



Control and Monitor Algae With the MPC-Buoy

- ✓ Eliminate up to 90% of the algae
- ✓ Reduce TSS, BOD and chemical usage
- ✓ Safe for fish, plants and other aquatic life

Looking for a Complete Algae Control Solution?

A combination of high temperatures, stagnant water, and nutrient overload can result in excessive algae growth. This causes a depletion of oxygen in the water and the release of toxins, as well as taste/odor problems.



Algae Problem



Algae Solution

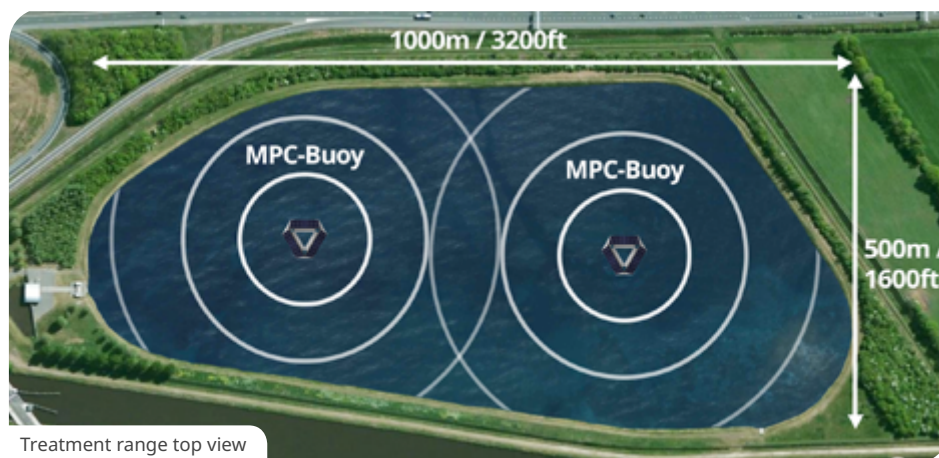
MPC-Buoy

The MPC-Buoy is a floating, solar-powered system that combines real-time water quality monitoring and ultrasonic sound waves to control algae in lakes and reservoirs effectively.

Advantages of LG Sonic ultrasonic technology

- ✔ Eliminate up to 90% of the algae
- ✔ Prevent the growth of new algae
- ✔ Reduce TSS, BOD and chemical usage
- ✔ Safe for fish, plants and other aquatic life

The solution is to anchor one or multiple systems that transmit specific ultrasonic parameters depending on the type of algae.



Treatment range top view

Each MPC-Buoy device can control algae in areas up to 500m/1600ft in diameter

Control Algae in Large Fresh Water Surfaces

The MPC-Buoy is especially designed to control algae in large water surfaces such as lakes and reservoirs.

Drinking Water Reservoirs



Reduce chemical consumption, odor and taste problems

Irrigation Reservoirs



Prevent the clogging of pumps, filters and sprinklers

Recreational Lakes



Reduce odour problems and prevent dangerous toxins

Industrial Reservoirs



Increase water quality and the efficiency of your cooling water

Wastewater Lagoons



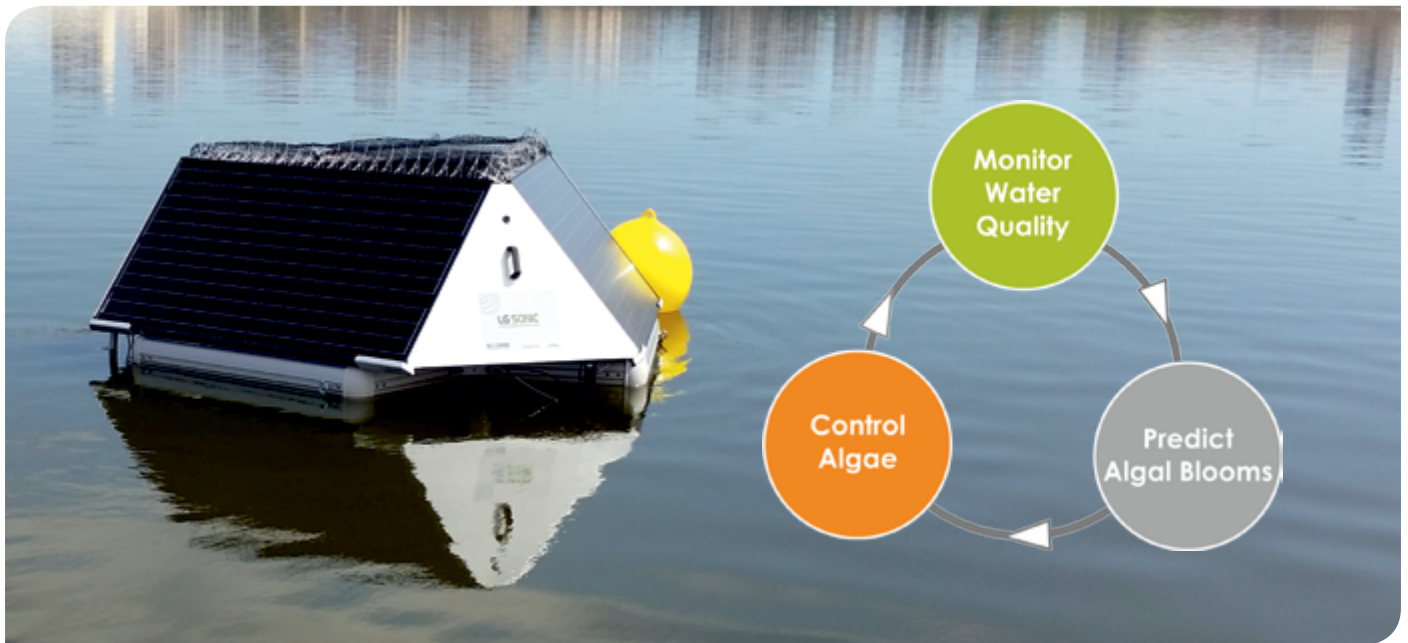
MPC-Grid

For wastewater lagoons, LG Sonic offers an MPC-Buoy solution without solar panels, called the MPC-Grid. The system is powered from the mains (AC, DC optional) to treat smaller water bodies such as wastewater lagoons.

Improve water quality, reduce TSS and BOD before discharge.

Monitor, Predict and Control Algae With the MPC-Buoy

The MPC-Buoy is a floating solar-powered system that combines real-time water quality monitoring and ultrasonic sound waves to control algae effectively.



1. Monitor Water Quality

The MPC-Buoy provides a complete overview of the water quality by collecting the following parameters every 10 minutes:

- Chlorophyll α (green algae),
- Phycocyanin (blue-green algae),
- pH,
- Turbidity,
- Dissolved Oxygen,
- and Temperature.

2. Predict Algal Blooms

The collected data is delivered in real-time via radio, GPRS, or 3G to a web-based software.

The web-based software gives a real-time insight in the water quality.

Based on our developed **algorithm** we can modify the ultrasonic program to the specific water conditions and predict an algal bloom a few days ahead.

3. Control Algae

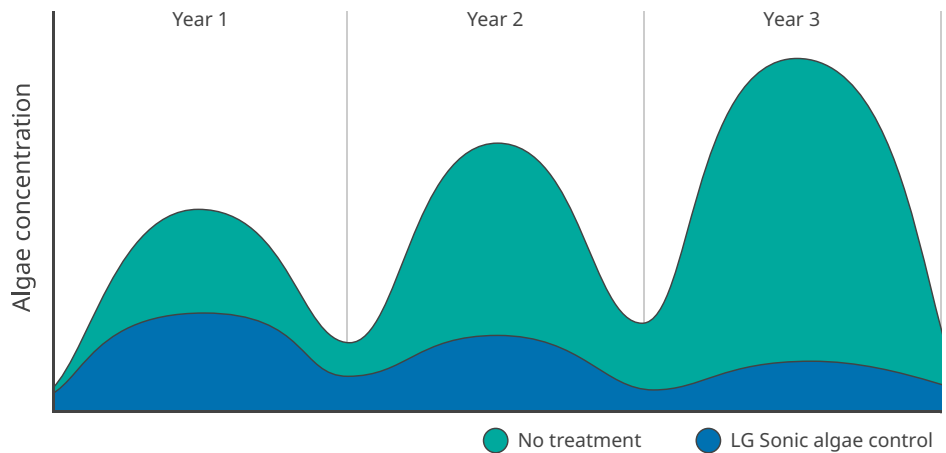
Based on the received information, ultrasonic transmitters are activated and/or optimized.

The ultrasound creates a sound layer in the top layer of the water. The sound layer prevents the algae from rising to the surface to get sunlight, the algae will sink to the bottom of a reservoir and are degraded by the bacteria present.

The effects of LG Sonic products have been tested by various universities and are proven to be safe for fish, plants, zooplankton, and insects

LG Sonic Ultrasonic Algae Control Treatment Process

A combination of high temperatures and nutrient overload can result in excessive algae growth, which can result in serious problems such as cyanobacteria toxins and MIB/Geosmin formation.



Ultrasonic treatment by LG Sonic can reduce algal blooms by 70 – 90% in concentration, compared to no treatment

Ultrasound for a Healthy Ecosystem

Without treatment, the algae will grow every year more and more which results in an unbalanced ecosystem. Therefore, it is important to control algae growth for a healthy ecosystem.



How Ultrasound Targets the Algae

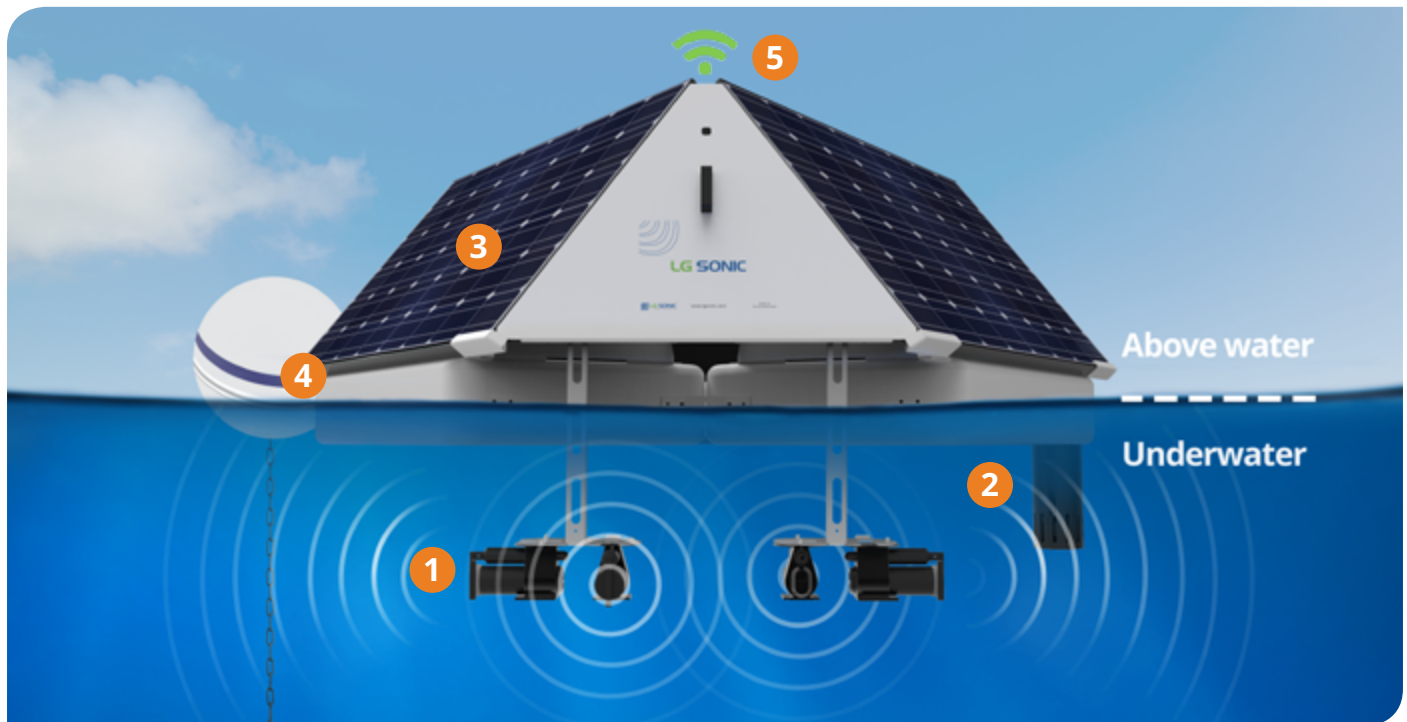
Ultrasound with specific parameters and low power can be used as an environmentally friendly solution to control excessive algae growth and to restore the ecosystem.

For effective treatment is important to adapt the ultrasonic parameters (frequencies, waveforms and amplitudes) to the type of algae present.

1. The ultrasound creates a sound layer in the top layer of the water
2. The ultrasound affects the buoyancy of the algae
3. Due to a lack of sunlight, the algae will die
4. The algae will sink to the bottom of the reservoir
5. The algae are degraded by the bacteria present

No release of toxins

MPC-Buoy Features



1 4 ultrasonic transmitters for complete 360-degree algae control



- ✓ Treatment range of 500m/1600ft in diameter
- ✓ Integrated Aquawiper™, an automatic cleansing system for the ultrasonic transmitters
- ✓ Real-time water quality monitoring to adjust the ultrasonic program to the specific water conditions

2 In-situ water quality sensors to provide real-time water quality data



- ✓ Monitors chlorophyll α , phycocyanin, DO, turbidity, temperature pH, and redox
- ✓ Automatic antifouling wiper ensures optimal readings
- ✓ Optional sensors are available according to your needs and preferences

3 Solar panels for autonomous power supply



- ✓ 3x 195 Wp high-quality solar panels that provide power, all year round in any country
- ✓ Switches to energy-saving program during periods of low sun radiation
- ✓ 1x 24 Volt, 40 AMP lithium battery

4 Floating construction anchored to the bottom of a lake



- ✓ Aluminium powder-coated frame
- ✓ UV and corrosion resistant construction
- ✓ Unsinkable floats

5 Smart communication system for remote control



- ✓ GSM/GPRS Telemetry Quadband (CDMA, Radio, GPS and Iridium Satellite optional)
- ✓ Real-time water quality data with the MPC-View software
- ✓ Integrated alarm functions

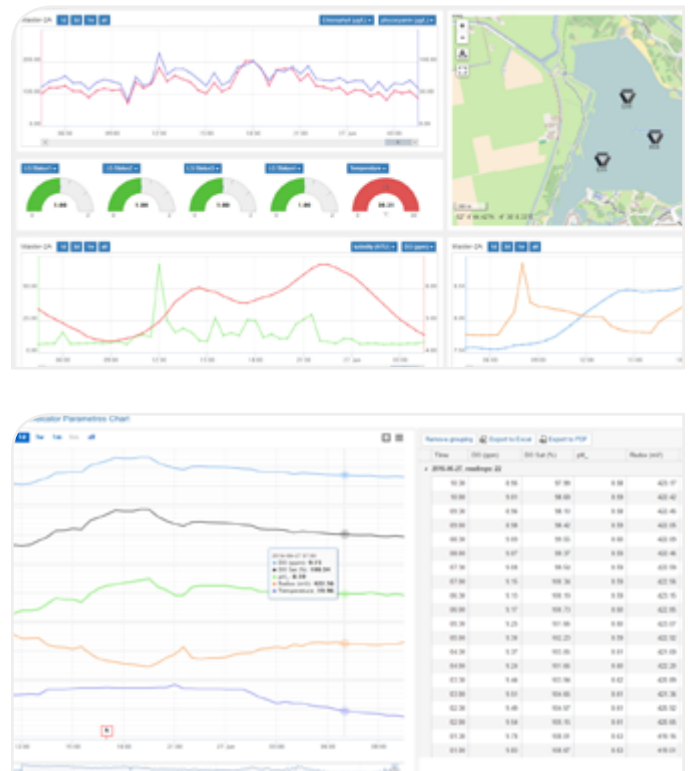
Real-time Water Quality Monitoring Software

- ✓ Real-time insight in the water quality
- ✓ Data transfer through radio, GPRS, 3G
- ✓ Ultrasonic program based on received data

Real-time water quality monitoring combined with web-based software allows to have a clear overview of the water quality in a drinking water reservoir.

The MPC-Buoy provides a complete overview of the water quality by collecting the following parameters every ten minutes: Chlorophyll α (green algae), Phycocyanin (blue-green algae), pH, Turbidity, Dissolved Oxygen, and Temperature.

Radio, GPRS or 3G is used to transfer the data from the system to an online software. Based on the received data an algorithm determines the most effective ultrasonic parameters.



The customer can real-time monitor the water quality, progress of the treatment, and technical status of the devices



Technical Specifications

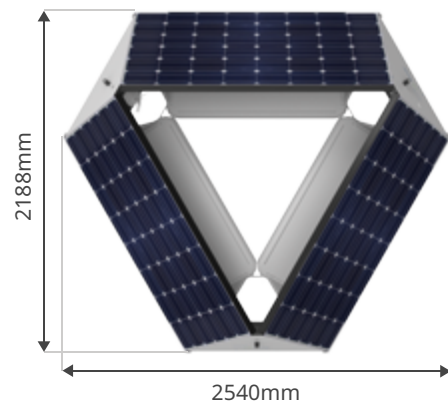
Frame	<ul style="list-style-type: none">• 3x aluminum framed polyethylene buoy• Material: Rotationally-moulded UV-stabilized HDPE polyethylene• Filling: Closed-cell polyurethane foam• Buoy frame: Anodized aluminum• Weight: 15 kg• Size: 1200x600x200mm• Buoyancy capacity 95 kg
Solar panels (3x)	<ul style="list-style-type: none">• Solar cell: Monocrystalline cell• Rated Power (Pmax): 195Wp Weight: 16 kg• Connectors IP67• Size: 1580x808x35mm
Battery	<ul style="list-style-type: none">• 1 x 24 volt lithium lifepo4• Capacity: 40 Ah• Weight: 15kg
Data acquisition system	<ul style="list-style-type: none">• 4 x analog channel (user-configurable for either 4-20mA)• 1 x RS485 port for instruments• 1 x high frequency pulse counting channel• 1 SDI-12 input• 3X RS232
Telemetry	<ul style="list-style-type: none">• GSM/GPRS• CDMA (optional)• Radio (optional)• GPS (optional)• Iridium Satellite (optional)
Solar Charge Controller	<ul style="list-style-type: none">• Overcharge and Deep discharge protection• Ip68 Protection

Side view



Total weight: 160kg

Top view



Easy installation

Build on-site system. Two people can install the MPC-Buoy without the use of a crane.

Water Quality Sensor Package

Fluorescence, including anti-fouling Wiper: chlorophyll a, phycocyanin, turbidity <ul style="list-style-type: none">• 470nm – Chlorophyll a• 610nm – Phycocyanin• 685nm Turbidity	Redox <ul style="list-style-type: none">• Combined electrode• (Redox/reference):• Platinum tip, Ag/AgCl• AgAgCl.• Gelled reference (KCl)• Range - 1000 to + 1000 mV• Resolution 0,1 mV• Accuracy ± 2 mV
pH <ul style="list-style-type: none">• Combined electrode• (pH/ref):• special glass, Ag/AgCl ref.• Gelled electrolyte (KCl)• Range 0 – 14 pH• Resolution 0,01 pH• Accuracy +/- 0,1 pH	Temperature <ul style="list-style-type: none">• Technology CTN• Range 0.00 °C à + 50.00°C• Resolution 0,01 °C• Accuracy $\pm 0,5$ °C• Response time < 5 s
Dissolved Oxygen <ul style="list-style-type: none">• Optical measure by luminescence• Measure ranges:• 0.00 to 20.00 mg/L• 0.00 to 20.00 ppm• 0-200%	It is possible to add additional sensors to the water quality sensor package.

Testimonials



Description

Installation of 4 MPC-Buoys in a drinking water reservoir at the Canoe Brook Water Treatment Plant

Location

The United States of America

"Extensive testing conducted during 2014 showed that the buoys had a significant impact on the algae, allowing the plant to reduce chemical consumption by more than 20 percent, and reducing the concentration of undesirable taste and odor causing compounds in the treated water delivered to customers".

Orren Schneider, Manager Water Technology



Description

Installation of 4 MPC-Buoy systems in a drinking water reservoir (East Dorset Reservoir)

Location

Longham Lakes, the United Kingdom

"We're working closely with the supplier who is able to fine-tune the sound frequencies to deal with specific outbreaks of algae. "It's early days and we haven't hit the peak time for algae but following the first significant outbreak, we've already seen a dramatic reduction which is very encouraging,".

Tim Latcham, Head of Water Supply



Description

Installation of 8 MPC-Buoy system in a drinking water reservoir (Embalse la Fe)

Location

Antioquia, Colombia

"The algae and cyanobacteria control has been an excellent investment. We achieved by means of an environmentally friendly technology to improve the water quality and decrease the treatment costs, furthermore we have today a monitoring and control which is more adjusted to the behaviour of our reservoir".

Santiago Barrera – Professional Business Operations



Description

Installation of 1 MPC-Buoy in a raw water reservoir

Location

The United Kingdom

"This is a new and exciting technology that has the dual advantage of being low capital cost and being solar powered, giving low operational costs. The environmentally friendly technology offers the potential of algae removal using ultra sound, resulting in an improvement in the water quality".

Martin Bradley, Head of Innovation

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 of water ecosystems. We work together with multiple European universities and research institutes, often on 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
- **Ecohull**
Prevent biofouling and reduce the use of antifouling paint with the Ecohull

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)



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

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