

# Prevent Biofouling Growth with the LG Sonic Industrial Line

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- ✔ Prevent the growth of biofouling
- ✔ Reduce chemical expenses
- ✔ Prevent clogging of filters and pumps

# Chemical-free Biofouling Prevention

Biofouling in closed-loop systems can result in serious negative side effects such as increased chemical consumption, corrosion, increased power requirements of the system, and health and safety implications due to the growth of Legionella or other potentially harmful organisms.

## LG Sonic Industrial Line

The LG Sonic Industrial Line (Dry) provides a cost-effective solution to prevent biofouling in sea chests, heat exchangers and pipes with the use of ultrasound technology.

## The Advantages of our Technology

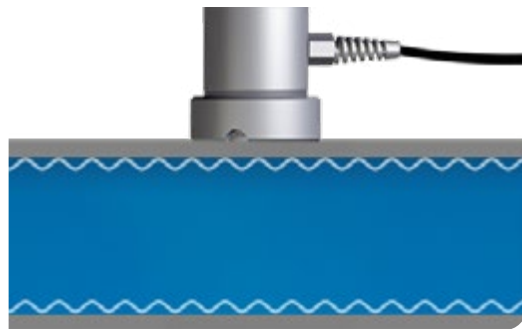
- ✔ Prevent the growth of biofouling
- ✔ Reduce chemical expenses
- ✔ Lower fuel consumption

## LG Sonic Industrial Line Options

Within the Industrial Line, there is an Industrial Wet or Industrial Dry option available depending on the specific situation.

### LG Sonic Industrial Dry

Featured in this brochure



### LG Sonic Industrial Wet



<p><b>How the ultrasound is transmitted</b></p>	<p>Through the dry side of a surfaces such as a pipe. The ultrasound is effectively transmitted through the material</p>	<p>Throughout the water body, within a pipe or mounted alongside a submerged surface</p>
<p><b>Which problem will be solved</b></p>	<p>Prevent the growth of biofouling in heat exchanges and pipes.</p>	<p>Reduce floating algae, prevent the growth of biofouling on the walls</p>
<p><b>Typical applications</b></p>	<p>Heat exchangers, sea chests, pipes</p>	<p>Reservoirs, larger ponds, irrigation reservoirs, clarifiers, cooling basins</p>

# Prevent Biofouling in Industrial Systems

The LG Sonic Industrial Line is an advanced system that emits specific ultrasonic parameters in order to prevent biofouling in industrial systems.

## Cooling Towers



Prevent biofouling formation within pipes by using ultrasound technology.

## Heat Exchanger



Improve efficiency of heat exchanger and cooling system.

## Sea Chest



Prevent biofouling formation, corrosion, and increased power consumption.

Over 10,000 LG Sonic algae and biofouling control products have been successfully installed in a wide range of applications in 52 different countries

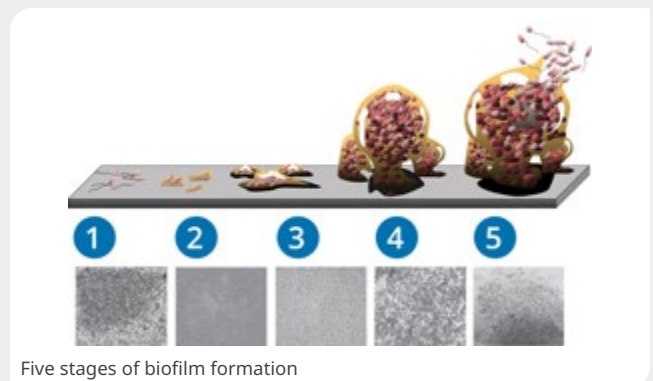
# Ultrasonic Biofouling Prevention Treatment Process

LG Sonic has more than 15 years of experience in applying ultrasound technology to prevent biofouling.

## How Ultrasound Prevents Biofouling Growth

Specific ultrasonic frequencies, waveforms and amplitudes can be utilised to prevent the formation of biofouling. Biofilm formation starts by bacteria attaching to a surface. The ultrasonic sound waves of LG Sonic create resonance around the solid surfaces within the water, thereby preventing bacteria to adhere to a surface.

1. Prevent bacteria from settling on a surface in the primary stages of biofilm formation
2. Alter the structure of an existing biofilm, eventually breaking it down
3. Control potential algae attaching to a biofilm



Ultrasonic treatment of LG Sonic can reduce algae growth by 70-90% and prevents the growth of biofouling

## Benefits of LG Sonic Biofouling Prevention

- ✓ Multiple ultrasonic programs for effective biofouling prevention
- ✓ Ultrasonic treatment allows for the reduction of chemical consumption
- ✓ No use of cavitation for a longer product lifetime

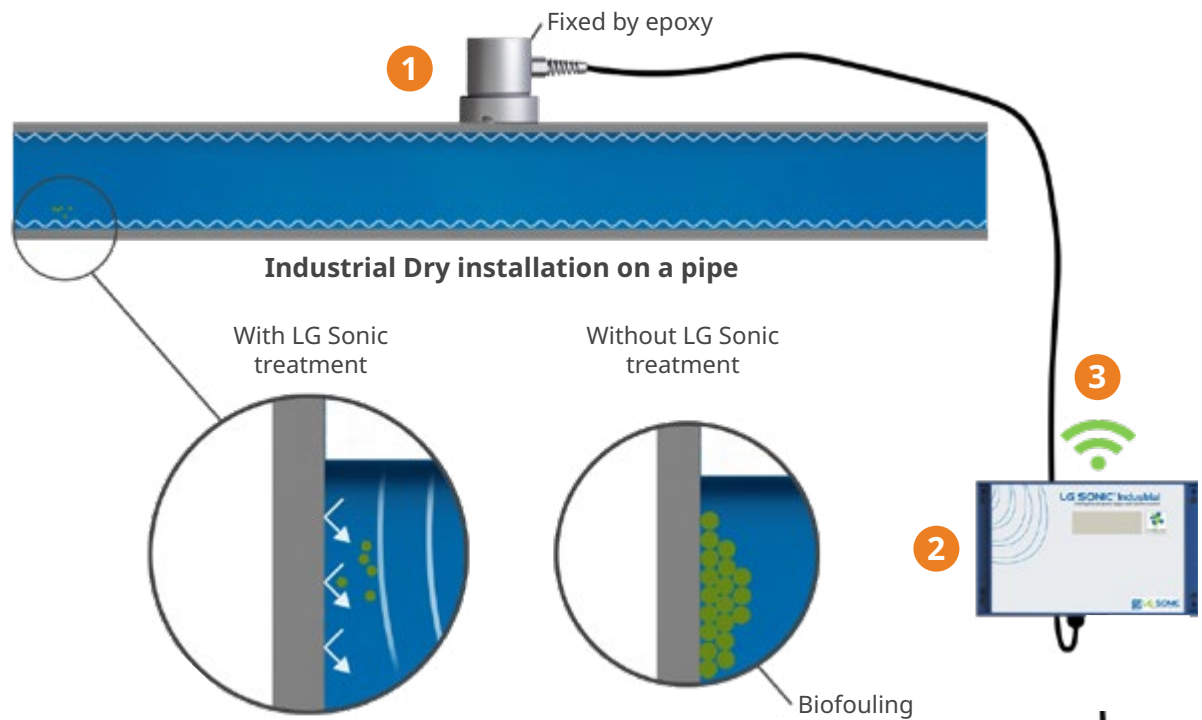


## No Use of Cavitation

Some ultrasonic biofouling control solutions use cavitation to prevent biofouling, which is a phenomenon where high-power ultrasound causes intense heat pressure and the formation of hydrogen radicals. These radicals may kill bacteria and other organisms but also cause oxidation reactions and may degrade anticorrosion layers.

- ✓ Not harmful for marine life
- ✓ Adaptable ultrasonic frequencies for effective treatment
- ✓ No side effects on the anti-corrosion layer
- ✓ Longer product lifetime
- ✓ Longer treatment distance

# LG Sonic Industrial Line (Dry) Features



## 1 Ultrasonic transmitter for effective biofouling prevention

- ✓ Treatment range up to 10m/30ft in diameter per device
- ✓ No use of cavitation
- ✓ Chameleon Technology™, adjusts the ultrasonic program to the specific conditions

## 2 Weatherproof control box

- ✓ Weatherproof design to protect against outdoor conditions
- ✓ LCD display with control buttons to select 12 different ultrasonic programs
- ✓ It is possible to add multiple ultrasonic transmitters to one control box for the treatment of multiple tanks or water surfaces with curves

## 3 Remote control monitoring to prevent frequent site visits

- ✓ GSM/GPRS control allows the user to monitor and change the ultrasound program remotely
- ✓ Receive status updates and alerts when power outages occur.

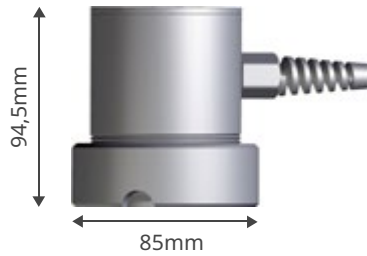
# Technical Specifications

<b>Ultrasonic treatment range</b>	<ul style="list-style-type: none"><li>• 10-15 meter in diameter</li></ul>
<b>Cable length</b>	<ul style="list-style-type: none"><li>• 20 meter</li></ul>
<b>Power consumption</b>	<ul style="list-style-type: none"><li>• 25 Watt</li></ul>
<b>AC input voltage</b>	<ul style="list-style-type: none"><li>• 100-240V AC, 50/60hz</li></ul>
<b>DC input voltage</b>	<ul style="list-style-type: none"><li>• 24V DC</li></ul>
<b>System weight</b>	<ul style="list-style-type: none"><li>• 2 kg</li></ul>
<b>Mounting foot</b>	<ul style="list-style-type: none"><li>• Stainless steel 304</li></ul>

**Control box**



**Industrial Dry**



# Biofouling Prevention Cases

The LG Sonic Industrial Line has been successfully installed in a wide range of applications, such as cooling towers, clarifiers and treatment plants

## Biofouling Prevention in a Cooling Tower

Al Futtaim Cooling district plant in Dubai incorporated the LG Sonic technology into their chemical treatment program to reduce the biocide consumption in the cooling towers and improve the water quality.

### Results

Using LG Sonic devices reduced chemical dosage for water treatment and control factors that may cause problems, such as corrosion, scaling, and microbial activity.

- ✔ Up to 69 % reduction in biocide dosage
- ✔ Up to 53% reduction in anti-scalant dosage
- ✔ Microbial analysis of the water after tests of satisfactory quality and within specific limits



## Biofouling Prevention in a Clarifier

Several LG Sonic devices were installed in the SAB Miller Clarifier in Tocancipa Brewery, Colombia to control filamentous algae caused by biofouling. The algae attached to the biofilm was identified as suspended and was growing on walls and water channels of the clarifiers, reducing process efficiency and increasing the cleaning efforts of the plant

### Results

Extensive testing showed the LG Sonic devices had a significant impact on the filamentous algae and bio-corrosion. Workers at the brewery didn't need to dose hydrochloric acid during maintenance, which resulted in less time required for the maintenance and substantial improvement of safety conditions for workers.



- ✔ Reduction of filamentous algae growth
- ✔ Lower maintenance
- ✔ Reduction of bio-corrosion on the clarifiers' walls

# Company Profile

## Mission

We at LG Sonic have the mission to eliminate harmful chemicals in the water treatment industry. Therefore, we developed a chemical-free technology that controls algae without disturbing the natural balance within water ecosystems. We work together with different European Universities and Research Institutes, many of which are European funded research and development projects.

Since 1999, LG Sonic has been a leading international manufacturer of ultrasonic algae control and biofouling prevention systems



## Our Solutions

- **MPC-Buoy**  
Control and monitor algae in lakes and reservoirs
- **LG Sonic e-line**  
Control algae in ponds
- **LG Sonic Industrial Line**  
Biofouling prevention in industrial systems
- **Monitoring Buoy**  
Combination of real-time water quality monitoring and user-friendly cloud software

## Track Record

- Coordinator of several European FP7 projects: ClearWater PMPC and Dronic (€3.2 million)
- Official Innovation Partner of American Water, U.S. largest water and waste water utility
- Winner of several innovation awards: Aquatech Innovation Award (2015), Global TAG excellence award (2015), WssTP Water Innovation Award (2014)





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