



# Complete Water Quality Monitoring Solution for Surface Water

- ✓ Real-time water quality monitoring buoy
- ✓ Vertical profiler to monitor the entire water column
- ✓ Real-time phosphate monitoring at different depths
- ✓ Digital twin for effective water resource management
- ✓ Automated trace metals monitoring

**LGSONIC**

# Water Quality Monitoring Technologies

At LG Sonic, we offer an extensive range of water quality monitoring technologies designed to provide you with a comprehensive and in-depth overview of your water quality.

## LG Sonic Monitoring Buoy

The LG Sonic Monitoring Buoy features advanced sensors and a durable design, ensuring precise data collection for thorough water quality analysis.

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## Vertical Profiler

The most precise and cost-effective approach for continuously monitoring water quality at various depths, encompassing depths of up to 100m throughout the water column.

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## Phosphate Sensor

Real-time phosphate (PO<sub>4</sub>) monitoring tailored for surface water applications, providing timely and accurate data through completely autonomous operation.

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## Digital Twin of Surface Water

Enhance water management by leveraging a digital representation of a physical water body to improve operations, decision-making, and overall efficiency.

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## Trace Metals

Trace metal analyzer for continuous real-time monitoring of drinking water reservoirs and industrial processes, delivering precision and compliance assurance.

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## Remote Sensing

Enhance monitoring of algae levels and water quality by utilizing remote sensing for improved spatial and temporal coverage accuracy.

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## MPC-View Water Quality Software

Web-based software for streamlined viewing, analysis, and reporting of algae and water quality data, integrating all monitoring solutions into a single cloud platform.

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## For applications worldwide

- ✓ Drinking water reservoirs
- ✓ Hydroelectric dams
- ✓ Lakes
- ✓ Irrigation reservoirs
- ✓ Cooling ponds
- ✓ Wastewater reservoirs





# LG Sonic Monitoring Buoy

This high-tech solution is a combination of real time water quality monitoring and user-friendly cloud software that stores and analyses received water quality data. Water quality data embodies essential evidence to support decision-making in water resource management. This information is used to verify compliance with regulations and policies, to alert managers to current and emerging problems, and to define new strategies to protect water quality, public health and the environment.

- ✔ Customizable sensor sets
- ✔ Web-based water quality software
- ✔ Upgradable with ultrasonic algae control

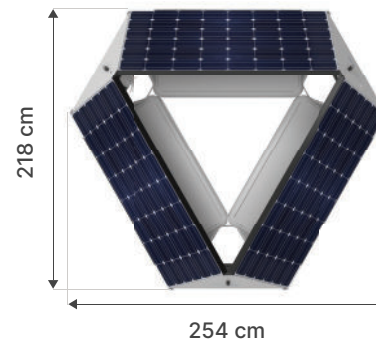


Side view



Weight: 200 kg (excl. anchor)

Top view



## Water quality sensor package

<p><b>Chlorophyll a, phycocyanin, turbidity</b></p> <ul style="list-style-type: none"> <li>• 470nm – Chlorophyll a</li> <li>• 610nm – Phycocyanin</li> <li>• 685nm Turbidity</li> </ul>	<p><b>Dissolved Oxygen</b></p> <ul style="list-style-type: none"> <li>• Optical measure by luminescence</li> <li>• Measure ranges:               <ul style="list-style-type: none"> <li>• 0.00 to 20.00 mg/L</li> <li>• 0.00 to 20.00 ppm</li> <li>• 0-200%</li> </ul> </li> </ul>	<p><b>pH</b></p> <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>
<p><b>Temperature</b></p> <ul style="list-style-type: none"> <li>• Technology CTN</li> <li>• Range 32°F to 122°F</li> <li>• Resolution 0,01 °C</li> <li>• Accuracy ± 0,5 °C</li> <li>• Response time &lt; 5 s</li> </ul>		<p>It is possible to add additional sensors to the water quality sensor package.</p>

# LG Sonic Vertical Profiler

Vertical profiling is a cost-effective solution to measure water quality throughout the entire water column with a maximum depth of 100m / 328ft. The LG Sonic Vertical Profiler can be pre-set to take samples from a wide range of depths within a water body and measure key algae and water parameters in real-time.



Early detection of harmful algae bloom events



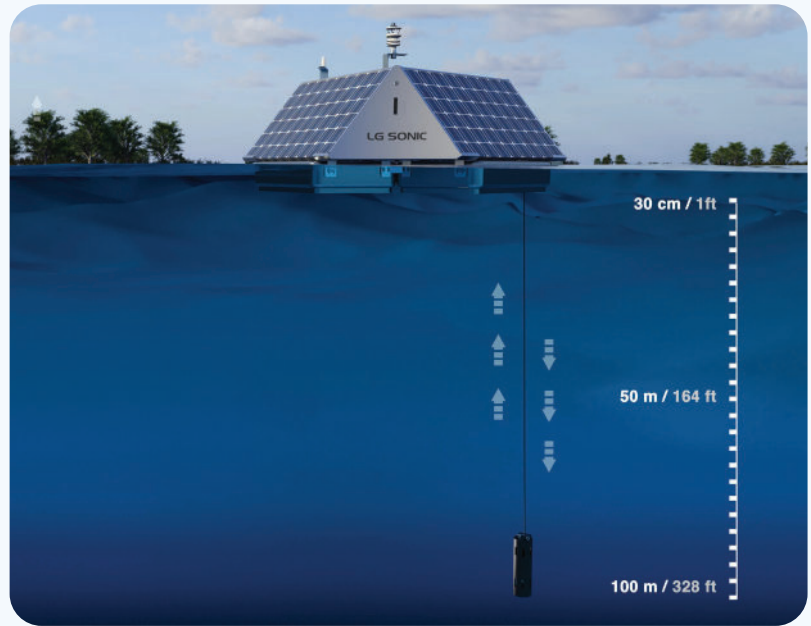
Evaluate differences throughout the water column



Identify both point and non-point source pollutants



Base your decisions on informed water quality assessments



Profile direction	Up / down
Weight (Winch system)	12 kg
Operating temperature	0° to 50°C
Operating humidity	0 to 95% RH
Data transmission	4G / Satellite
Warranty	2 years

## High quality profiler

The LG Sonic Vertical Profiler has a rugged design, built to work in the long term for effective and reliable water resource management.

### Easy maintenance

There is no need to bring the profiler back to shore or step onto it.

### Cost-effective

Auto-cleaning system for accurate readings and low maintenance.

### Modular design

Upgradable with a weather station or ultrasonic algae control.

### Software suite

Data is delivered in real-time to the web-based MPC-View software.

### Parameters

- Chlorophyll α (green algae)
- Phycocyanin (blue-green algae)
- Turbidity
- Dissolved oxygen
- Temperature

*Additional sensors can be purchased separately*

# LG Sonic Phosphate Sensor

LG Sonic Phosphate (PO<sub>4</sub>) Sensor monitors phosphate levels in real-time at different water depths. Through the implementation of the Yellow Method, the sensor provides highly accurate readings over a larger measurement range. Its robust design and durable materials ensure stability at high temperature ranges. The LG Sonic Phosphate Sensor automatically calibrates and cleans for ease of use and minimal maintenance.



Better algae bloom understanding



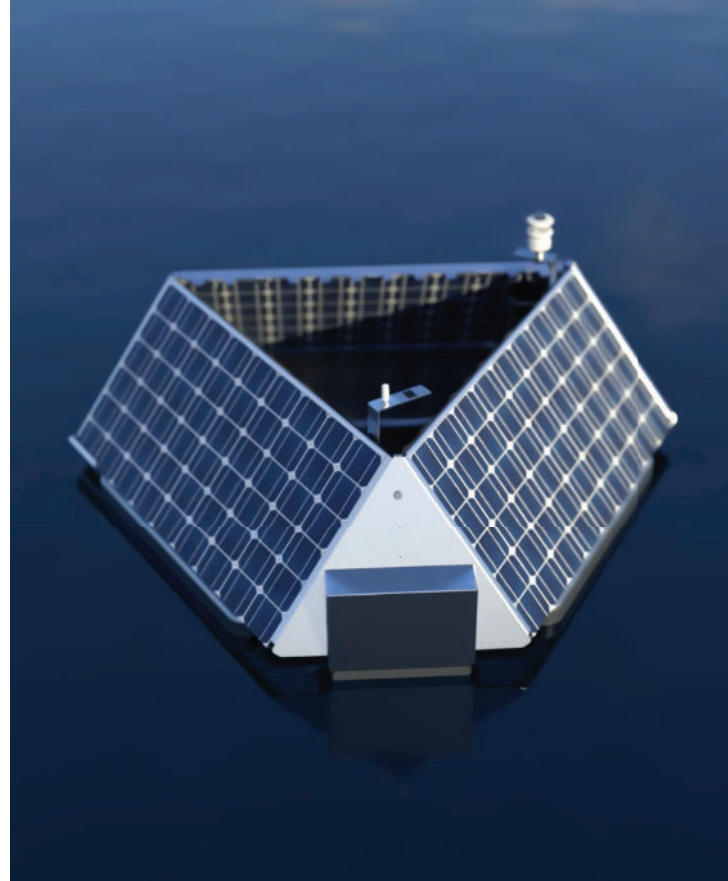
Operates completely autonomous



High durability of reagents



Easy installation and maintenance



<b>Technology</b>	Lab-on-a-Chip (LOC) technology
<b>Method</b>	Molybdate-Vanadate method (Yellow method)
<b>Detection limit</b>	0.01 mg/L PO <sub>4</sub> -P
<b>Number of runs per reagent set</b>	≥ 300
<b>Cleaning</b>	Automatic cleaning and flushing step
<b>Calibration</b>	2-POINT calibration before each measurement. Remote calibration possible
<b>Reagent life</b>	Up to 6 months self life
<b>Protection</b>	Installed in sensor housing for protection against debris
<b>Operational temperature</b>	5 - 40 °C (41 - 104 °F)
<b>Filter pore size</b>	0.1 μm (0.1 micron)

## Understanding Phosphorus

Nutrients, such as nitrogen and phosphorus, are essential in any aquatic ecosystem. However, their overabundance can cause several adverse health and ecological effects. The source of PO<sub>4</sub> in a water body can vary. It's important to know exactly where it comes from and in what quantity, as PO<sub>4</sub> released from the sediments may require different solutions than PO<sub>4</sub> flowing in from a stream. Harmful algae blooms are fueled by PO<sub>4</sub>.

Knowing the source of PO<sub>4</sub> helps you understand the problem you're dealing with, so that you can apply targeted solutions and more effective treatment – saving time and costs. The LG Sonic PO<sub>4</sub> Sensor provides PO<sub>4</sub> information in real-time, taking away the chore of frequent field trips and manual measurements, while ensuring reliable and accurate readings.



## 1. Remote Sensing

LG Sonic uses NASA and ESA satellite data to map algal blooms from space. Allowing to see and compare historic algae growth, turbidity, and Dissolved Oxygen levels.



# The Digital Twin



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## 2. Trace Metals Monitoring

The automated onshore trace metals monitoring system tracks 23 various metals, such as As, Cd, Cr, Cu, Hg, Ni, Pb, Se, Tl, Zn, and more, with measurements taken every 30 minutes.

3

## 3. Vertical Profiling

Reliable, and fully-automated water quality measuring at multiple depths throughout the entire water column. Monitor Chlorophyll  $\alpha$ , Phycocyanin, Turbidity, Dissolved Oxygen, Temperature.



#### 4. Control Room

Enter our advanced control room, where LG Sonic's cutting-edge monitoring solutions offer real-time insights into your water body's health, quality, quantity, and environmental conditions.



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# of Surface Water

#### 5. Weather Monitoring

Enhance algal bloom predictions with local weather data collected by the LG Sonic Weather Station.

5



#### 6. In-situ Monitoring

Provides real-time, comprehensive water quality data, including key parameters such as chlorophyll  $\alpha$ , turbidity, and phosphate.

6

8

#### 7. Bathymetric Data

Satellite-derived bathymetric (SDB) and/or drone data provides information about the depths and shapes of underwater terrain.

7

#### 8. Algae treatment

Optionally, the Monitoring Buoy can be upgraded with ultrasonic algae control transmitters to control algal blooms.

# Trace Metals Monitoring

Regulations for heavy metal effluent limits are becoming stricter as regulatory agencies and industry realize their potential environmental and health impact. Monitoring is essential for detecting and mitigating their presence, preventing adverse environmental effects. Our systems utilize solid-state electrodes to conduct voltammetry for metal analysis in solutions. This system enables continuous 24-hour monitoring at a high frequency, capable of identifying and isolating events that daily average sampling may overlook, with data updates provided every 30 minutes.

- ✓ Reduce legal and financial risks by adhering to environmental regulations
- ✓ Respond effectively to unexpected events with proactive monitoring
- ✓ Enhance treatment efficiency and reduce operating costs

## TMO (Trace Metals Online)

The TMO system offers monitoring capabilities for 23 different metals, including As, Cd, Cr, Cu, Hg, Ni, Pb, Se, Tl, Zn. This fully automated and modular system is designed to facilitate continuous metal monitoring across various applications.

- ✓ Can monitor 23 different metals
- ✓ Low detection levels (down to 0.1 µg/L\*)
- ✓ High accuracy and repeatability

## TMP (Trace Metals Portable)

TMP is a versatile instrument suitable for both on-site monitoring and laboratory applications. It features an extended measurement range and comes with a software for real-time visualization of analytical data.

- ✓ Portable for monitoring in remote locations
- ✓ Multiple metal analysis
- ✓ Solid-state robust electrodes



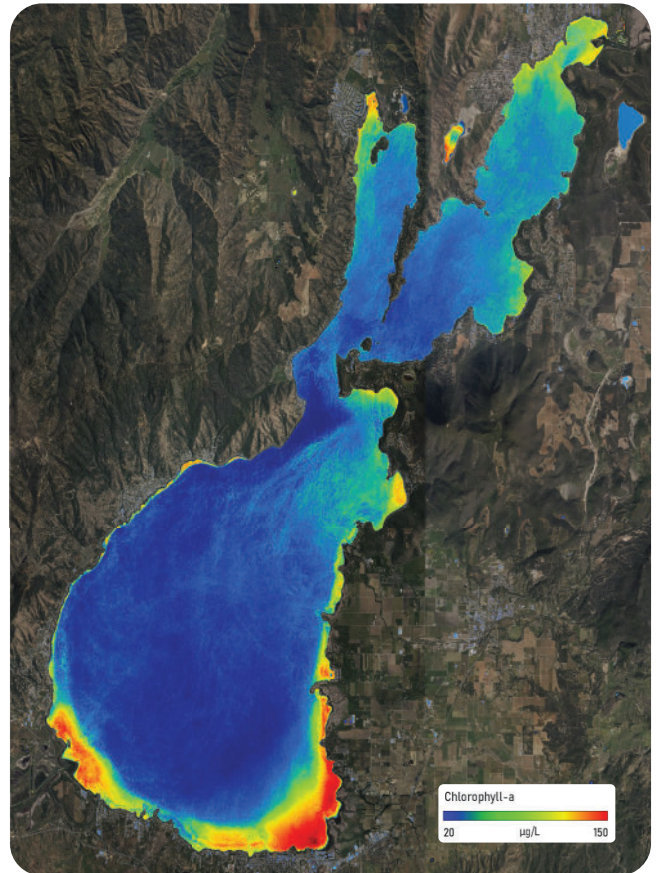


# Remote sensing

## Map algal blooms and water quality from space

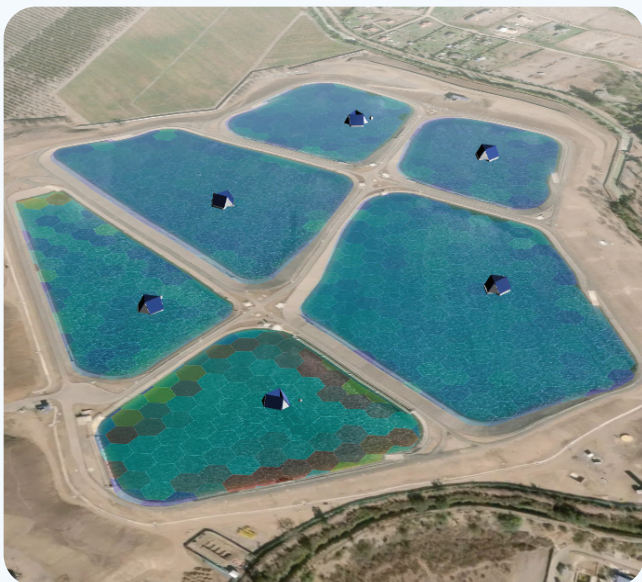
LG Sonic Remote Sensing leverages satellite imagery to extract data on key algae and water quality parameters. Utilizing AI and in combination with in-situ water quality data, our technology allows for the detection and monitoring of algae levels and water quality at higher spatial and temporal coverages

- ✔ NASA and ESA satellite imagery
- ✔ Track algal bloom evaluations
- ✔ Access historical and present images
- ✔ Improve decision-making and processes



## LG Sonic Water Quality Index

The LG Sonic Water Quality Index considers key parameters such as temperature, phycocyanin, dissolved oxygen and turbidity, giving you a clear understanding of your water quality on a scale of 0 to 100%.



## High-res satellite imagery

LG Sonic supplies high-resolution images allowing you to make informed decisions for all your water bodies. Our cutting-edge data analysis utilizes multiple sources like Sentinel 2, Landsat 5, 8, MODIS and more to offer a comprehensive view of the earth's surface.

With over 30 years of data dating back to 1984, our team of experts and our partnership with Google allows us to deliver unparalleled insights into water quality.

## Artificial Intelligence

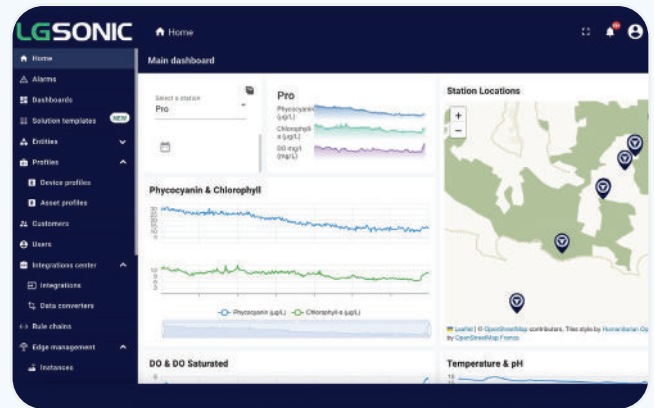
Our innovative AI-driven approach analyses satellite data to provide comprehensive water quality insights. By seamlessly integrating satellite and in-situ sensor data from LG Sonic Monitoring Buoys, we offer customers reliable and relevant information, empowering informed water resource management

# Web-based water quality software

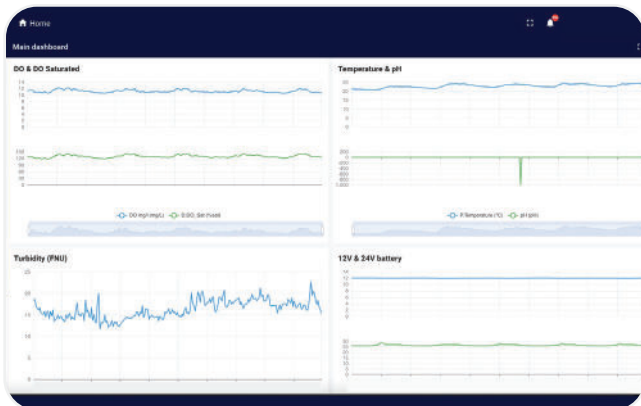
## MPC-View

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

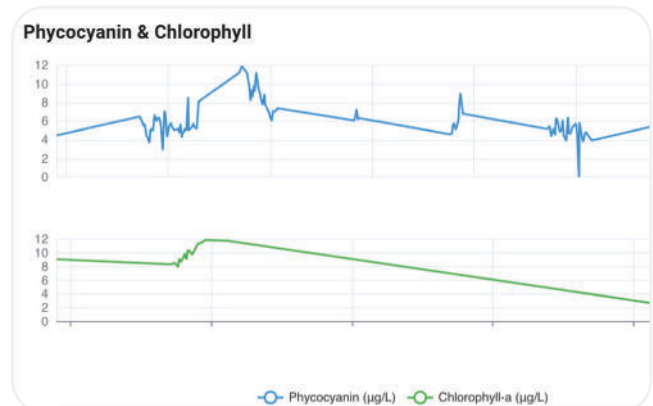
- ✓ Real-time insights into your water quality
- ✓ Integrated data visualization and reporting
- ✓ Create specific rules that will trigger an email alert



## MPC-View software features



- ✓ Comply with water quality regulations and standards by delivering precise data and reports
- ✓ Analyse historical data trends to identify patterns and potential issues.



- ✓ Integrate with other systems and databases for a comprehensive view of water quality across various sources
- ✓ Generate detailed reports and visualisations to offer insights into water quality over time

*Set up alerts for specific water quality thresholds, triggering notifications when levels are outside acceptable limits*



# About LG Sonic

LG Sonic is a leader in ultrasonic algae control with a mission to restore aquatic ecosystems without the use of chemicals or other harmful pollutants. Leading the way by producing cutting-edge technologies that manage algae blooms sustainably, LG Sonic's solutions are present in over 55 countries, serving 12 industries.

For over 10 years, we've invested in research and development. Today, while striving to provide smart strategies against water pollution, LG Sonic expands its expertise to offer comprehensive solutions for surface water management, including vertical profiling, phosphate sensor, remote sensing, trace metal monitoring, and digital twin.

**100+**  
Customers

**55+**  
Countries

**12+**  
Industries served



## LG Sonic Headquarters

Opened in 2011, this European venue is where we established our corporate headquarters and our R&D department. At this location we continue to improve our features and technologies in our in-house water laboratory.

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## Award-Winning Innovation



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