



## LG Sonic® MPC-BUOY

### Monitor Predict Control

The **patented LG Sonic® MPC** combines **online water quality monitoring, telemetry** and **ultrasound technology** to provide the *state-of-the-art* treatment against algae and cyanobacteria in ponds, lakes and dams

# Interactive Algae & Cyanobacteria control

As algae types change during seasons, the ultrasonic treatment needs to change accordingly. To remain the highest efficiency, the ultrasonic treatment will be monitored and adjusted by the water experts of LG Sound.

## 1 Monitor water quality

LG Sonic MPC provides a complete overview of the water quality by collecting the following parameters:

- Chlorophyll a (green algae)
- Phycocyanin (blue-green algae)
- pH
- TSS
- Dissolved oxygen
- Temperature

more sensors on request

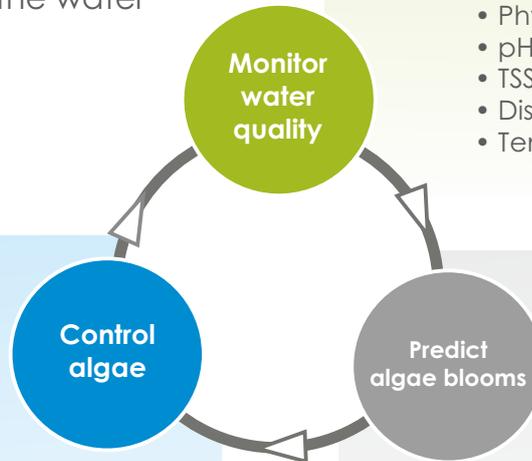
## 2 Predict algae blooms

Collected data is delivered real-time through radio, 3G or GPRS telemetry. MPC-View is a web based software, that provides a clear overview of your water quality and other technical parameters. Based on these data, a bloom can be predicted a few days ahead.

## 3 Control algae

With help of the MPC-View software, the most optimal ultrasonic program can be determined based on the present type of algae or cyanobacteria. If the MPC-View predicts a bloom, the LG Sonic's will be set to a different program and increased intensity.

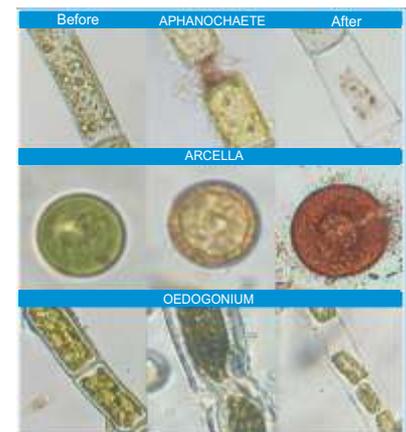
This way, LG Sonic controls algae interactively without risking algae to become resistant to ultrasound.



## How does ultrasonic algae control work?

The LG Sonic technology uses specific ultrasonic waves to target different algae types.

To derive an optimum result, different frequencies, amplitudes, waveforms and signal durations are required for each type of algae. This is determined by different characteristics like the size of a cell, the water quality the cellular composition and the morphology of an algae species.



Before and after ultrasonic treatment with the LG Sonic® solution

## Different effects of ultrasonic sound pressure on algae:

### Creating a sound barrier

Ultrasound from the right frequency creates a sound barrier in the top layer of the water, reflecting on objects with a different density than water. This affects the buoyancy of many types of algae and prevents algae from floating up to the surface, thus dying by lack of light.

### Collapse of gas vesicles

Blue-green algae are capable of travelling through the water column vertically due to their possession of gas vesicles. The ultrasound from the LG Sonic rupture these vesicles, preventing the algae from rising to the surface and absorbing light for their photosynthesis.

# MPC-Buoy features:

## LG Sonic® e-Line to control algae



- 3 transmitters assure a complete sound coverage of 360 degrees
- A strong sound signal with 500 meter diameter range
- *Chameleon technology™* to change the ultrasonic program based on the algae type

## UV-resistant Buoy with unique design



- Easily accessible for maintenance while deployed.
- Anti-slip surface to ensure optimal safety.
- Aluminum body allows easy installation of equipment.



## Efficient Solar System

- Provides power, all year round in any country.
- Flexible mounting angle to tilt for optimum performance.
- 3x 200WP Solar panels.



## Intelligent power management

- During low battery voltage automatically powers off ultrasonic transmitters.
- Switches to energy-saving program during periods of low sun irradiation.
- Overcharge and deep charge regulation to protect equipment.



## Complete sensor package

- In-situ sensors to provide real-time data.
- Monitors DO, TSS, pH, Chlorophyll a, Phycocyanin and temperature.
- Automatic antifouling wiper ensures optimal readings.



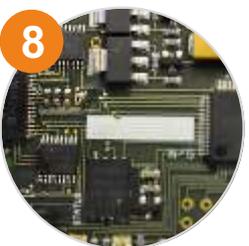
## Robust, lightweight aluminum frame

- Can be deployed quick and easy without the need of a crane.
- Easy to assemble.
- Corrosion resistant clamps.



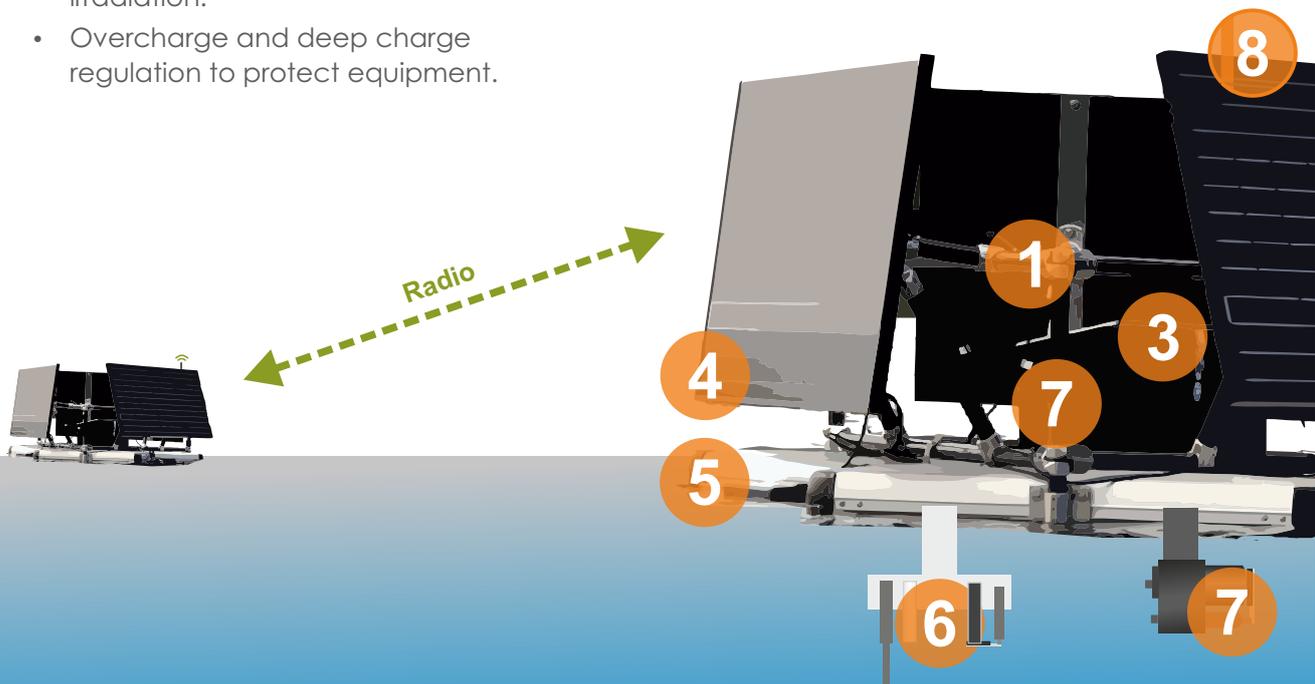
## Communication / Telemetry

- GSM/GPRS Telemetry Quadband (850/ 900 / 1800 / 1900 MHz ).
- CDMA optional .
- Radio (UHF/VHF) for communication between several MPC-buoy's.



## Reliable Data Acquisition System

- 3-way communication between LG Sonic®, Sensors and Web server
- Universal input to customize monitored data.
- Integrated alarm functions.



# MPC-View

The MPC-View software allows users to visually follow the water quality and the status of the LG Sonic transmitters.

This web-based software receives, summarizes and publishes data into charts, tables and sheets on your personal web page.

Data about projects can be added, like the location of deployment, history of algae blooms and finally, generate reports.

This provides a complete overview of the progress of the LG Sonic treatment.



GPRS/3G



## LG SOUND

With real-time water quality data, existing algae blooms can be determined and future algae blooms can be predicted. Based on this ecologists, biologists and technicians from LG Sound verify the current status of a lake and modify the ultrasonic program to match the algae present in the water or prevent a new bloom.

## Customer

MPC-View software allows customers to view the data of their water body real time.

Thanks to the flexibility of this software, user profiles can be created.

This way, local authorities have the opportunity to view a full set of data, while other users may only see a specific set of parameters.

Radio



# TECHNICAL SPECIFICATIONS MPC-BUOY

## Aluminum Frame

Powder coated pipe

Clamps: Aluminum-Magnesium Alloy 535.0 Sand Castings

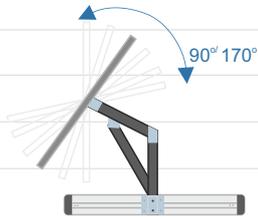
## 3x Solar Panels 205Wp

Solar Cell: Monocrystalline Cell  
Rated Power (Pmax): 205Wp

Weight: 16kg

Connectors IP67

Size: 1580x808x35mm



## 2x 12 Volt Deep Cycle GEL battery

12 Volt

Capacity: 66 Ah (At 20 hr discharge at 25 °C)

Size: 258x166x235mm

Weight: 24kg

## 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

## Data Acquisition System

Configurable time interval (default: 10 min)

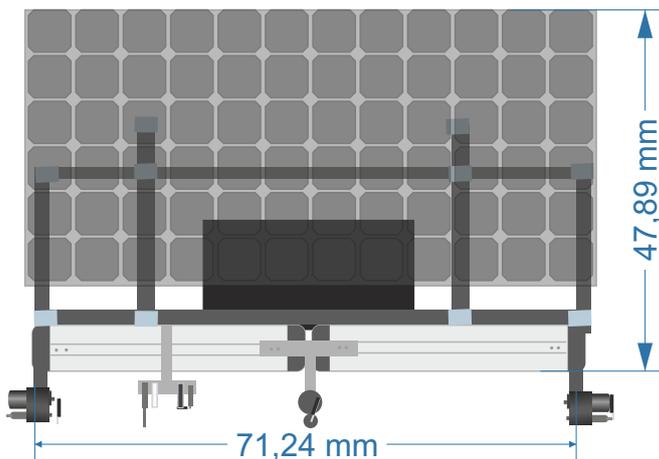
4 x Analog channel (user-configurable for either 4-20mA,)

1 x RS485 port for Instruments

1 x High frequency pulse counting channel

1 SDI-12 input

3X RS232



## Sensor package

### Fluorescence; including anti-fouling Wiper: Chlorophyll a, Phycocyanin, Turbidity

470nm – Chlorophyll a  
610nm – Phycocyanin  
685nm - Turbidity

### Redox

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

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

Technology CTN  
Range 0,00 °C à + 50,00°C  
Resolution 0,01 °C  
Accuracy ± 0,5 °C  
Response time < 5 s

### Dissolved Oxygen

Optical measure by luminescence  
Measure ranges:  
0,00 to 20,00 mg/L  
0,00 to 20,00 ppm  
0-200%

## 3x LG Sonic E-line XXL algae control treatment (360°)

Power consumption: up to 10W

Remote selection of ultrasonic program

Number of ultrasonic programs: 12 programs

+ option to remotely customize ultrasonic program

Ultrasonic range: up to 80 frequencies

Different programs per transmitter

Automatic wiper to clean transducer surface

## Telemetry

GPRS Telemetry  
Quadband (850/ 900 / 1800 / 1900 Mhz )  
CDMA optional

Radio (UHF/VHF)  
(between the MPC-buoys)

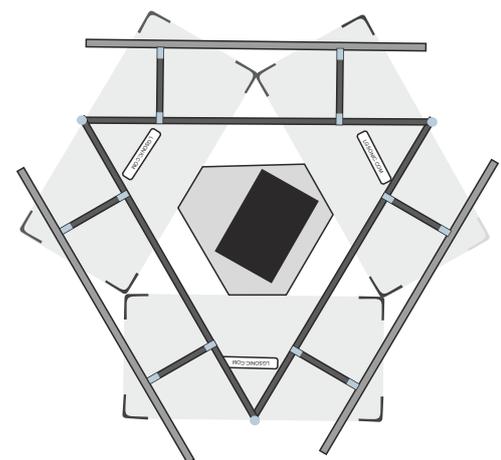
## Solar Charge Controller

Overcharge and Deep discharge protection

Graphical LCD display

Total weight:  
120 kg

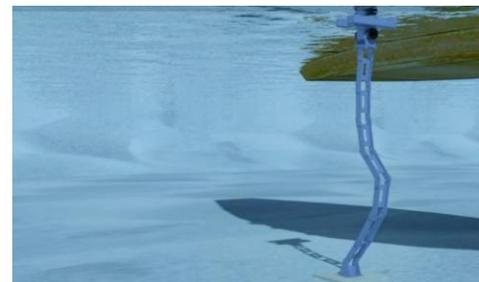
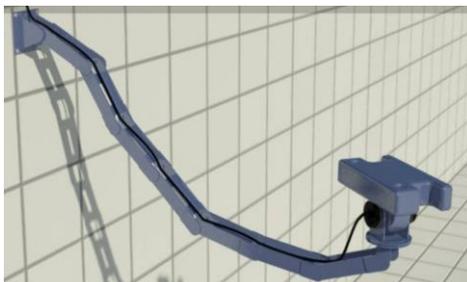
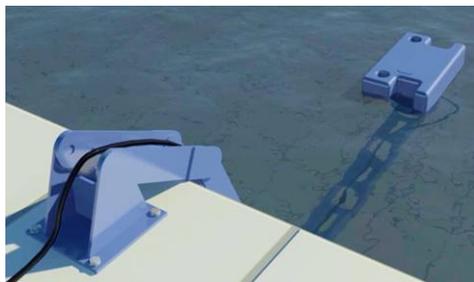
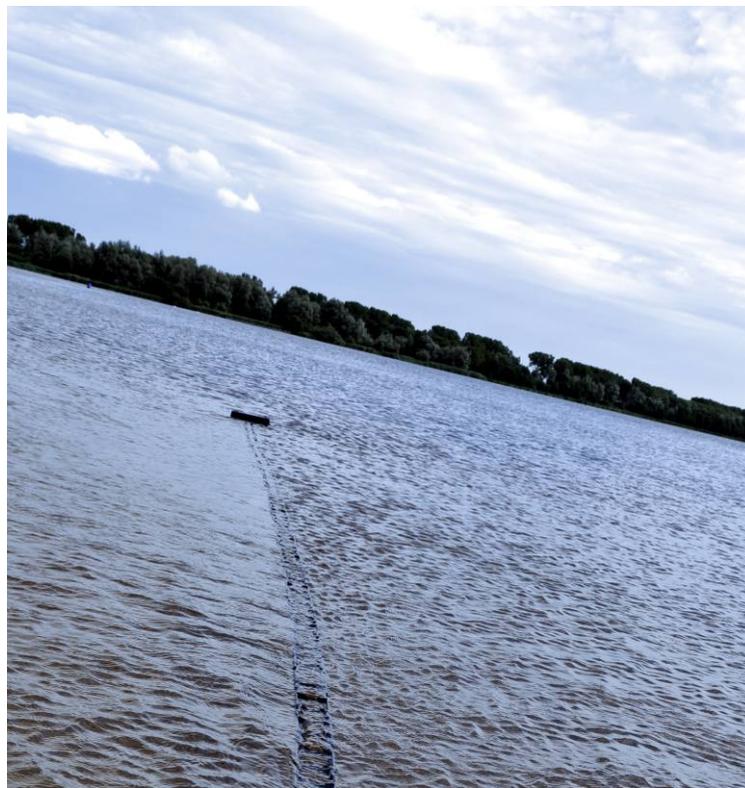
Total buoyancy:  
315 kg



## 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



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