

HACCP and FDA-compliant modules with glass splinter protection for water sterilisation in a CIP fresh water tank

Efficient UVC disinfection for industrial and process water as well as special applications

UVC sterilisation of water has established itself as a sustainable, chemical-free and efficient method of rendering microorganisms in various liquids harmless. It is used successfully in many areas of industry and supply. In addition to the treatment of cooling and process water, UVC technology is also used for the treatment of brine, whey, permeate, rinse water, ice water and washing liquor.

The challenges of chemical water treatment

Water plays a central role in many manufacturing processes, regardless of the industry. For reasons of cost and efficiency, water is usually recirculated. Whether for rinsing components in painting

lines, as washing water in salad production or for cooling machines, the water must be available in sufficient quality. Biocides are added to prevent or combat contamination, biofilm, foaming and thickening. This widespread practice not only harbours health risks for

employees and the environment. The costs for biocides, as well as the disposal of treated water, are very high. In addition, corrosive additives often put a strain on critical system components and reduce the service life of the systems.

„When developing a hygiene concept, it was important to us not only to use a high-quality product, but also to find a competent partner who could support us with their experience and expertise in finding the most effective solution for our customers. At sterilAir AG, we get the exact calculations and technical advice we need.“, Martina Engst (Güntner Group Europe GmbH).

UVC disinfection as an alternative

UVC disinfection is based on the treatment of water or liquids with ultraviolet optical radiation at a wavelength of 254 nanometres. This energy destroys the DNA of microorganisms such as bacteria, viruses and algae, causing the cells to die. It is therefore no longer possible for these cells to multiply and form biofilms. The great advantage of this method is that it does not require any chemical additives and therefore leaves no residue. UVC systems are also extremely energy-efficient and reduce operating costs compared to conventional chemical disinfection methods.

Applications in the industry and building services

The areas of application for UVC water sterilisation in industry are as varied as the use of the treated liquids. The only known application is UVC sterilisation in open cooling circuits - so-called cooling towers - to combat legionella. These are often the reason for installing sterilAir installations in mixed water circuits for showers, hand washing stations and emergency showers. UVC modules are often used in surface technology; for example, rinsing zones and air washers in painting

lines and cooling basins in plastic moulding are established areas of application, as the addition of biocides is often not possible here for process-related reasons. There are also solutions for the treatment of ultrapure



sterilAir AQD-ST reactors for UVC sterilisation of brine

water and demineralised water in the optical and pharmaceutical industries as well as in medical technology.

Applications in food production

UVC systems from sterilAir are also often used in food production. For example, sterilAir offers devices for cloudy media such as brine and whey, which play a major role in the cheese and dairy industry. In salt baths,

for example, which are used to preserve and flavour cheese, UVC treatment of the brine prevents the growth of undesirable microorganisms such as yeast and mould. Although the irradiation is repeated, the composition of the brine remains unchanged, which ensures a consistently high quality of the end product and allows the microbiological flora of the brine to be controlled. Liquids with variable turbidity are also treated with UVC. Ice water for cooling food, washing water for salad and vegetables and cooling water for pasta, for example. There are also less common applica-

tions in the food industry, such as the treatment of vapour and permeate, which are by-products of milk powder or cheese production, where in addition to sterilisation, phages and enzymes are also inactivated.

Flexibility and efficiency in practice

sterilAir products are characterised by their versatility and high efficiency. The modular system of the E-series enables

easy integration of the UVC units into existing systems. For example, submersible EQ modules are integrated into CIP tanks and EA flange modules are inserted into cisterns and basins from the outside. The AQD-ST from sterilAir combines the advantages of flow-through devices with the cleaning and hygiene requirements of the food industry. CIP-bar and optionally made entirely of stainless steel and with glass splinter

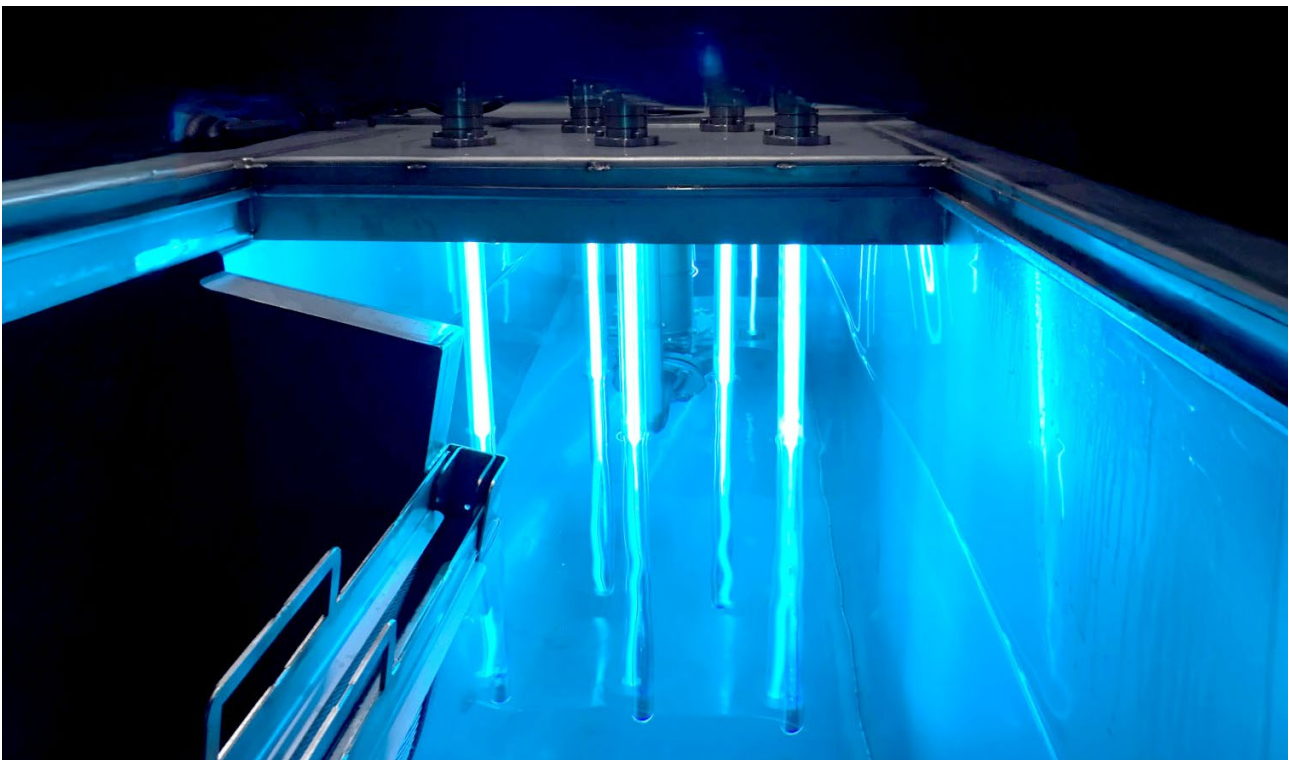
The compact UVC devices offer a sustainable and environmentally friendly alternative to chemical biocides and help to reduce operating costs, as maintenance is only required periodically.

Sustainability and cost savings

A key advantage of UVC sterilisation is the efficiency and sustainability of the method. Time and resources are saved when water is sterilised with UVC in-

Future technology for water

UVC water sterilisation is a pioneering technology that goes far beyond conventional drinking water treatment with its chemical-free, sustainable and extremely versatile disinfection performance. It has a wide range of applications - from process and industrial water to speciality liquids in the food and pharmaceutical industries. sterilAir's UVC technology reliably prevents biofilm formation and



Modules from the sterilAir E series can be combined flexibly and application-specifically – here for water sterilisation in the rinsing zone of a painting line

protection, the device fulfils FDA and HACCP requirements. In addition, the AQD-ST can be completely dismantled into its individual parts for cleaning and inspection. The sterilAir Original - the AQT immersion emitter - is particularly suitable for use in evaporative coolers, where it effectively prevents the growth of germs such as legionella and pseudomonads while also reducing biofouling.

stead of being heated/pasteurised. As no chemical additives are used, there are no problematic residues that pollute the environment and systems. The formation of resistance is ruled out due to the physical principle of action. UVC technology therefore also offers a sustainable and reliable solution outside areas in which strict guidelines such as VDI 2047 or the 42nd BImSchV must be complied with.

microorganism growth without leaving residues or creating resistance risks. Its simple integration into existing systems and high energy efficiency make it a cost-saving, environmentally friendly alternative to traditional biocide methods - and a genuine future technology for clean water in a wide range of industries.