated organic compounds that are known to give rise to swimming pool odor and eye, nose and throat irritation.

While the addition of chlorine and chloramines to pool water may control bacteria levels, there is growing awareness regarding the negative health impacts of chlorine and its by-products. On the other hand, unlike bacterial pathogens, *Cryptosporidium* oocysts are resistant to chlorine disinfection and can survive for days in treated recreational water venues despite adherence to recommended residual chlorine levels (1–3ppm). A UV system sized for chloramines reduction ($60\text{mJ}/\text{cm}^2$) delivers sufficient UV dosage to inactivate *Cryptosporidium*. UV systems can also significantly reduce the microbial counts by destroying at least 99.9% of the bacteria present in the influent stream, when installed after filtration.



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Aquafine equipment performance is guaranteed with the use of genuine OEM replacement parts.

