



SPECIALTY SEPARATION SERVICES



Algae Control By Use of Ultrasonic Waves

The technique used to kill algae using ultrasonic waves is a revolutionary method which has been strongly evolving throughout the years by intense field testing. The larger models we offer are completely equipped to control bacterial infections.



Closed water circuits are present in many industrial plants; they include cooling towers, heat exchangers, air humidifiers, air conditioning systems and fountains. Observations confirm that in most of these circuits microorganisms are present, algae are growing and biofilms are formed. Along with the negative esthetical aspects of this microbial growth an increased health-risk (e.g. Legionella) can occur. Moreover, biofilms can lead to a reduction of heat transfer in heat exchangers and induce (bio) corrosion at specific parts of the installation. An efficient and regular disinfection of the water with chlorine, ozone and UV-light minimizes these problems. However, such treatments present negative side effects. Adding chlorine to these circuits introduces harmful chlorine products, such as chlorophenol and chloroform, can be formed and there are also safety risks linked with handling of these chemicals. Treatment with ozone and UV-light on the other hand is characterized by relatively high cost. Recently, disinfection devices based on ultrasonics have become available. First tests, both at pilot and industrial scale, give a strong indication that a disinfecting activity can be obtained and that such control of biofilms present advantages compared to the previous techniques. Moreover, a positive effect on corrosion resistance and reduction of scaling is observed. Total costs could also be significantly less than with other techniques. In this project the technical and economic potential of several ultrasonic disinfection apparatus will be investigated for the treatment of water in closed circuits and their impact and cost will be compared with other newer and frequently used techniques.



How does it work?

A transducer produces a whole range of specific ultrasonic waves. These sounds reproduce themselves below the surface of water, generating vibrations in the vacuoles of the alga cells. The frequencies are studied in such a way, that they reach the vacuole's resonance tone and tear it open, causing the cell to die back immediately.

Fish, water plants and other aquatic forms of life are not affected by these ultrasonic waves. Other single-celled organisms are only destroyed by the heavy types of equipment. This means that useful bacteria also stay alive.

Applications

Our technique can be used against all kinds of algae, blue-green algae (Cyanobacteria) and a whole range of pathogens.

***Algae:** irrigation water basins, lakes/ponds, swimming pools, fountains, drinking water storage, cooling towers, wastewater treatment, aquaculture ponds, etc.....

Pathogens: irrigation water basins, cooling towers, air conditioning, process water, etc.

Bio-Film: water pipes, filters, high pressure installations, heat exchangers, irrigation hoses and droppers, etc.

Installation

The installation is very simple. The equipment is composed of two parts: an **electronic box** and a **transducer**. These are connected by a cable. The electronic box is placed outside of the water, preferably in a dry place. The transducer is placed in the water that needs to be treated, in a horizontal position preferably in a corner on the side. The Biosonic is installed between the main pipes and is connected by means of waterproof couplings.