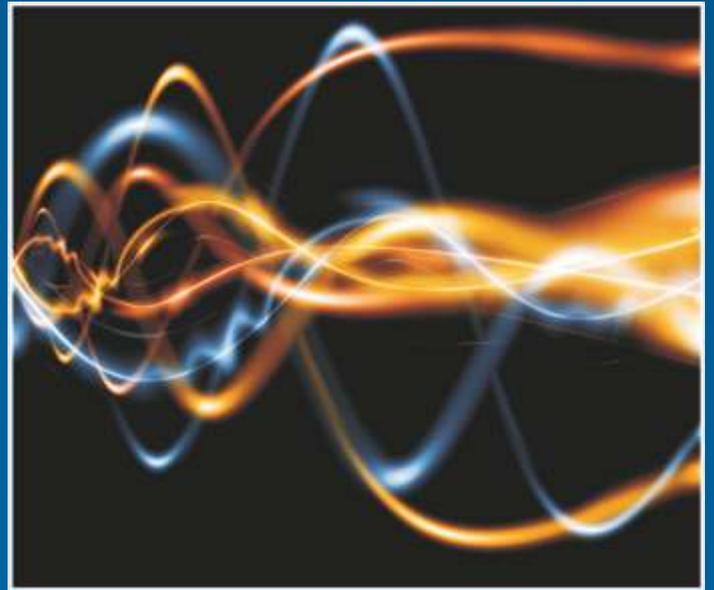


LG SONIC[®]

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,”





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 warranty on all products.

LG Sonic has been featured on TV (21st Century Business).



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.



What is ultrasonic algae control?

Ultrasonic algae control devices from LG Sound, are very specific, underwater systems, that emit ultrasonic sound waves which destroy algae. Using scientifically proven frequencies, offers the possibility to eliminate many types of algae, including the toxic blue-green algae (cyanobacteria) and biofilm build-up that can cause problems in drinking water and cooling towers.

An effective ultrasonic technology can be used to treat water environmentally friendly and reduce chemical treatment in several different applications. The LG Sonic® products are typically found to be useful in industrial water systems such as irrigation tanks, aquaculture basins, cooling towers and (waste) water treatment plants. Other common applications for LG Sonic® are (more or less) stagnant water bodies such as ponds and lakes.



Movie 1:



The Advantages of our Technology

Controls algae

The LG Sonic® technology combines strength, safety and efficiency in one product to control algae in many applications.

Environmentally friendly

LG Sonic® offers you a method to control algae without using chemicals or to reduce chemical treatment. Besides that, the LG Sonic® technology has a very low power consumption.

Friendly for fish and water plants

The LG Sonic® 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® products on fish and water plants, but no negative effect was found.

Controls biofilm

LG Sonic® uses the newest technologies to control biofilm in many applications where chemical additives are unwanted or need to be reduced.

Effective on large water surfaces

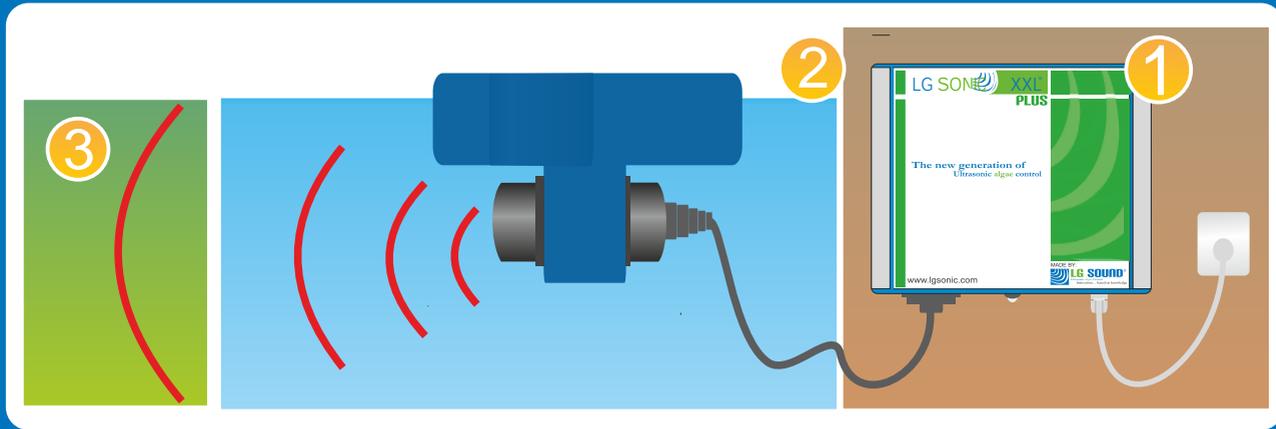
The LG Sonic® products can efficiently control algae up to 186 meter per device. with a power consumption of just 5 Watt.

Easy to install and maintain

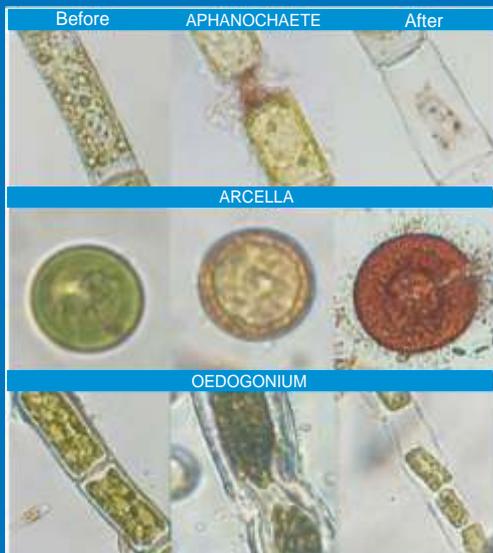
The LG Sonic® devices are being placed in the water body itself, emitting sound waves through your water reservoir.

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 algae.



Before and after ultrasonic treatment with the LG Sonic® solution



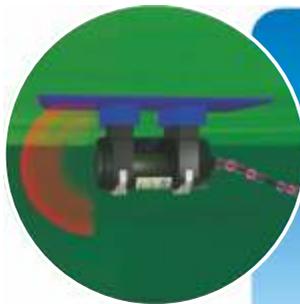
1 Generate ultrasound

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 ultrasonic 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.



Movie 2:



LG SONIC®

The worldwide most Innovative, Effective and Powerful ultrasonic system that will control your Algae and Biofilm problem on an environmentally friendly manner.



Less frequencies, higher efficiency

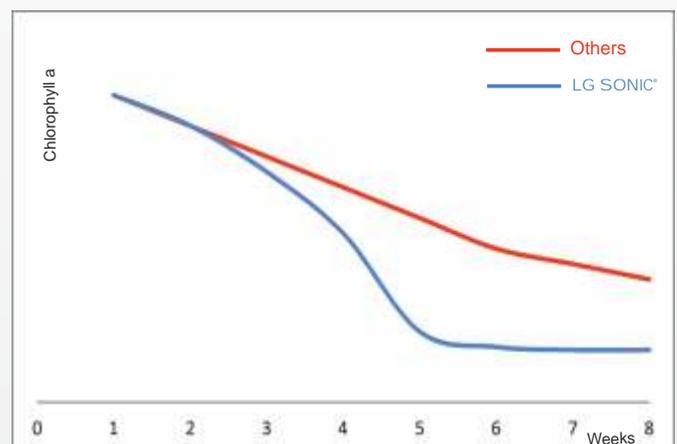
By only using effective frequencies, LG Sonic® wastes no time in emitting the wrong ones which leads to a higher efficiency. LG Sound has been cooperating closely together to determine the most optimum parameters to control different types of algae.

As a result, the LG Sonic® combines only the correct frequencies, amplitudes and output powers to control algae efficiently. Because fewer frequencies are used that are more effective, the treatment time is shorter and the efficiency will be higher



Movie 3

LG SONIC® vs wide frequency bandwidths



LG SONIC® 38% more effective than traditional ultrasonic algae control devices, thanks to:

Dual Core-Multi Frequency technology™

LG Sonic® devices are equipped with the DC-MF technology™ to ascertain that all different types of algae in your water are being controlled.

Because a water body normally contains several different types of algae, using only 1 frequency would not suffice as it would kill only one group of algae. The DC-MF technology™ effectively combines different frequencies, produced simultaneously, to address all algae in your water body.



Low Power- Bright Signal Technology™

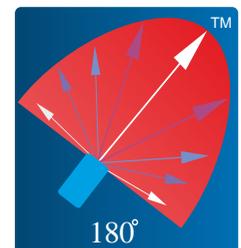
LG Sonic® uses the LP-BS technology™ to send out a sound signal under optimal conditions. This makes it unnecessary to apply high power to obtain a long range, increases the lifespan of the transducer and electronics and increases the "algae killing ability" because sound waves are not being distorted, dimmed or changed. Due to the highly advanced Lp-Bs technology™, the LG Sonic® models have a low power consumption of only 5 Watt.



Highly advanced broadband transducer

The LG Sonic® transducer has been especially designed for LG Sound and forms a perfect match with LG Sonic's electronics.

This ensures the best transmission of ultrasound into the water with a minimum sound loss and frequency change, which makes the LG Sonic® devices the most efficient ultrasonic units on the market today.



3 years warranty , NSF/ANSI Standard 61 , CE, UL and CSA Standard

LG Sonic® offers a warranty on the industrial units of 3 years and has been tested for certificates worldwide and comply to all regulations. Some of the safety standards LG Sonic® units have: CE, NSF/ANSI Standard 61 and UL and CSA Standard for safety for Class 2 Power Unit.



Solar system available

The LG Sonic® units can operate on 24 Volts DC using only 5 Watt. The complete standalone solar system and installation can be purchased from LG Sound.



LG Sonic® options:

GSM monitoring



Because continuous operation is important to control algae effectively, all LG Sonic® devices can be equipped with a GSM monitoring system. With this handy option you can request the operation status of your device at any time, by sending your device an SMS message! Besides that, the GSM monitoring system is programmed to send an sms alert.

Dual Tester



The Dual Tester can be used to test whether the Power Box is still sending all the correct frequencies by plugging it into the transducer output. Besides that, it can also be used to test the frequencies emitted into the water.

The Dual Tester has been set to match the correct frequencies that the LG Sonic® is known for and do not measure any harmonic noise or useless frequencies, that a common dB meter would do.

Flexi-arm



The flexi-arm is part of the most recent innovation line of the LG Sonic®. This product has been especially designed to make the installation of the units easier.

Besides that, they offer the possibility to aim the LG Sonic® unit better, leading to an even better result of your ultrasound treatment. The connecting arm is flexible and it can be adjusted to fit every (possible) application, where previously improvised techniques, such as ropes and poles were used.



Installation examples in lakes, ponds and swimming pools with the flexi-arm:



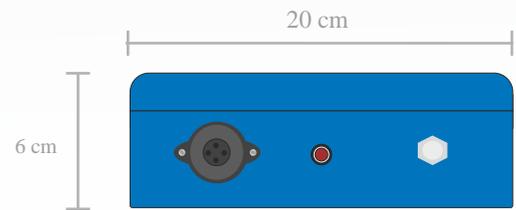
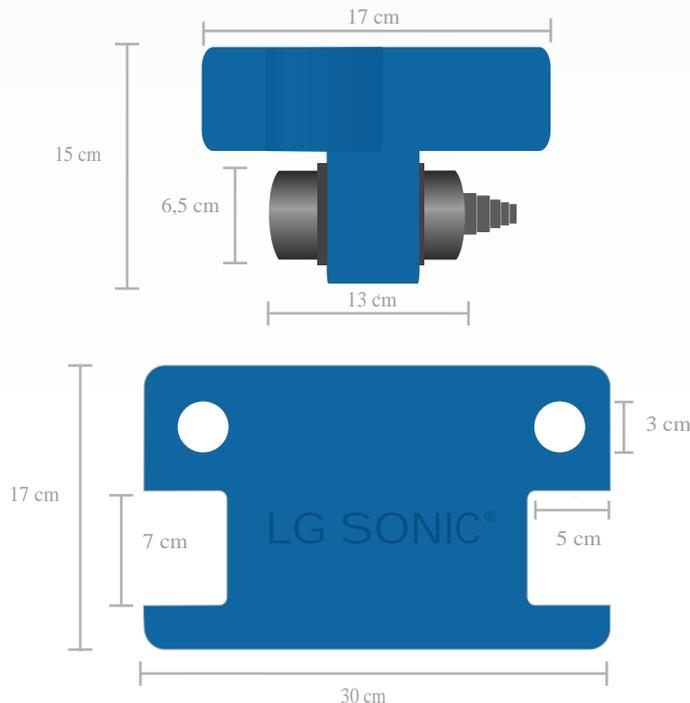
LG SONIC® MODELS

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 5 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)	30 (100)
AC Power input 110-240V 50/60 hz	✓	✓	✓	✓	✓
DC Power input	24V	24V	24V	24V	24V
Energy consumption (W/h)	7W	5W	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	Yes	Yes
Weight kg (lb)	6 (13)	6 (13)	6 (13)	6 (9)	6 (9)
Warranty	3 years	3 years	2 years	2 years	2 years



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 10 Watt. 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 30 meter in length:

LG Sonic SSS

For ponds up to 70 meter in length:

LG Sonic Tank

For ponds up to 105 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 Spotlight projects page



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

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 a 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



Download brochure 1

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 short 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.



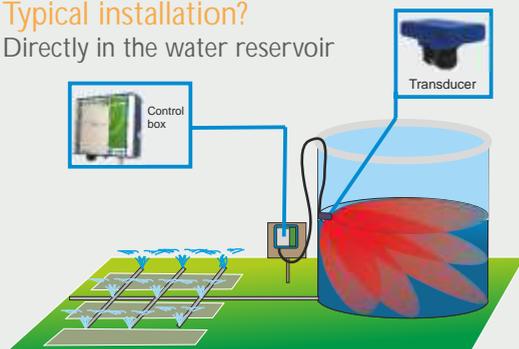
Which product do I need?

Measurement of reservoir:

- Up to 70 meter: LG Sonic Tank
- 105 meter: LG Sonic XL plus
- 186 meter: LG Sonic XXL Plus
- 186+ meter: 1 or more, LG Sonic XXL plus

Typical installation?

Directly in the water reservoir



Download brochure 2

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 Sonic 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?

LG SONIC XXL PLUS or XL PLUS

for installation, more information and reference, please ask us about our water treatment brochure.

Download brochure 3



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 10 Watt.



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.



Download brochure 4

GOLF COURSES

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



Controls algae

Algae growth in ponds 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 short retention time.



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.



Can also work on solar power

The LG Sonic units can also operate on 24 Volts DC using only 5 Watt. The complete standalone solar system and installation can be purchased from LG Sound.



No maintenance

Keeps your golf course pond in optimal condition without the need to maintain the pond frequently.



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 pond:

- Up to 70 meter: LG Sonic Tank
- 105 meter: LG Sonic XL plus
- 186 meter: LG Sonic XXL Plus
- 186+ meter: 1 or more, LG Sonic XXL plus

Typical installation?

Directly in the pond



SPOTLIGHT PROJECTS

Controlling Algae in Bekaert cooling towers.

In January 2011, The Belgium company Bekaert installed several open cooling towers. In open systems, cooling water comes into contact with sunlight which in this case, resulted in the extreme growth of algae.

As a consequence, algae clogged pipes and filters weakening and reducing the overall cooling efficiency of the towers.

In March 2011, Bekaert installed 3 LG Sonic XL and LG Sonic XXL Plus units in their bassins. After only 5 days of treatment the results from the LG Sonic devices were clearly visible, according to Bekaert Quality manager:

„The LG Sonic simply did its work. The algae particles float around in the cooling water making it appear cloudy. However these particles are later easily filtered. The algae blocking the pipes disappeared.“



 **BEKAERT**
better together

Tyson Foods, Inc. clarifier at a Poultry Processing Plant

Controlling algae in a clarifier at a Poultry Processing Plant, Pennsylvania USA (within the period of March-April 2011).

Tyson Foods has an 80' diameter circular clarifier, that suffered from algae growth on the walls and weirs. Algae would be carried over in the system, causing various problems.

As a solution, 1 LG Sonic XL plus was installed. The clarifier was cleaned before the installation of the LG Sonic. After installation, the LG Sonic kept the clarifier free from algae for over 1 month, without cleaning.





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

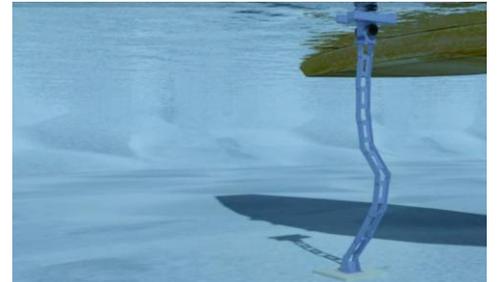
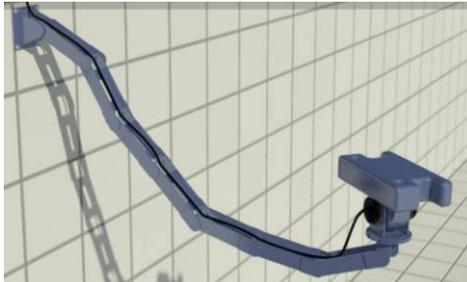
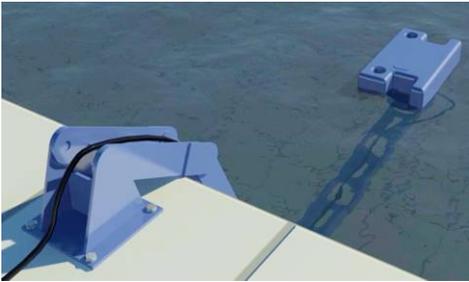
Toxin concentration



Flexi-arm:

This product has been especially designed to make the installation of the units easier.

The Flexi-arm offer the possibility to aim the LG Sonic® unit better, leading to even better result of your ultrasound treatment. The connecting arm is flexible and it can be adjusted to fit many (possible) application, where previously improvised techniques, such as ropes and poles were used. The flexi-arm can be extended up to 50 Meters



Aquatic Plant & Algae Id.
Aquatic Weed Control
Algae Control
Water Testing
Aeration
Water Quality Systems

AQUATIC
TECHNOLOGIES

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