



# Monitor, Predict, Control Algae with the MPC-Buoy

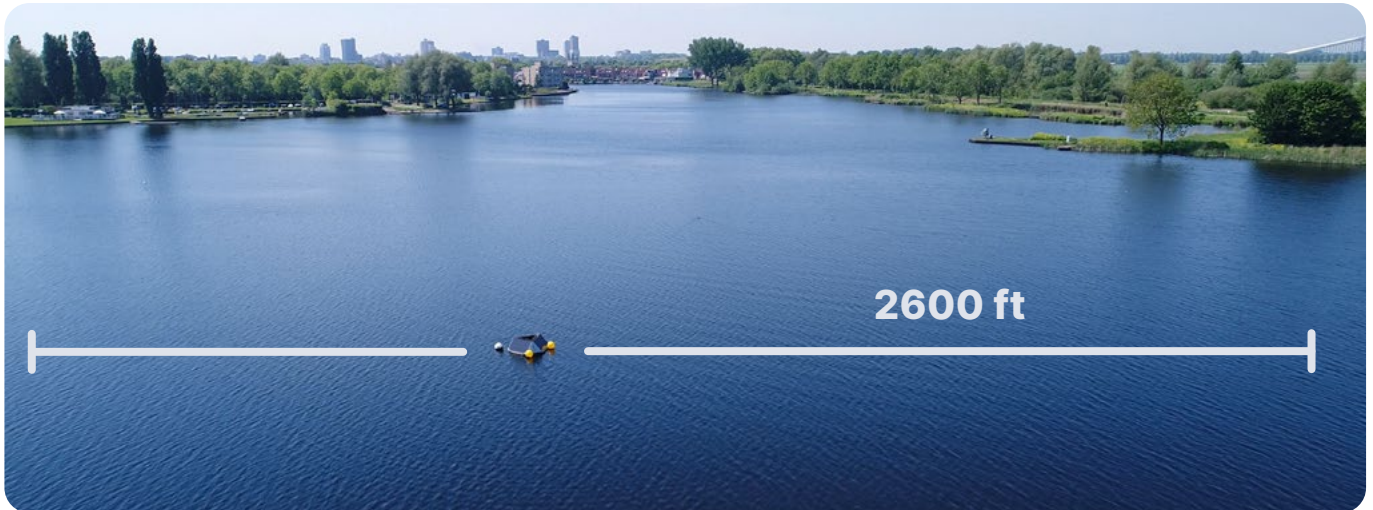
- ✓ Eliminate up to 90% of the algae
- ✓ Reduce TSS, pH, and chemical usage
- ✓ Safe for fish, plants, and other aquatic life

**LGSONIC**

# Complete algae control solution

## Meet the MPC-Buoy

The MPC-Buoy is a floating, solar-powered system that combines real-time water quality monitoring and ultrasound to effectively control algae (blooms) in lakes and reservoirs.



Each MPC-Buoy device can control algae in areas up to 2600 ft in diameter.



### Algae problem

A combination of high temperatures, stagnant water, and nutrient overload can result in excessive algae growth. These organisms deplete oxygen levels in water, release toxins, and cause bad taste and odors. The solution is to deploy one or more MPC-Buoys that emit targeted ultrasound into the water.



### Algae solution

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



# Designed for large water bodies

The MPC-Buoy is specifically designed to control algae and improve water quality in large water bodies.

## Drinking water reservoirs



Reduce chemical consumption, odor and taste issues.

## Cooling ponds



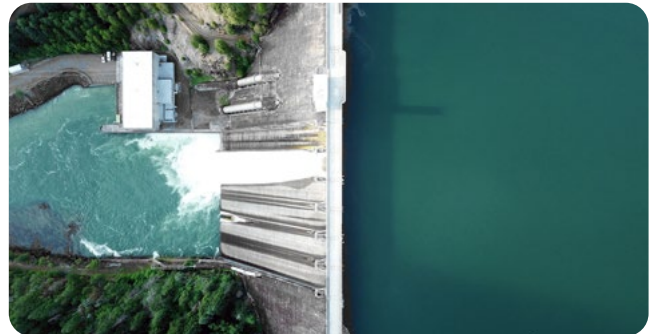
Increase the water quality and efficiency of your cooling water.

## Wastewater ponds



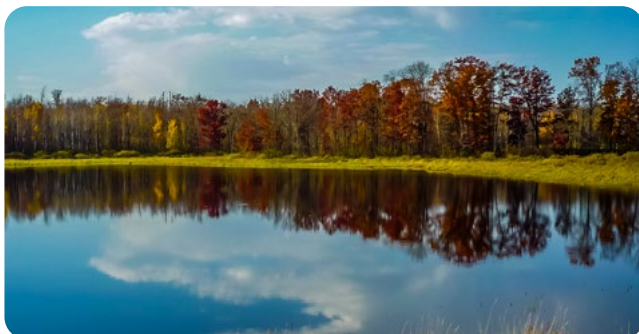
Control algal blooms to lower pH, TSS, and BOD levels.

## Hydroelectric dams



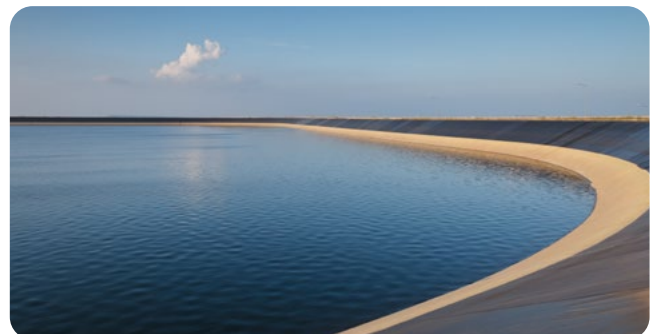
Lower chemical consumption and improve water quality.

## Lakes



Reduce odor problems and prevent dangerous toxins.

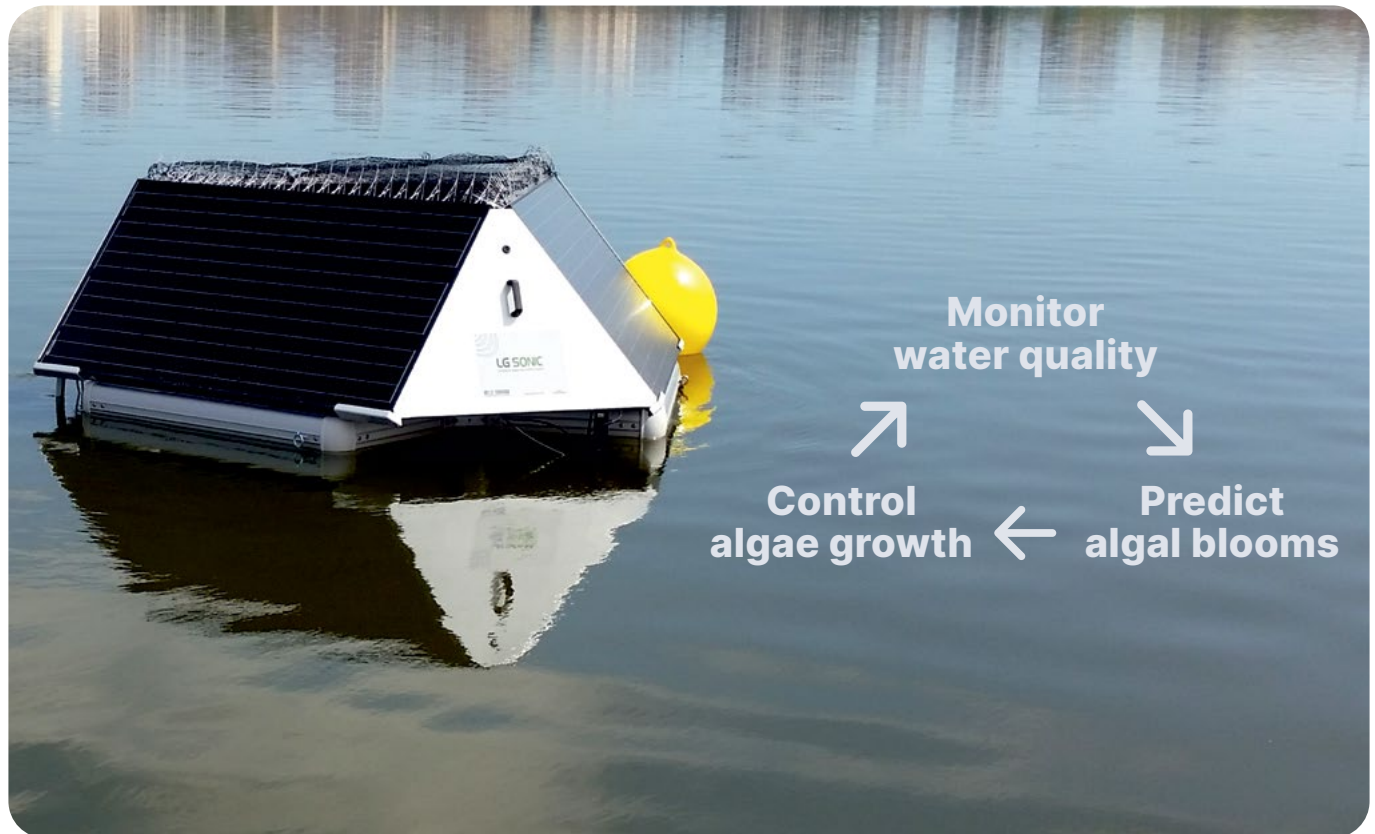
## Irrigation reservoirs



Prevent clogging of filters and pipes of drip irrigation systems.

# Monitor, predict, and control algae with ultrasonic technology

The MPC-Buoy uses low-power ultrasound to stop algal growth without harming the environment.



## 1. Monitor water quality

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

- Chlorophyll  $\alpha$  (green algae)
- Phycocyanin (blue-green algae)
- pH
- Turbidity
- Dissolved oxygen
- Temperature

## 2. Predict algae blooms

Our database contains more than 10 years of information collected from thousands of LG Sonic devices operating around the world. It includes datapoints on different types of water bodies, algae species, seasons, etc. Our database is continually refreshed with new information, always optimizing predictive algorithms for the benefit of all our customers.

## 3. Control algae growth

Algae can become resistant to treatment methods, including ultrasound. To avoid this, we'll determine the most effective ultrasonic program for your unique situation. The program parameters will be specific for wave form, frequency, pause, and amplitude. The key to long-term results is adjusting settings before the algae mutate.

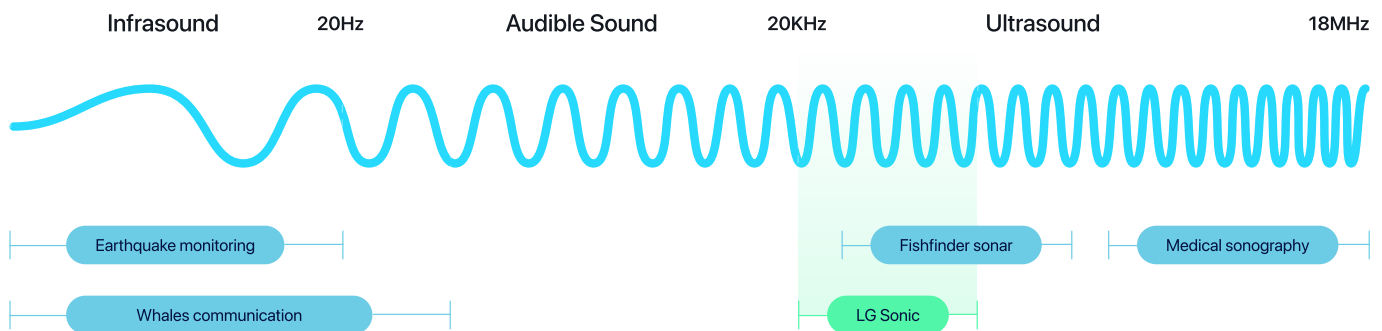
\* Additional sensors can be purchased separately

# How ultrasonic algae control works

## Eco-friendly ultrasonic treatment

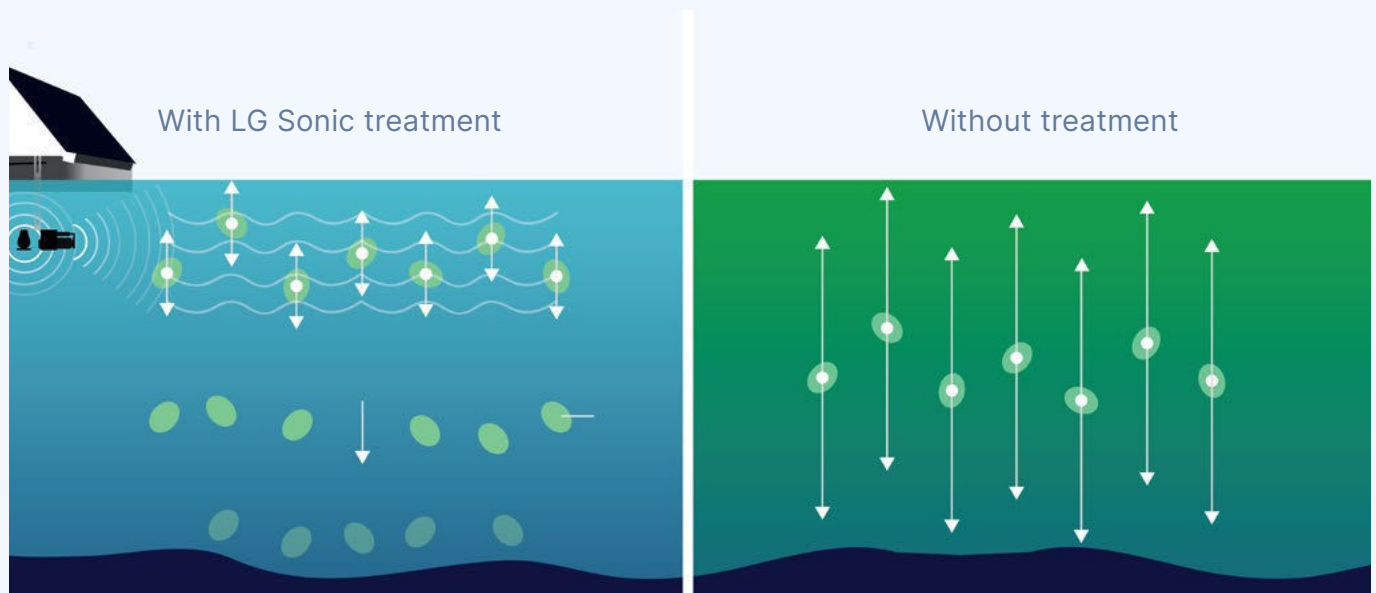
Algae blooms reduce light penetration, deplete oxygen, and release dangerous toxins, harming fish, plants, and other aquatic organisms. By controlling algal growth, LG Sonic's ultrasonic technology has the power to restore entire ecosystems.

After one year of treatment, algae levels will significantly reduce as water clarity increases, encouraging plant growth and therefore, increasing oxygen levels. Our ultrasonic treatment reduces algae blooms by up to 95%, compared to no treatment.



## How ultrasound targets the algae

- 1 Algae move to the water surface for photosynthesis. The ultrasound creates a sound layer at the top of a water body.
- 2 The ultrasound affects algae's vertical movement by fixing them in the water column.
- 3 Without sunlight and nutrients, the algae sink to the bottom, where they decompose without releasing toxins.
- 4 In time, bacteria will degrade the algae.



# MPC-Buoy components

## Solar-powered

- 3× 200 Wp high quality solar panel that provide power all year-round in any country
- 1× 24 Volt, 40 AMP lithium battery
- Switches to energy-saving program during periods of low sun irradiation

## Smart communication system

- 4G, Satellite, LAN
- Real-time water quality data with the MPC-View software
- Integrated alarm functions



## 4 ultrasonic transmitters

- Treatment range: 2600 ft in diameter
- Integrated Aquawiper™: automatic cleansing system for the transmitters
- Chameleon Technology™ adjusts the ultrasonic program to specific water conditions

## Anchored floating construction

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

## Complete quality sensor package

- In-situ water quality sensors to provide real-time data
- Monitors DO, turbidity, pH, chlorophyll  $\alpha$ , phycocyanin, and temperature
- Automatic antifouling wiper ensures optimal readings

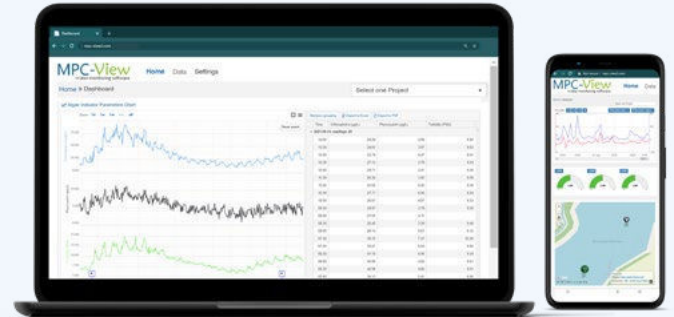


# Get real-time water quality insights

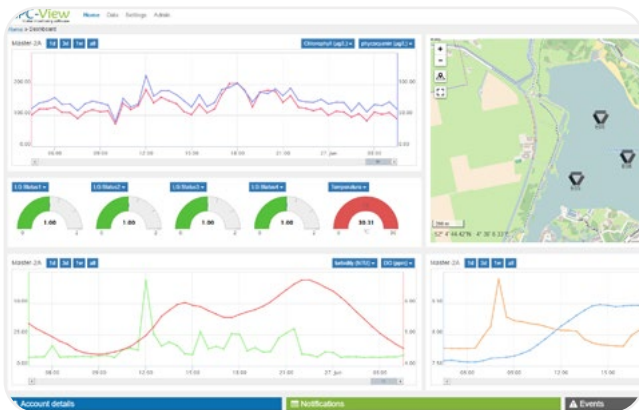
## Meet the MPC-View

MPC-View is an advanced web-based software. It provides a complete water quality overview of one or more water bodies.

- ✓ Real-time insights into your water quality
- ✓ Data transfer through 4G or satellite
- ✓ Ultrasonic programs change based on the water quality data received



## MPC-View software features



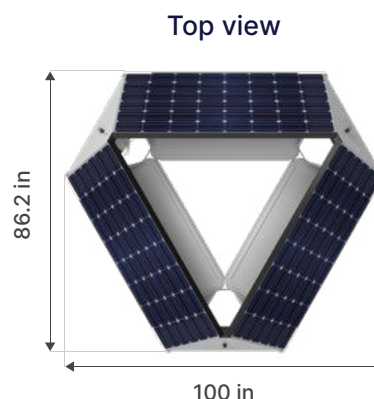
- ✓ The software receives, summarizes, and publishes data into charts, tables, and spreadsheets on your personal webpage.
- ✓ Allows you to follow the algae treatment progress and the status of the units.



- ✓ Based on the data, ecologists, biologists and technicians from LG Sonic modify the ultrasonic program for effective treatment.
- ✓ Set alarms for changing water conditions and maintenance activities.

*Remote sensing is also integrated into MPC-View. This allows you to view the historic data of a specific water body, and further optimize the treatment.*

# Technical specifications



<b>3x aluminum framed polyethylene buoy</b> <ul style="list-style-type: none"> <li>Material: Rotationally-moulded UV-stabilized HDPE polyethylene</li> <li>Filling: Closed-cell polyurethane foam</li> <li>Buoy frame: Anodized aluminum</li> <li>Weight: 33 lbs</li> <li>Size: 47 × 23.5 × 8 in</li> <li>Buoyancy capacity 600 lbs</li> </ul>	<b>Solar panels (3x)</b> <ul style="list-style-type: none"> <li>Solar cell: Monocrystalline cell</li> <li>Rated Power (Pmax): 200 Wp Weight: 35.3 lbs</li> <li>Connectors IP67</li> <li>Size: 62.2 × 32 × 1.4 in</li> </ul>
<b>Telemetry</b> <ul style="list-style-type: none"> <li>GSM/GPRS</li> <li>CDMA (optional)</li> <li>Radio (optional)</li> <li>GPS (optional)</li> <li>Iridium Satellite (optional)</li> </ul>	<b>Data acquisition system</b> <p>4 x analog channel (user-configurable for either 4-20mA)</p> <ul style="list-style-type: none"> <li>1 x RS485 port for instruments</li> <li>1 x high frequency pulse counting channel</li> <li>1 SDI-12 input</li> <li>3X RS232</li> </ul>
<b>Battery</b> <ul style="list-style-type: none"> <li>1× 24 volt lithium lifepo4</li> <li>Capacity: 40 Ah</li> <li>Weight: 33 lbs</li> </ul>	<b>Solar Charge Controller</b> <p>Overcharge and Deep discharge protection</p> <p>Ip68 Protection</p>

## Water quality sensor package

<b>Fluorescence, including anti-fouling wiper:</b> chlorophyll a, phycocyanin, turbidity <ul style="list-style-type: none"> <li>470nm – Chlorophyll a</li> <li>610nm – Phycocyanin</li> <li>685nm Turbidity</li> </ul>	<b>Dissolved Oxygen</b> <ul style="list-style-type: none"> <li>Optical measure by luminescence</li> <li>Measure ranges:</li> <li>0.00 to 20.00 mg/L</li> <li>0.00 to 20.00 ppm</li> <li>0-200%</li> </ul>	<b>pH</b> <ul style="list-style-type: none"> <li>Combined electrode</li> <li>special glass, Ag/AgCl ref.</li> <li>Gelled electrolyte (KCl)</li> <li>Range 0 – 14 pH</li> <li>Resolution 0,01 pH</li> <li>Accuracy +/- 0,1 pH</li> </ul>
<b>Temperature</b> <ul style="list-style-type: none"> <li>Technology CTN</li> <li>Range 32°F to 122°F</li> <li>Resolution 0,02°F</li> <li>Accuracy ± 0,9°F</li> <li>Response time &lt; 5 s</li> </ul>		<p>It is possible to add additional sensors to the water quality sensor package.</p>



# What other products do you need?

## Vertical profiling system

LG Sonic Vertical Profiler can be pre-set to take samples from a wide range of depths within a water body and measure key water parameters in real-time. Data is transmitted through 4G, radio or satellite to the MPC-View online software.

- Easy maintenance: can be done from the boat, without bringing it back to shore
- Possible to measure up to 330 ft in depth
- 50% more affordable than other Vertical Profilers on the market



## PO<sub>4</sub> sensor

By measuring PO<sub>4</sub> in a water body, you're able to predict harmful algae blooms and you gain a better understanding of the different PO<sub>4</sub> sources in your water.

- Reliable measurements at different depths
- 2-POINT calibration with each measurement
- High durability of reagents
- User-friendly and highly customizable
- More affordable than other PO<sub>4</sub> sensors
- Operates completely autonomously
- The sensor can be supplied on a stable buoy

## Weather station

Our Weather Station is a low-maintenance unit that enables more accurate algae bloom predictions by integrating local weather data into your MPC-Buoy and MPC-View software.

- Real-time weather data
- Highly customizable
- Low maintenance



# Our customers

*We work together with top-level water and energy utilities.*



American Water is the largest and most geographically diverse U.S. public water and wastewater utility.

To control harmful algae and eliminate foul odor and taste issues, American Water installed MPC-Buoy systems in their reservoir located in New Jersey. Amongst other positive results, the utility achieved 100% chemical reduction in the reservoir



In California, the MPC-Buoy technology is controlling algae in an open water reservoir where treated reclaimed water is stored to be later used for irrigation.

Since the start of the ultrasonic treatment, overall algae levels have decreased. TSS, pH, and dissolved oxygen levels have also improved, allowing Vallecitos to provide higher water quality to their customers.



For years, power generating company NIPSCO tried lowering TSS levels using algaecide, but it never gave consistent results.

Since the installation of five MPC-Buoy systems in the spring of 2019, TSS levels remained at lower levels than 3 ppm. Additionally, the company could keep pH and TSS in check, complying with EPA's NPDES permit limits.



After installing the MPC-Buoy in their wastewater pond, American Crystal Sugar Company has reduced chlorophyll-a levels by up to 85%.

As a result, TSS values lowered, enabling them to comply with the NPDES limits. American Crystal Sugar is the first company in the sugar beets industry to start using ultrasonic technology for improving water quality.

# About LG Sonic

We're global leaders in sustainable algae management. Our patented ultrasound integrated into our technologies can be remotely controlled by our team of experts.

For over 10 years, we've invested in research and development. Today, we deliver technological solutions that restore aquatic ecosystems without the use of chemicals or other pollutants.

# 100+

Clients

# 55+

Countries

# 12+

Industries served



## LG Sonic US

In 2018, we opened our US office and expanded our business in North America. Ever since, we've been able to better service the needs of our customers. We are running algae treatment projects across the states, including California, New York, Florida, New Jersey, Pennsylvania, Colorado, and Georgia.

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# LGSONIC



## Award-Winning Innovation



# LGSONIC

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