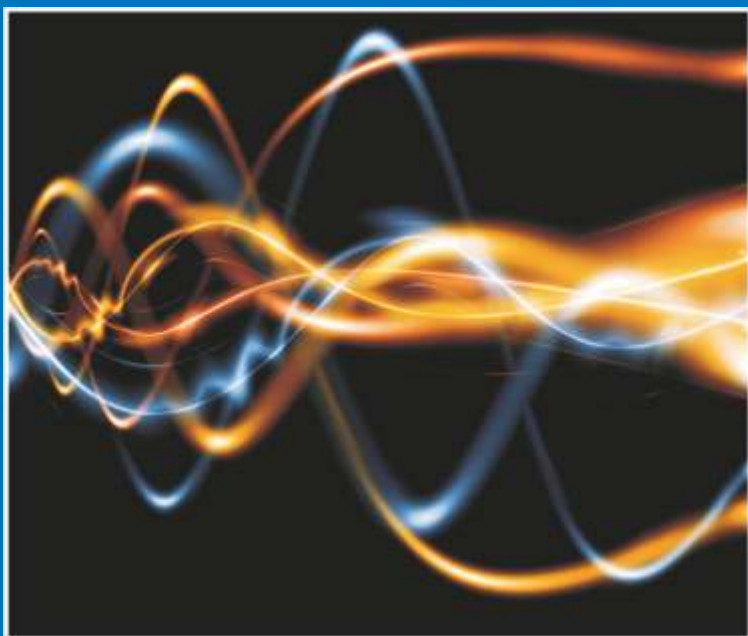


# LG SONIC®

## ULTRASONIC ALGAE AND BIOFILM CONTROL



After more than 10 years of experience with the usage of ultrasonic devices in controlling algae and biofilm, LG Sound now proudly presents the **LG Sonic**® technology.



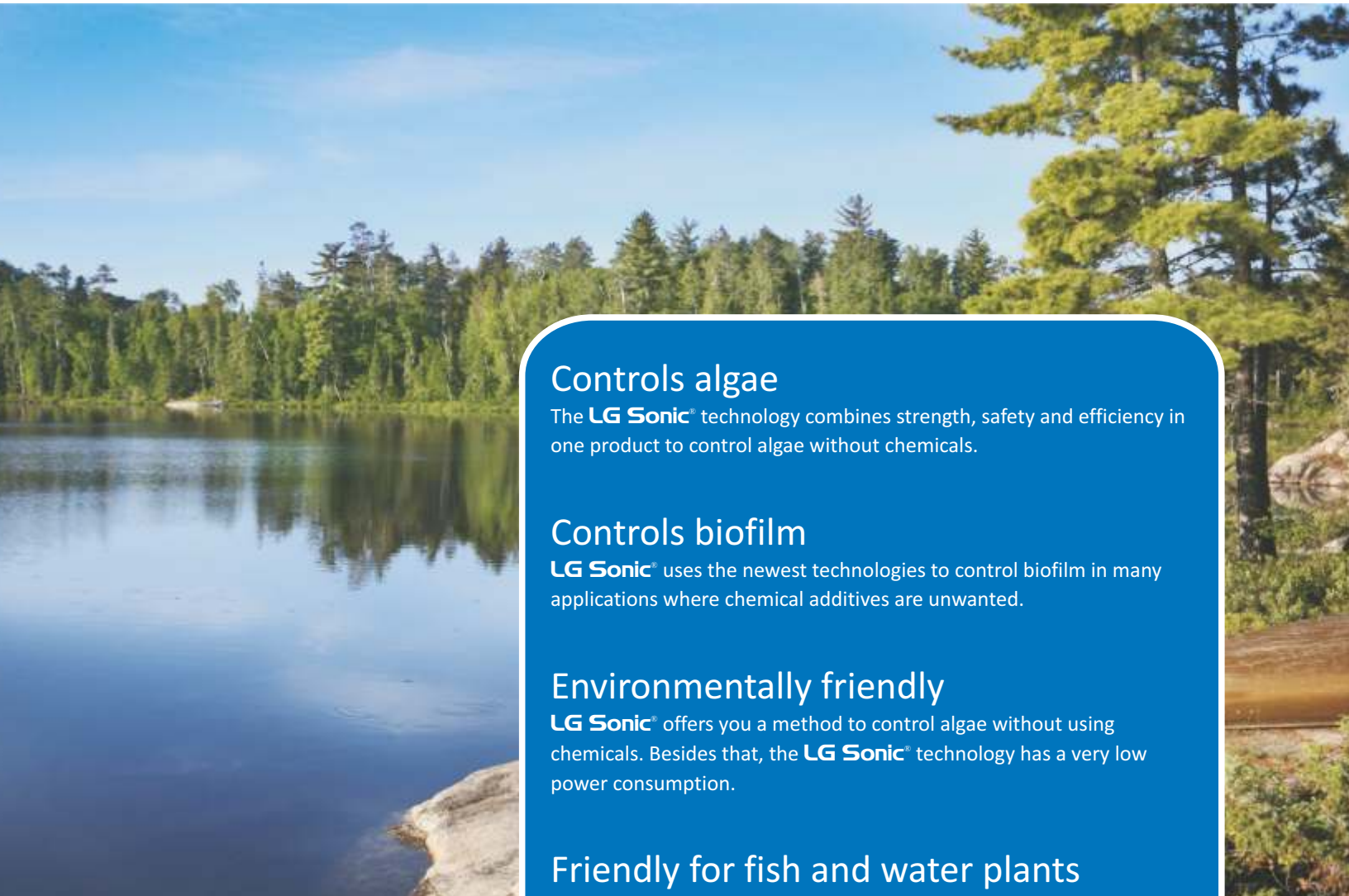
The **LG Sonic**® technology consists of a new generation of ultrasonic devices, which inhibit algal growth on an environmentally friendly basis without chemical additives.

“Control algae the environmentally friendly way in different applications ,”



# ADVANTAGES OF THE **LG SONIC**<sup>®</sup> TECHNOLOGY

Using ultrasonic sound waves only, the **LG Sonic**<sup>®</sup> controls algae and biofilm on all places where water is being stored.



## Controls algae

The **LG Sonic**<sup>®</sup> technology combines strength, safety and efficiency in one product to control algae without chemicals.

## Controls biofilm

**LG Sonic**<sup>®</sup> uses the newest technologies to control biofilm in many applications where chemical additives are unwanted.

## Environmentally friendly

**LG Sonic**<sup>®</sup> offers you a method to control algae without using chemicals. Besides that, the **LG Sonic**<sup>®</sup> technology has a very low power consumption.

## Friendly for fish and water plants

The **LG Sonic**<sup>®</sup> technology is tough on algae yet completely harmless for other life forms present in the water. Various universities have researched the effect of the **LG Sonic**<sup>®</sup> products on fish and water plants, but no negative effect was found.

## Effective on large water surfaces

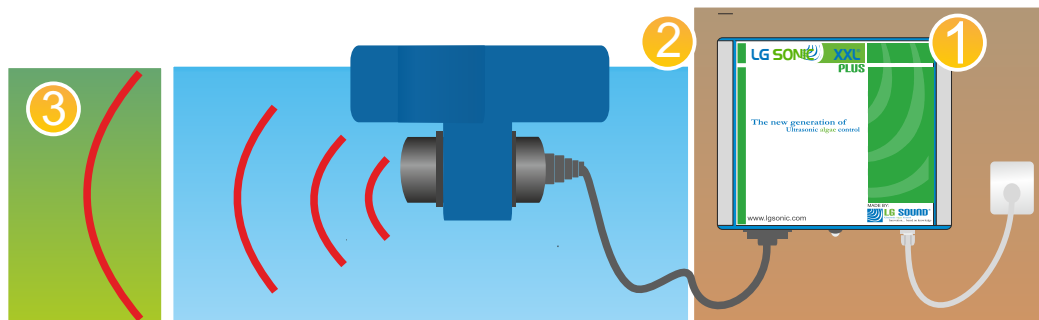
The **LG Sonic**<sup>®</sup> products can efficiently control algae on a distance up to 186 meter. with a power consumption of just 10 Watt. For reservoirs larger then 186 meters, the biologists from LG Sound can assist you with a detailed plan to install multiple devices for optimal water treatment.

## Easy to install and maintain

The **LG Sonic**<sup>®</sup> devices are being placed in the water body itself, emitting sound waves through your water reservoir.

# CONTROL ALGAE IN 3 SIMPLE STEPS

Algae control does not have to be complicated, at LG Sound we do the thinking about your water treatment to provide you with a simple system to control your algae.



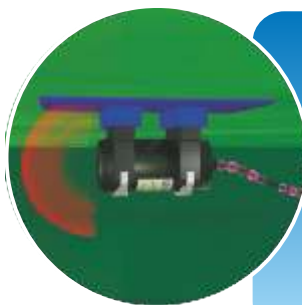
## 1 Generate ultrasound

Sound pulses are being generated within the power box. Thanks to the Dc-Mf Technology™, used only by the **LG Sonic**, the power box generates several different frequencies simultaneously and sends them to the transducer.



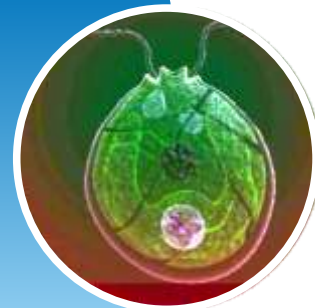
## 2 Transmit ultrasound

The transducer transmits these sound pulses into the water with a very high sound pressure (dB). The sound waves have different frequencies but all lie in the ultrasound range and are thus inaudible.

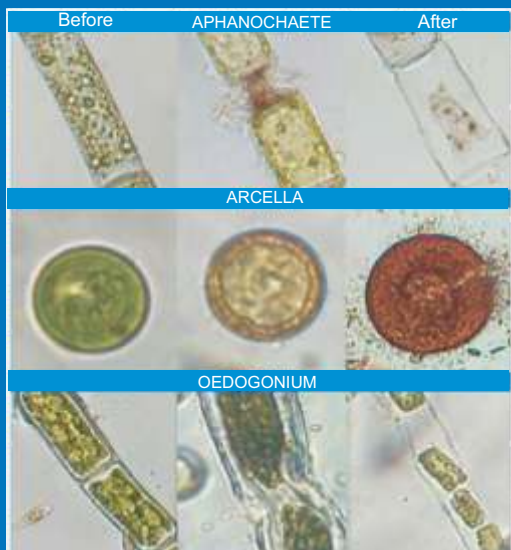


## 3 Damage algae

The high pressure ultrasound emitted by the **LG Sonic** targets many different algal structures. Components of algae cells, within the long range of **LG Sonic**, oscillate on the sound frequencies. This leads to tearing of different cell organelles such as the vacuole's tonoplast, cell wall or membrane and the gas vesicles of blue-green algae. Because many frequencies are used simultaneously different species of algae can be controlled on an efficient manner within a very short time span.



Before and after ultrasonic treatment with the **LG Sonic**® solution



# BENEFITS OF THE LG SONIC® TECHNOLOGY



## Controls algae in a range up to 186 meter..

One **LG Sonic**® device can control algae in a range up to 186 meter. For applications larger than this, multiple devices can be used.

## Low Power- Bright Signal Technology™

We feel that the strength of a sound wave is not in the power you put into them, but in their shape and transmission.

The Lp-Bs technology™ enables the **LG Sonic**® devices to send out a sound signal under optimal conditions. This makes it unnecessary to apply high power to obtain a long range.

## Low energy consumption

Due to the highly advanced Lp-Bs technology™ the **LG Sonic**® models use a maximum of 13 Watts.

## Dual Core-Multi Frequency technology™

Controlling one type of algae in a water reservoir often means another type will have a better chance to grow.

Therefore the **LG Sonic**® uses the Dc-Mf Technology™, which produces multiple frequencies simultaneously, controlling several algal species at the same time.

## Weatherproof control box

Completely innovated aluminium control box to better protect the PCB from weather influences. The aluminium box has better cooling capabilities and is water resistant.

## Highly advanced broadband transducer

The **LG Sonic**® transducer has been especially manufactured for LG Sound and has a protected formula. The transducers have been designed to gain the highest efficiency in transmitting the sound energy to the water.

## Easy to install

The **LG Sonic**® devices are easy to install. After delivery the product can be installed immediately in a water reservoir.

## Low maintenance

**LG Sonic**® devices have hardly any maintenance.

## 3 years guarantee

The **LG Sonic**® XXL plus, XL plus, and XXL models have a guarantee of 3 years.

Smaller models have a 2 year guarantee.

## Solar system available

The **LG Sonic**® plus models can operate on 24 or 36V using only 10Watt and are thus capable to operate on a standalone solar system.

# LAKES LAKES

*“A safe method to control algae in a large area”*



## Controls algae

The **LG Sonic**® technology combines strength, safety and efficiency in one product to control algae in large lakes. Blue-green algae are known to cause serious health problems and make recreational use of a lake nearly impossible. This can be controlled efficiently with the **LG Sonic**® products.

Furthermore, green algae, whether filamentous or suspended, are affected by the **LG Sonic**® technology.



## Effective on large water surfaces

The Lp-Bs technology™ enables the **LG Sonic**® products to efficiently control algae with a range of 186 meter with a power consumption of just 10Watt.

For larger lakes, the professional biologists from LG Sound can assist you with a detailed plan to install several devices for optimal water treatment.



## Beneficial to its environment

The **LG Sonic**® technology controls algae but is safe for humans, animals, waterplants and insects.

Using the **LG Sonic**® in a lake, the natural balance between all these life forms will be restored leading to a healthier and more stable environment.



## Solar power available

In lakes where a power source is not available the **LG Sonic** devices can be installed on a solar system. The technicians working for LG Sound can advise you on the best installation for your application.



## Easy to install and maintain

The installation of the devices is easy and there is hardly any maintenance necessary.



# (KOI) POND

*“ Enjoy a clear pond without chemicals ”*



## Controls algae

Forget scooping off algae and start enjoying your pond. Algae growth in your pond can now effectively be controlled with the **LG Sonic**® technology. Ponds clear up in only a few weeks and will be kept clean with one of the **LG Sonic**® products.



## Friendly for fish, waterplants and insects

The **LG Sonic**® technology is tough on the algae in your pond yet completely harmless for other life forms present in the water. Various universities have researched the effect of the **LG Sonic**® products on fish, waterplants and insects but no negative effect was found.



## Easy to install and maintain

The **LG Sonic**® products work on the total surface of the pond. Installation of an extra pump or other system is not necessary, the products can just be placed in the pond. After installation the devices are nearly maintenance free.



## Environmentally friendly

The **LG Sonic**® products can be used without chemicals and have a very low power consumption.



### Which product do I need?

For ponds smaller than 10 meter in length:  
LG Sonic XS or SSS  
For ponds up to 50 meter in length:  
LG Sonic Tank  
For ponds up to 100 meter in length:  
LG Sonic XL Plus  
For bigger ponds  
LG Sonic XXL Plus



# SWIMMING POOL

*“Enjoy a clean swimming pool with less chlorine”*



## Controls algae

Controls algae on an environmentally friendly manner without causing any harm to humans or animals.



## Effective against black algae

Black algae, which stain your pool walls and floors become easy to remove once treated with the **LG Sonic® Pool**. After removing the layer of algae from the walls, the **LG Sonic®** technology will prevent them from growing back.



## Reduces biofilm

A biofilm, the slimy attachments on the sides of the pool, will loosen and can be cleaned easily due to the sound waves produced by the **LG Sonic®**.



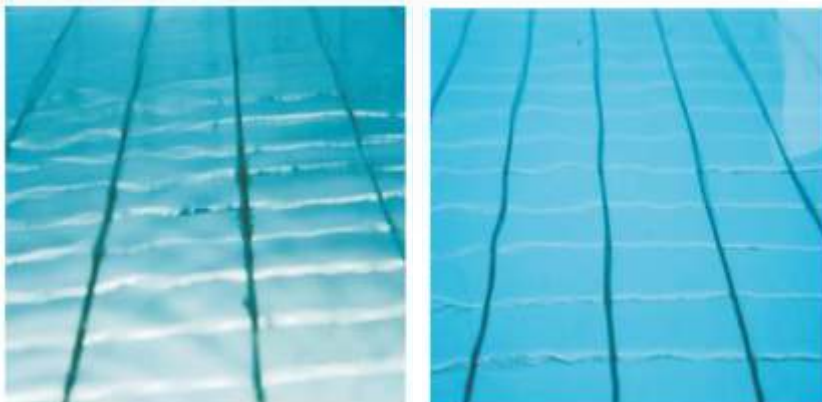
## Reduction of chlorine

Controlling algae and biofilm in your swimming pool, the **LG Sonic®** technology will assist you in reducing the chlorine treatment in your swimming pool. Experience healthier water to swim in with the **LG Sonic®** technology.



“Even the largest swimming pool in the world uses **LG Sonic®** to keep it clear”

See page 13



Reduction of black algal growth over a period of 5 days of **LG Sonic®** treatment



### Which product do I need?

Swimming pools up to 50 meter can be treated with the **LG Sonic Pool**

### Typical installation?

Within the swimming area

# IRRIGATION

“ Control algae on an easy, cost-efficient manner”



## Controls algae

Algae growth in water reservoirs can be controlled without chemicals or labor, with the **LG Sonic**® technology. The sound signals produced by the **LG Sonic**® technology are so strong that they can even control algae in reservoirs with a low retention time.



## Prevent clogging of filters

It is mostly algae that clog filters, drip installations and nozzles. Prevent frequent maintenance to your system due to algal growth with the **LG Sonic**® technology.



## Also effective in tanks with a low retention time

**LG Sonic**® uses the Dc-Mf technology™ which enables the devices to affect several different algal species within a second. Therefore the **LG Sonic**® technology works fast and efficient enough to be applied on tanks with a low retention time.



## No maintenance

The **LG Sonic**® devices are almost maintenance free.



## Easy to install

Placement of the **LG Sonic**® devices involves only placing the device in the water and turning it on.



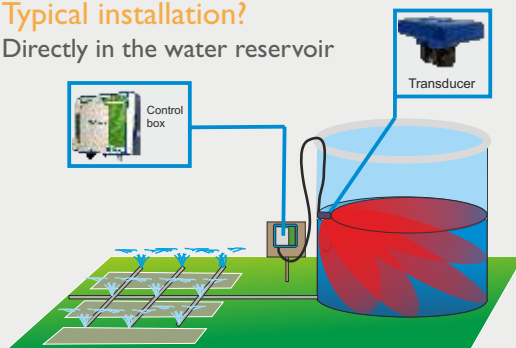
### Which product do I need?

Measurement of reservoir:

- Up to 50 meter: LG Sonic Tank
- 100 meter: LG Sonic XL plus
- 150 meter: LG Sonic XXL Plus
- 150+ meter: 1 or more, LG Sonic XXL plus

### Typical installation?

Directly in the water reservoir



Ask us for our irrigation brochure!



# AQUACULTURE

*“Improve the water quality in your fish tanks”*

## Inland aquaculture



### Controls algae

The **LG Sonic**® technology will retain a 90% algal reduction in your fish tanks in an environmentally friendly manner without the use of chemicals.



### Controls cyanobacterial toxins, MIB and geosmins

By controlling blue-green algae growth, toxins and other negative side effects of an algal bloom will be reduced simultaneously with your algal problems.



### Reduces TSS, Turbidity, BOD, COD and pH.



### Safe for fish, waterplants and insects

No negative effects by the **LG Sonic**® products were found on fish, waterplants and insects in various studies performed at various universities.

## Open sea aquaculture



### Reduces biofouling

By directly aiming the **LG Sonic**® towards a fish cage the formation of biofilm will be prevented, together with the adherence of algae and other organisms present in the water.

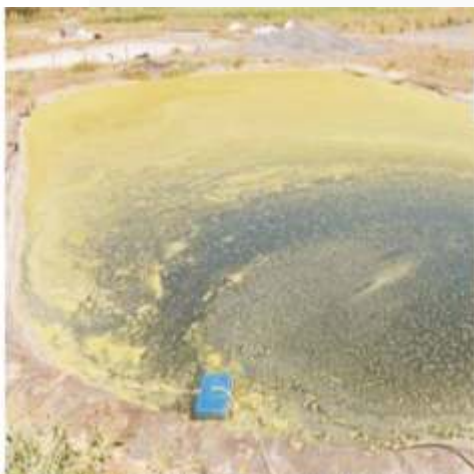


### Reduces maintenance of fish cages

**LG Sonic**® prevents the fouling of fish cages in open sea, thereby drastically reducing maintenance to the fish cages.



Salmon net cage



Ask us for the aquaculture brochure!

# WATER TREATMENT PLANTS

“Controls algae without killing beneficial bacteria”



## Controls algae

Algal growth in clarifiers, sand filters or filter basins can be controlled without using chemicals. LG Sound provides special industrial models to control the growth of filamentous and suspended algae in water treatment plants.



## Improves sludge reduction

The **LG Sonic** technology does not harm bacteria in charge of sludge reduction. Various studies have proven that the **LG Sonic** technology, combined with a bacterial treatment of both aerobic and anaerobic bacteria leads to a faster sludge reduction.



## Better interaction between both solids and bacteria

A higher interaction surface between dissolved solids and bacteria can be established in DAF or flocculation tanks using the ultrasound produced by the **LG Sonic**. Because **LG Sonic** does not harm the bacteria used, sludge reduction becomes more efficient.



## Environmentally friendly

With the introduction of the Lp-Bs Technology™, the **LG Sonic** devices have an increased strength and efficiency yet only use 10 Watt. Chemical treatment to prevent algal growth becomes hardly necessary and the treatment plants' efficiency can be increased.



### Which product do I need?

Measurement of tank:

#### Length

13 meter	1x LG Sonic XL Plus
20 meter	1x LG Sonic XXL plus
25 meter	2x LG Sonic XL Plus
40 meter	2x LG Sonic XXL plus

Ask us for the wastewater brochure!



# COOLING TOWERS

*“Reduces chemical treatment by controlling algae,,*



## Controls algae

The **LG Sonic**® technology directly controls existing algae and prevents the growth of new algal cells without using chemicals. Thanks to the new Lp-Bs Technology™ the **LG Sonic**® products can control algal growth in a circuit using only 10Watt.



## Controls biofilm formation

The sound waves produced by the **LG Sonic**® are strong enough to inhibit the adherence of bacteria to a surface. EPS, present in an existing biofilm, is directly targeted, degrading the biofilm.



## Reduces chemicals

The **LG Sonic**® technology effectively controls algae, biofilm and *Legionella* which diminishes the need to frequently add chemicals, to shock the cooling water.



## Improved efficiency

Even a small layer of biofilm within a pipe reduces its diameter. This means less water can be pumped around the circuit and more power is needed. Besides that, a biofilm can function as an insulating layer around the grids and pipes, thereby reducing the cooling efficiency of the tower. By reducing the formation of a biofilm, the **LG Sonic**® helps increase the efficiency of the cooling tower.



## Prevent damage to pumps and pipes

Bacteria present in a biofilm can produce acids, corrosive for metal, or even use metal as fuel. Debris present in the cooling tower water can be collected in the biofilm, leading to damage to pumps and pipes. With **LG Sonic**® the formation of a biofilm can be controlled, preventing damage to the system.



Which product do I need?  
**LG SONIC XXL PLUS** or **XL PLUS**

for installation, more information  
and reference, please ask us about  
our cooling tower brochure.

# SPOTLIGHT PROJECTS

## San Alfonso del Mar, largest swimming pool in the world

(2007 Guinness World Book of Record)

San Alfonso del Mar seawater swimming pool is the largest swimming pool of the world made by Crystal Lagoons Corp. It is 1 km long, contains 250 million litres of water and has a surface area of 20 acres.

Crystal lagoons uses environmentally friendly methods only to control the water quality in their swimming pool and keep the water crystal clear. After 2 years of research, Crystal Lagoons Corp. integrated 13 **LG Sonic** products, especially developed for their water treatment technology.

“Crystal Lagoons is very satisfied with the results. Projects of similar and larger dimensions are now in different stages of development and will all be finalized with the **LG Sonic** technology „ Fernando Fischmann, Chairman of Crystal Lagoons Corp.



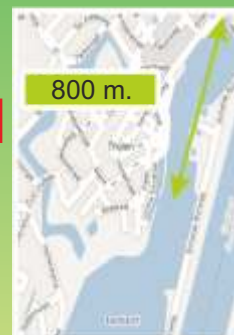
## Controlling Blue-green algae in a 800 meter long harbor.

In May 2007 LG Sound proposed treatment for a harbor in the Netherlands. The harbor, which measured approximately 800 meters in length, suffered badly from blue-green algal growth. Blue-green algae produce toxins, which can be harmful for humans. The toxin concentration and smell in the harbor was so bad that recreational use was impossible. Furthermore, the smell was so bad that houses, surrounding the harbour could no longer open their windows.

The solution was 13 **LG Sonic**® devices, installed in the harbour itself, to kill the algae growing inside the harbor. In the midst of the blue-green algae blooming period, toxin levels in the harbor, treated with **LG Sonic**® where diminished drastically.

Location	LG SONIC Treatment	30 July 2007	6 August 2007
Harbor 1	Yes	0,23 µg/l	0,83 µg/l
Harbor 2	No	72 µg/l	82 µg/l
Harbor 3	No	81 µg/l	89 µg/l
Harbor 4	No	31 µg/l	325 µg/l
Harbor 5	No	2,5 µg/l	1220 µg/l

Toxin concentration



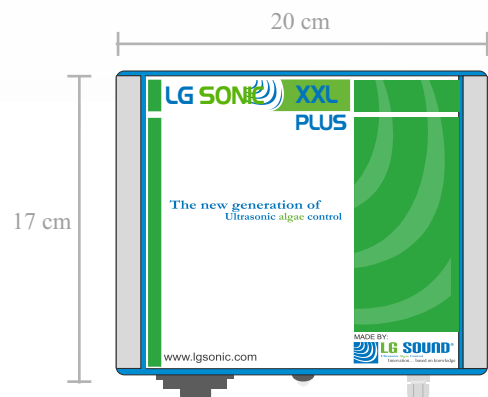
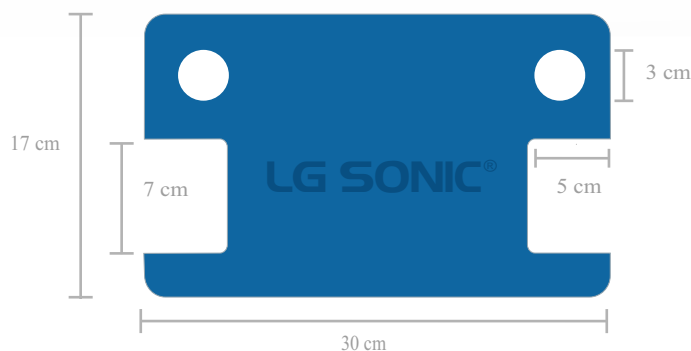
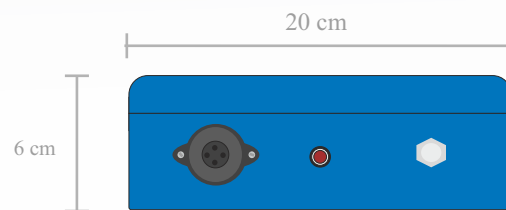
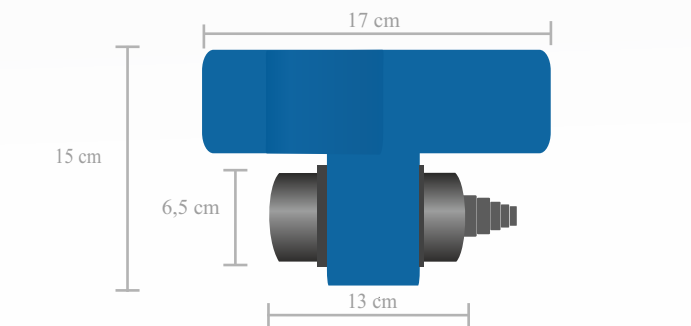
# LG SONIC® MODELS

Whether you require a strong unit capable of treating very large water surfaces, or are looking for a device capable to control the algae in your garden pond efficiently, **LG Sonic**® offers you the best solution.

The **LG Sonic**® technology consists of 7 devices which have their own benefits and strengths to optimally control algae or biofilm in every application. Because of the highly advanced technique, the **LG Sonic**® models produce the strongest sound signals, with the lowest possible power consumption.

## TECHNICAL SPECIFICATIONS:

MODELS	XXL PLUS	XL PLUS	TANK	POOL	SSS
Range Meter (Feet)	186 (600)	105 (350)	70 (230)	50 (160)	10 (30)
AC Power input   110-240V 50/60 hz	✓	✓	✓	✓	✓
DC Power input	24V	24V	36V	36V	36V
Energy consumption (W/h)	11W	10W	13W	13W	12W
Lp-Bs Technology™	YES	YES	NO	NO	NO
Dual Core Multi Frequency™	YES	YES	YES	YES	YES
Type of electric plug	Variable	Variable	Variable	Variable	Variable
Cable length meter (feet)	17 (55)	17 (55)	17 (55)	10 (30)	10 (30)
Float	Yes	Yes	Yes	Optional	Optional
Weight kg (lb)	6 (13)	6 (13)	6 (13)	5 (9)	5 (9)
Guarantee	3 years	3 years	2 years	2 years	2 years





## Innovation based on knowledge

LG Sound believes in constantly expanding her knowledge on water quality and ultrasonic techniques. With a better understanding of all biological and chemical processes in watery ecosystems, LG Sound aims to keep innovating the product to our customers needs. LG Sound offers biological and chemical knowledge to all her customers before and after sales.

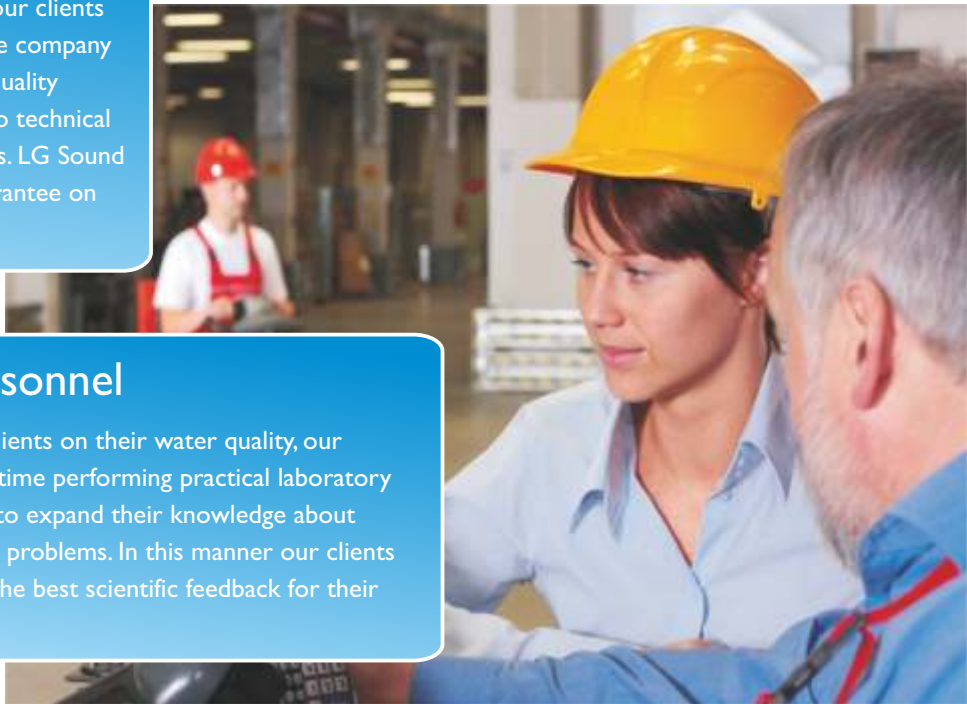
## LG Sound invests in science

After 2 years of research in cooperation with several European universities in a 2 million USD project, LG Sound developed the **LG Sonic** technology. Based on the findings in this study, the optimal frequency pattern was determined. Used under optimal conditions such as the Lp-Bs Technology™, the **LG Sonic** products are the most efficient, updated products on the market today.

- University of Portsmouth (UK)
- University of Catania (Italy)
- Universität für Bodenkultur Wien (Austria)
- University of Amsterdam - VU (Amsterdam)

## We care about quality

LG Sound makes sure that the devices reach our clients in perfect condition! Before a device leaves the company to one of our clients, it goes through several quality controls to make sure that the devices have no technical or designing flaws, nor any other imperfections. LG Sound offers her customers a two or three year guarantee on all products.



## Certified personnel

Besides advising our clients on their water quality, our biologists spend their time performing practical laboratory and literature studies to expand their knowledge about algae and their related problems. In this manner our clients can be certain to get the best scientific feedback for their water reservoir.



## Why choose LG Sound:

- 3 years guarantee on the industrial **LG Sonic**® devices
- More then 8000 **LG Sonic**® devices have been installed in 48 countries worldwide
- Scientifically proven technology
- Safe for fish, plants, and other aquatic life
- No high current or high voltages are transmitted into the water
- LG Sonic**® units are developed in the Netherlands in collaboration with several renowned universities:
  - University of Amsterdam (VU)
  - UNICT Catania (Italy)
  - University of Portsmouth (UK)
  - Limnos (Slovenia)
  - BOKU (Austria)
- Money back guarantee

### **LG SOUND**

Gerrit van der Veenstraat 75  
2321CD Leiden  
The Netherlands

Tel: +31(0) 715281950  
Fax: +31(0) 715281952  
E-mail: [info@lgsonic.com](mailto:info@lgsonic.com)

[www.lgsonic.com](http://www.lgsonic.com)

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