

Made in Norway

AquaUV

AQUACULTURE
LINE | UV Systems

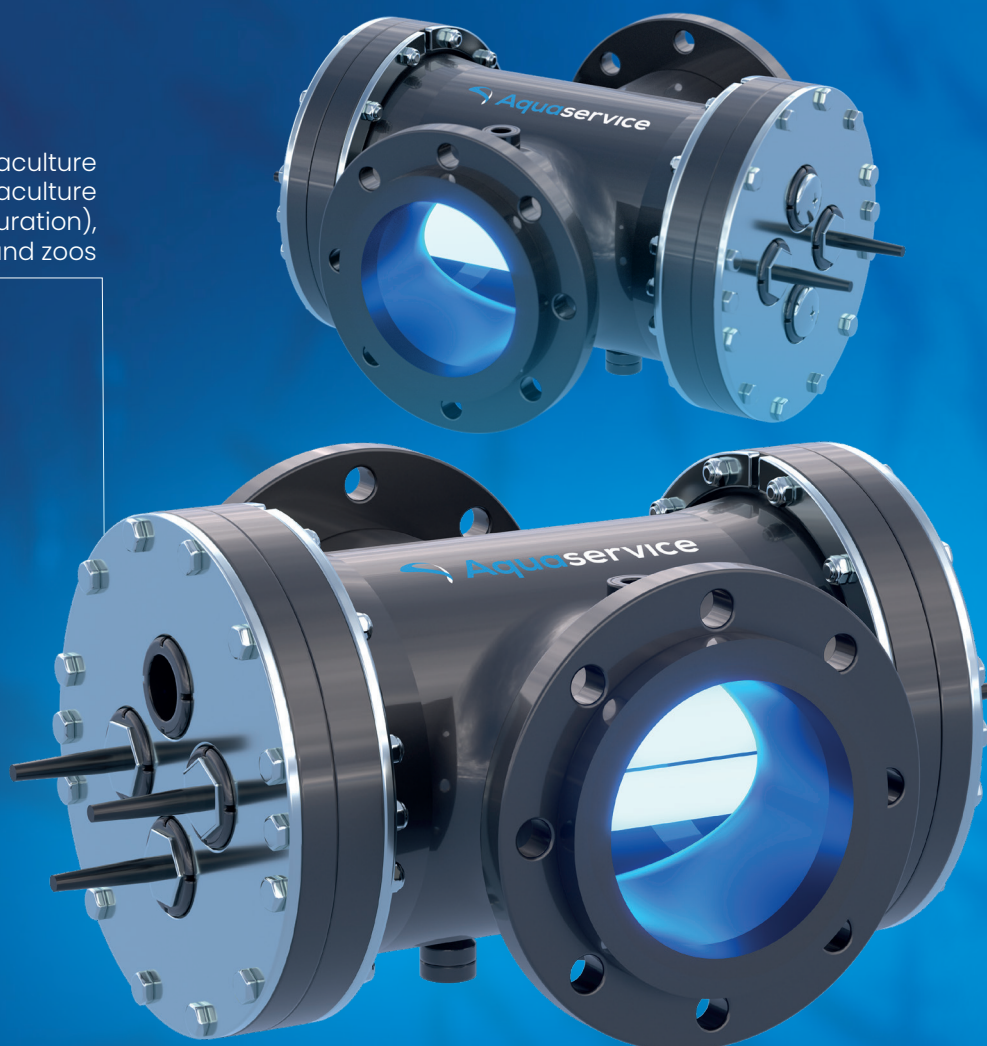


 **Aquaservice**

- HDPE Corrosion Resistant UV Chamber
- Medium Pressure lamps
- Minimum of 8.000-hour lamp life
- Power Stepping
- Manual or Automatic wiper
- BUS connection option
- Temperature Sensor
- Suits all types of aquaculture applications'



Aquaservice UV, designed for aquaculture (fish hatcheries, recirculating aquaculture systems, well boats, shellfish depuration), aquariums and zoos



Aquaservice AQS-PL UV systems are the only HDPE, medium pressure UV systems available for the aquaculture market, with a lifetime corrosion-free guarantee, even in the most aggressive water conditions.

Why Use Ultraviolet Treatment in Aquaculture?

Fish farming involves raising fish commercially in tanks or enclosures. In the wild, diseases and parasites are normally at low levels and kept in check by natural predation on weakened individuals. In crowded hatcheries and sea pens they can become epidemics. The dense stocks of fish involved mean that infectious diseases which can potentially be introduced by the water, the feed or the fish themselves, can be devastating. In 1984, infectious salmon anaemia (ISA) was discovered in Norway in an Atlantic salmon hatchery. Eighty percent of the fish in the outbreak died. A disease outbreak of ISA in Chile in 2009 led to the loss of half of the production of Atlantic salmon throughout the country. Such diseases are also a threat to the dwindling stocks of wild salmon.

Chemical and antibiotic treatments risk damaging both the fish and the environment. UV helps aquaculture producers achieve disinfection without compromising health or compliance with strict environmental rules. By replacing chemicals with powerful UV treatment, these systems protect fish condition, support environmental goals, and help producers maintain profitability. Aquaservice UV disinfection systems are chemical-free and can help to reduce overall pathogen numbers.

Why Use HDPE?

Aquaservice produces its UV chambers from high-density polyethylene (HDPE) for corrosive waters and environments. The reason is that stainless steels are susceptible to several forms of corrosion in waters containing dissolved chloride ions and this includes 316L stainless steel, from which most other UV chambers are fabricated.

Corrosion occurs when chloride ions dissolve the protective oxide layer on the steel. For any grade of stainless steel the risk of corrosion increases with increasing temperature and increasing chloride content of the water that is in contact with the metal. Sea water contains on average 35,000 mg/l TDS and 85% of that is sodium chloride, so roughly 18,050 mg/l chloride. Unless the water is extremely cold, 316L stainless steel will corrode in sea water.

How Does UV Light Disinfect Water?

UV (ultraviolet) light is a rapid and effective method of disinfection by means of inactivating pathogenic microorganisms. UV disinfection works by using specific wavelengths of light between 200 and 290 nm (UVC light, often referred to as 'germicidal' UV). Medium pressure UV lamps have broad emissions within this band. These wavelengths of UV light are absorbed by the DNA molecules within the nuclei of microorganisms, altering the DNA structure and preventing them from replicating. The same process applies to RNA in viruses. UV will inactivate all micro-organisms, whether they are bacteria, protozoa, viruses or fungal spores; it is just a case

of establishing the relevant UV dose-response of the organism. Examples of fish pathogens for which UV has been successfully used include:

- Infectious Salmon anaemia (ISA)
- Infectious Pancreatic Necrosis Virus (IPNV)
- Infectious Hematopoietic Necrosis Virus (IHNV)
- Oncorhynchus masou virus (OMV)
- Ichthyophthirius (white spot disease)
- Saprolegnia
- Viral Haemorrhagic Septicaemia (VHS)
- Proliferative Kidney Disease (PKD)
- Vibrio anguillarum
- Viral Nervous Necrosis (VNN)
- Ulcerative Dermal Necrosis (UDN)
- Aeromonas salmonicida
- Myxosoma cerebralis (whirling disease)
- Trochodina

Why Use Medium Pressure Lamps?

Medium pressure lamps have a far higher power than low pressure lamps, which means that the chamber footprint and pressure head loss (hence pumping costs) are lower. The output of medium pressure lamps is polychromatic within the UVC spectrum, delivering wavelengths that coincide with the peak absorption of both DNA and the action spectra of individual pathogens. Low pressure lamps are monochromatic, with a single UVC output at 254 nm and there is no research that demonstrates that 254 nm coincides with the peak absorption of any pathogen / micro-organism. It has been proven that micro-organisms disinfected with low pressure UVC will as a result of photo-reactivation recover their viability and colony forming ability whereas micro-organisms disinfected with medium pressure UVC do not recover their viability and colony forming ability when treated with exactly the same UV dose.

AQS-PL UV systems		
Model	Connection size, NW/inches	Lamp power total (kW)
AQS-PL10	80/3"	0.4
AQS PL20	80/3"	1.05
AQS PL30	100/4"	1.05
AQS PL40	100/4"	2.1
AQS PL50	150/6"	3.6
AQS-PL60	200/8"	4.2
AQS PL70	200/8"	6.3
AQS PL80	300/12"	8.4
AQS-PL90	350/14"	8.4
AQS-PL100	400/16"	8.4