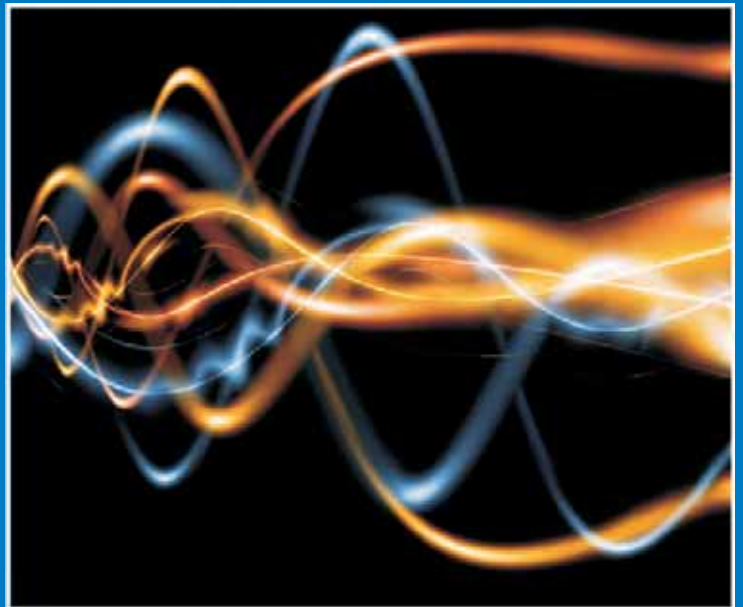




# ULTRASONIC ALGAE AND BIOFILM CONTROL FOR IRRIGATION



# Irrigation



Water used for irrigation can contain high levels of nutrients, some of these nutrients are beneficial for the plants watered, but can also lead to extensive algal growth. Algae in irrigation tanks can clog the irrigation system and can also be spread over the irrigated area. In addition, some types of fungus, also present in these waters, can be harmful for the plants grown. Therefore the quality of water in an irrigation system can be of critical condition for the performance of a nursery.

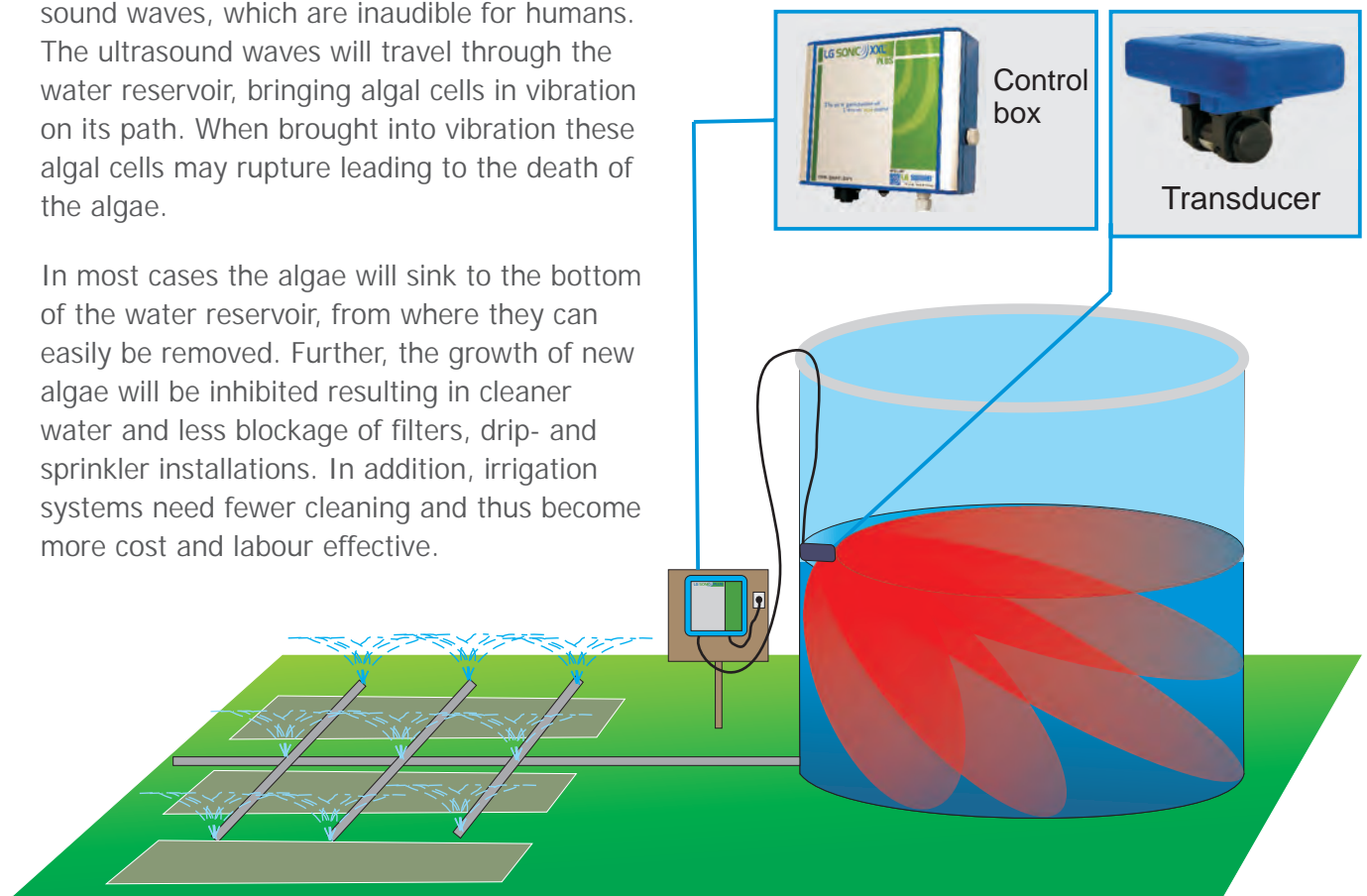
Covering up the reservoir does not always solve the problem: Because covering the reservoir may lead to the built up of high temperatures underneath the cover, this can lead to more extensive growth of bacteria and other micro-organisms. Chemical treatment may damage the crops and farmland. Aeration, where oxygen is added to the water, alone does not suffice either.

## How does it work?

The **LG Sonic**® products are very easy to install. The transducer and float are being placed inside the water reservoir. The units can be turned on by connecting them to the power supply (electrical or solar).

In operation the units will emit ultrasonic sound waves, which are inaudible for humans. The ultrasound waves will travel through the water reservoir, bringing algal cells in vibration on its path. When brought into vibration these algal cells may rupture leading to the death of the algae.

In most cases the algae will sink to the bottom of the water reservoir, from where they can easily be removed. Further, the growth of new algae will be inhibited resulting in cleaner water and less blockage of filters, drip- and sprinkler installations. In addition, irrigation systems need fewer cleaning and thus become more cost and labour effective.



## REFERENCE 1: BIOLOGICAL CONTROL OF ALGAE BY MEANS OF ULTRASOUND



### TEST INFORMATION

Company : Agromil s.l.  
Test start : 22nd of July 2008  
Test end : 28th of August 2008  
Total test days : 37 days  
Device used : **LG Sonic® XXL**  
Pond dimension : about 75 x 50 meters  
Location : Farm ctra. Archena, Murcia, SPAIN  
Type of application : Irrigation  
Type of cultivation : Fruits

### ANALYZED PARAMETERS

	Start	End
<b>Chlorophyll A</b>	36,15 µg/l	0,52 µg/l
<b>Total Chlorophyll</b>	160,0 µg/l	6,10 µg/l



## Conclusions

When treated with the **LG Sonic®**, water reservoirs show improvement in water quality parameters. In these tests, other physico-chemical parameters have not been followed specifically. It is recommended to follow these parameters to have a clearer view on other changes within the water of these treated water reservoirs.

From the results in these tests could be learned that the **LG Sonic®** treatment results in large reductions of bacterial concentrations within the water.

Important factors which influences the formation of obstruction in tubes and pipes systems.	Level of danger of causing these obstruction.			
		Low	Medium	High
<b>Physico</b>				
PH		< 7,5	7,0 - 8,0	> 8,0
<b>Chemical</b>				
Suspended solids (mg/l)		< 50	50 - 100	> 100
Dissolved solids (mg/l)		< 500	500 - 2000	> 2.000
Magnesium (1) (mg/l)		< 0,1	0,1 - 1,5	> 1,5
Total Iron (2) (mg/l)		< 0,2	0,2 - 1,5	> 1,5
H <sub>2</sub> S (mg/l)		< 0,2	0,2 - 2,0	> 2,0
Bacterial count (n° of bacteria/ml)		< 10.000	10.000 - 50.000	> 50.000

- (1) in spite of the fact that these concentrations can be insufficient to cause problems in irrigation, the problems of photo-toxins (produced by cyanobacteria) can be detected at lower concentrations stated then above.
- (2) Concentrations of iron over 5,0 mg/l can cause nutritious imbalances which can negatively effect the cultivations.

# Irrigation

## REFERENCE 2: REDUCTION OF AEROBIC BACTERIA AND ALGAE IN DRINKING WATER FOR ANIMALS.



### TEST INFORMATION

Company : Ampelax, UPA Unión de pequeños agricultores  
Test start : 4th of June 2008  
Test end : 23rd of July 2008  
Total test days : 49 days  
Device used : **LG Sonic® XXL**  
Pond dimension : About 50 x 50 meters  
Location : Granja Las Torres de Cotillas, Murcia, SPAIN  
Type of application : Drinking water for animals

### ANALYZED PARAMETERS

	START	FINAL
Aerobic bacterial count	30 cfu/100ml	2 cfu/100ml
Chlorophyll	0.9 ug/l	0,02 ug/l
Total chlorophyll	1,92 ug/l	0,25 ug/l



# Irrigation

## Conclusions

After finalizing the test the following was observed: strong reduction in algae and aerobic bacteria concentration. This lower amount in micro-organism concentration, in the water leads to lower biochemical oxygen demand (BOD). This subsequently leads to the improvement of the quality of the potable water. This allows longer water storage and reduction of the decomposition rate.

## ADVANTAGES

- ✓ **Biological Control of filamentous and unicellular algae**
- ✓ **Reduction of iron and sulfur related problems.**
- ✓ **Reduction of intensive maintenance.**
- ✓ **Better irrigation network conservation.**
- ✓ **Increment of agricultural productivity.**
- ✓ **Low maintenance of the devices.**
- ✓ **Low energy consumption**
- ✓ **Savings of time and energy in mechanical systems for the irrigation purposes.**
- ✓ **Reduction of oxygen demand (BOD)**
- ✓ **Reduction of chemical oxygen demand (COD)**
- ✓ **Significant reduction of total suspended solids (TSS).**
- ✓ **100% Ecological**
- ✓ **Better irrigation network conservation.**
- ✓ **Cost efficiency**



A long range up to 200 meters.

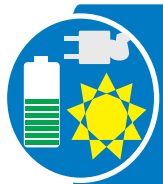


Low energy consumption of maximal 16

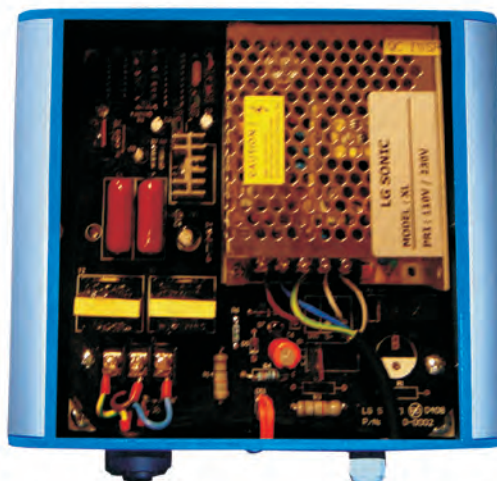


**DC-MF**

Dual core multi frequency technology.



can be mounted to a solar panel.



**2 YEARS**  
Guarantee

Two years Guarantee.



**LpBs**

Low Power – Bright Signal technology with a lower power consumption and a stronger signal

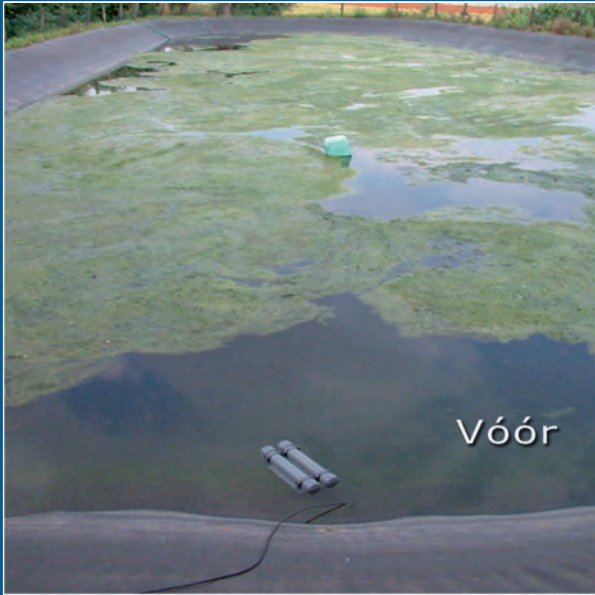


Aluminium box for a better protection against influences of the weather.

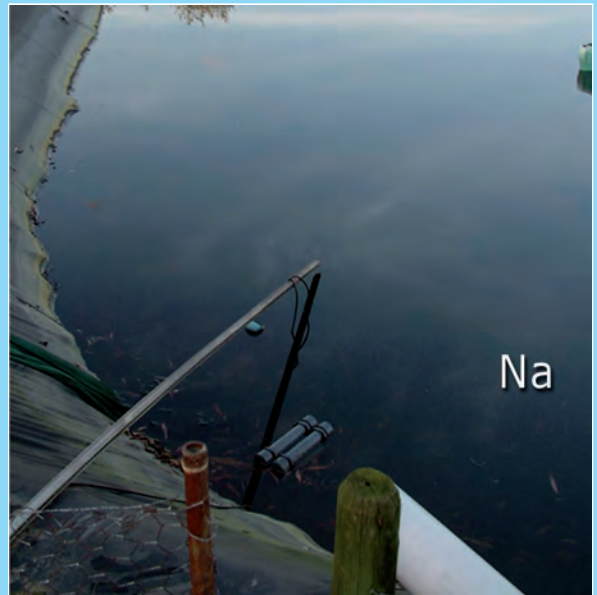
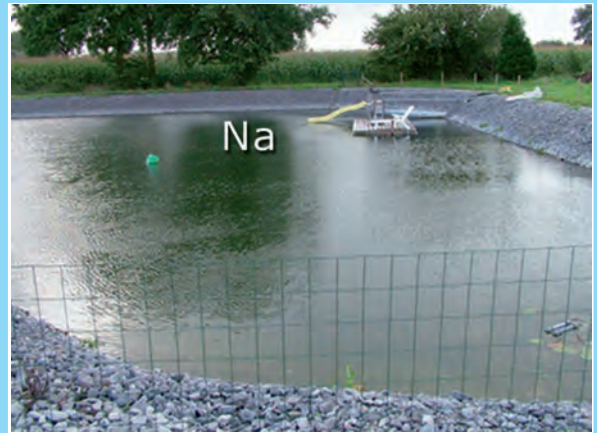
**LG SONIC®**

# Irrigation

BEFORE



AFTER



## Why choose LG Sound:

- ✓ 3 years guarantee on the industrial LG Sonic® devices
- ✓ More than 8000 LG Sonic® devices have been installed in 48 countries worldwide
- ✓ Scientifically proven technology
- ✓ Safe for fish, plants, and other aquatic life
- ✓ No high current or high voltages are transmitted into the water
- ✓ LG Sonic® units are developed in the Netherlands in collaboration with several renowned universities:
  - University of Amsterdam (VU)
  - UNICT Catania (Italy)
  - University of Portsmouth (UK)
  - Limnos (Slovenia)
  - BOKU (Austria)
- ✓ Money back guarantee



### UK Distributor:

#### AGA Group

Merton Hall Ponds

Watton Road

Merton

Thetford Norfolk

IP25 6QH

England

Tel: 01953 886824

Website: [www.agagroup.co.uk](http://www.agagroup.co.uk)

