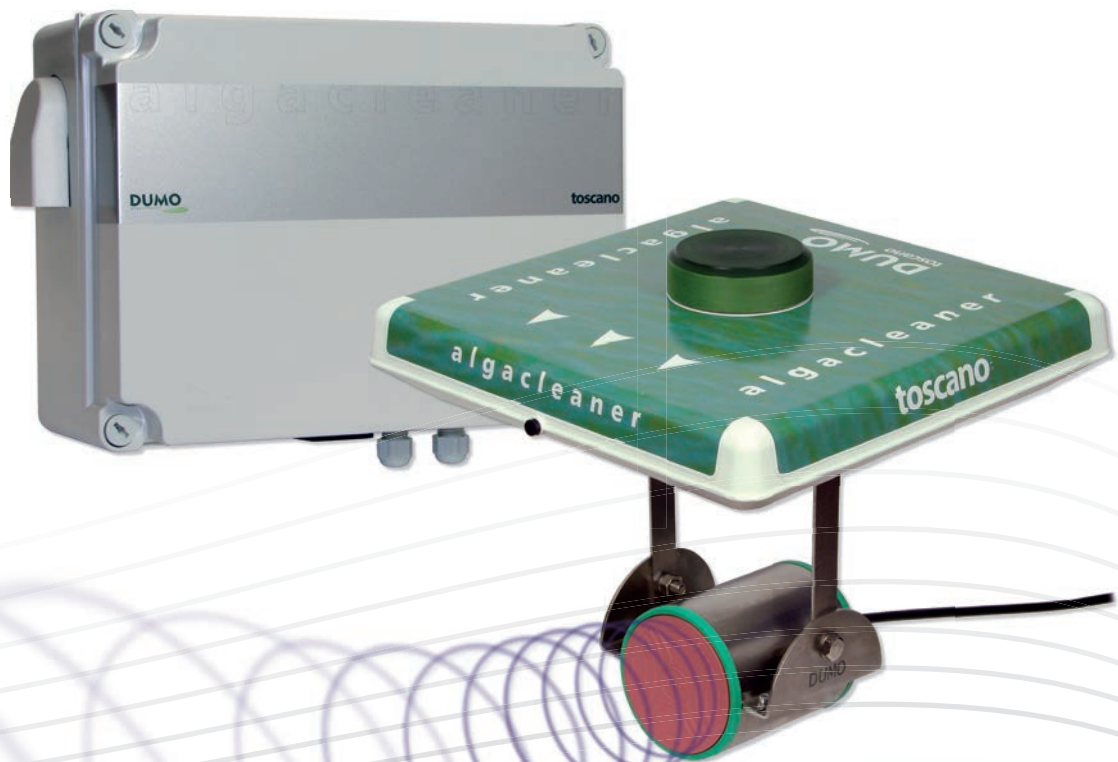


# toscano

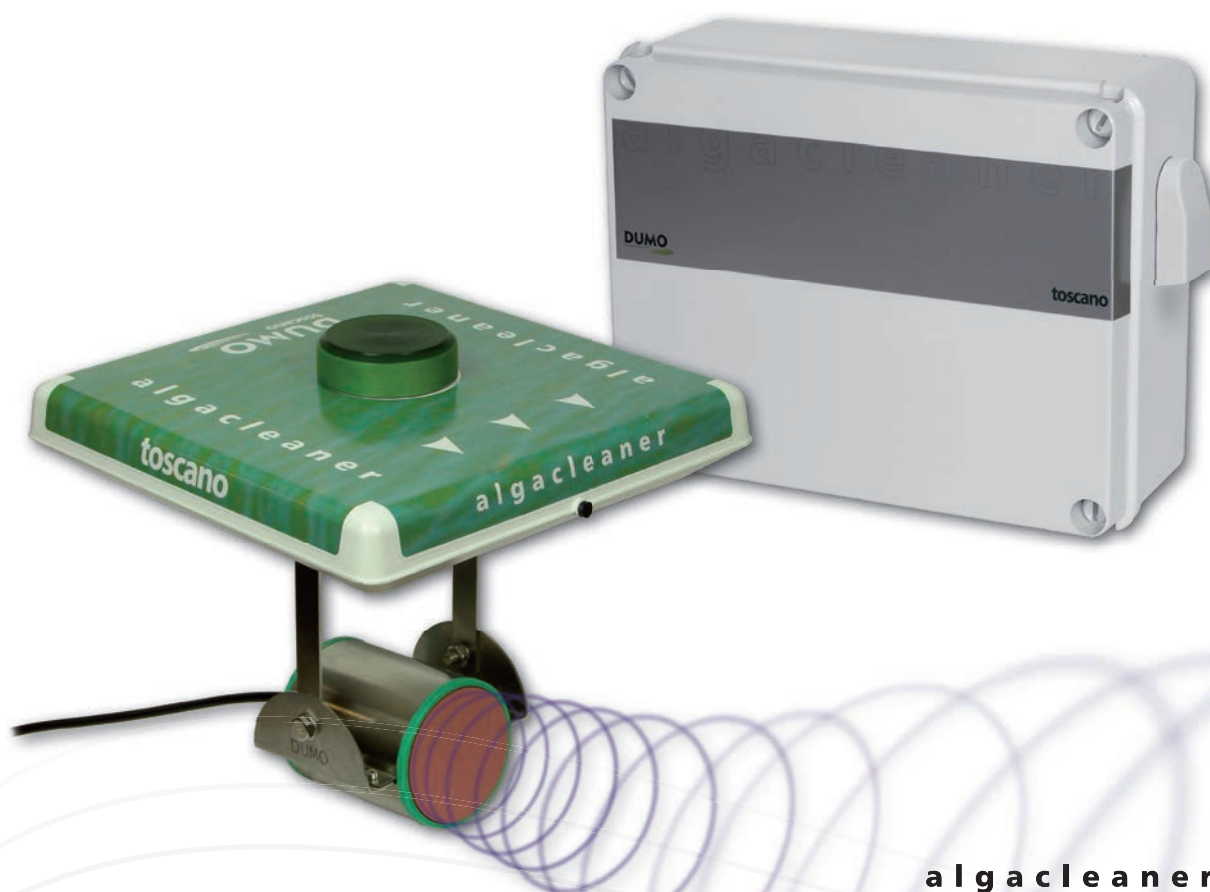
**DUMO<sup>®</sup>**  
algacleaner



Ultrasound for Water and Environmental applications  
without chemicals!

# Algae removal

The mitigation, destruction and growth-inhibition of algae by use of ultrasonic pulses, which avoids chemical usage, is ideally suited for a wide range of applications.





## algacleaner

Destruction and growth-inhibition of algae by ultrasonic energy pulses

Ultrasounds are present in a wide range of frequencies, beyond the range of human hearing (20 kHz - 10 MHz).

Sound propagation in a medium such as water is carried out by continuous waves transition through the medium in two phases: rarefaction (negative pressure) and compression (positive pressure).

Our transducer offers a coupling technology that matches the transmission pulses to the water density, resulting in more effective penetration of the ultrasonic waves, delivering more acoustic pressure over greater distances.

DUMO Algacleaner emits pulses that cause damage in vacuoles or cell tissue (fig.1) and inhibits algal growth process and vital functions.

The system emits different harmonic frequencies, creating waves of different length, generating effective wavefronts against algae by the balance of parameters such as wave shape, wave matching, pressure, and power.

Depending of the environmental conditions water nutrients, retention time, reservoir construction, shape, as well as biological characteristics, the effects of destruction and growth inhibition, start to be noticed from 4 to 8 weeks (fig.2).



Discover DUMO  
Algacleaner

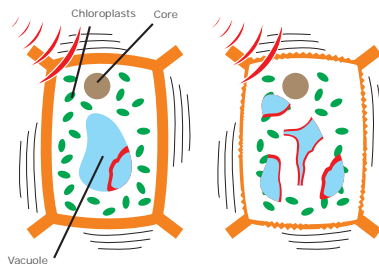


Fig. 1

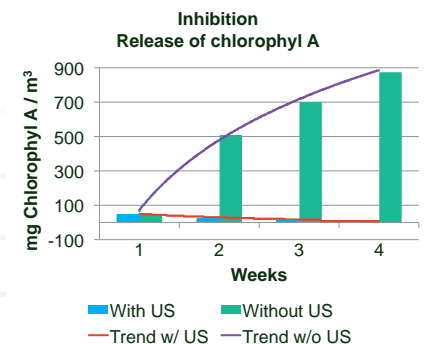
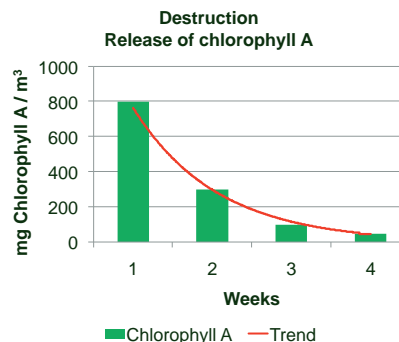
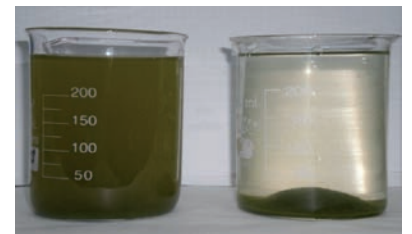
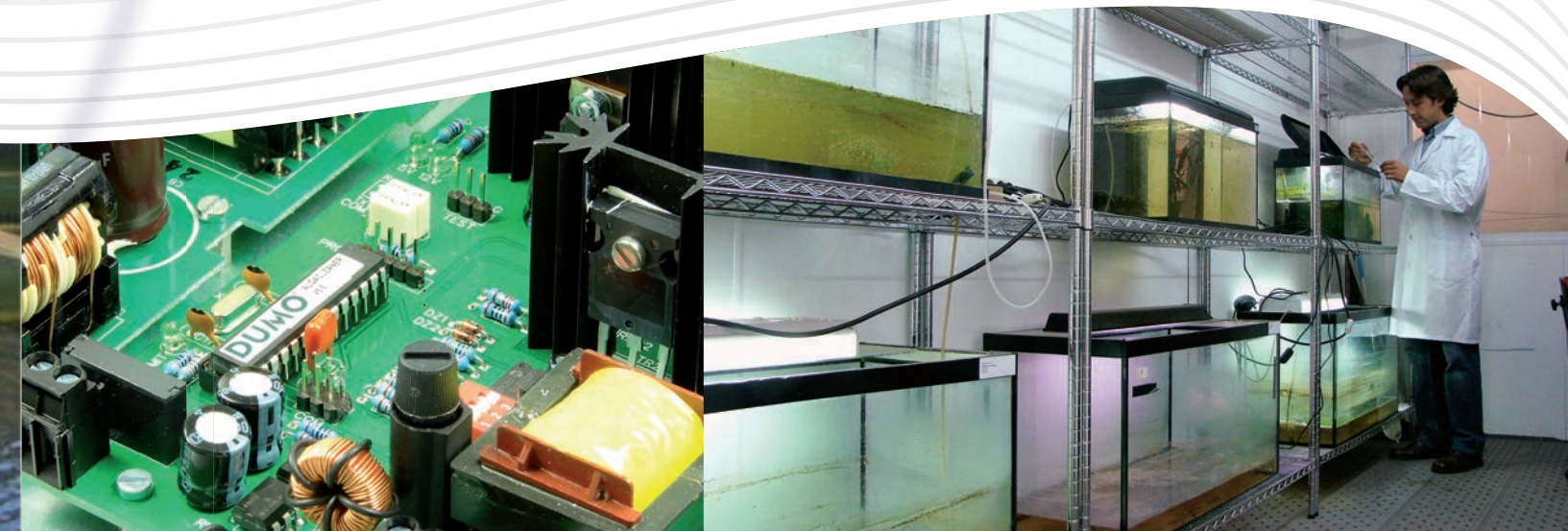


Fig. 2



## The most effective and ecological way to prevent algae

### DUMO Algacleaner®

It is now possible to alleviate algae bloom in your pond, irrigation reservoir, lake, fountain, cooling towers, etc., without the need for chemical products. Our ultrasonic equipment will ensure algae is eliminated in the most sustainable method possible.

Installation its easy. All you need do is float the device in the water and connect it to a power source or solar panel.

### Advantages



**Ecological**



**Non-toxic**

Causes no harm to humans, animals or plants.



**Clean**

No need for chemical products



**Minimal**

**maintenance**



**Easy to install**



**24/7**

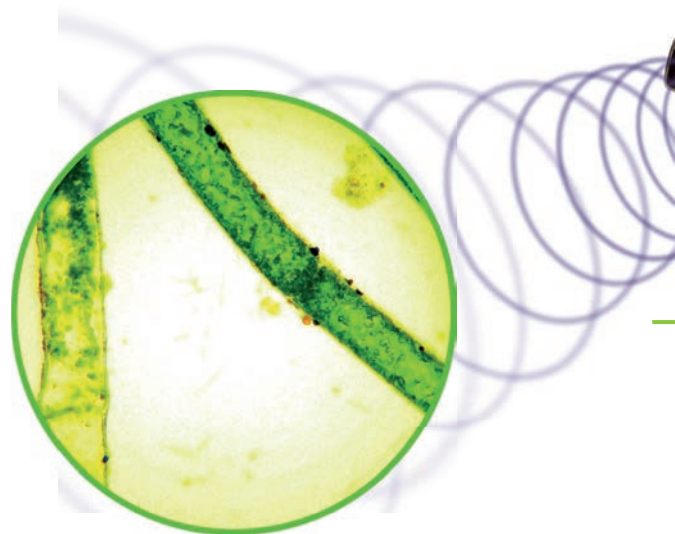
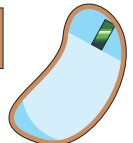
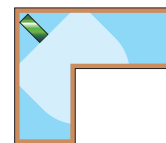
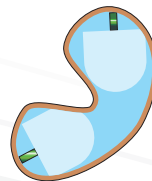
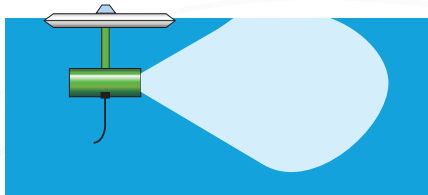
service



**Low power**

**consumption**

- Eliminates green, blue and many other species of algae and cyanobacteria, depending upon extant conditions.
- Significantly reduces the use of chlorine in swimming pools while eliminating problematic green and black algae.
- Extremely effective in removing bio-film from boat hulls and tank, pond and swimming pool walls.



**Irrigation**

**Ponds & lakes**

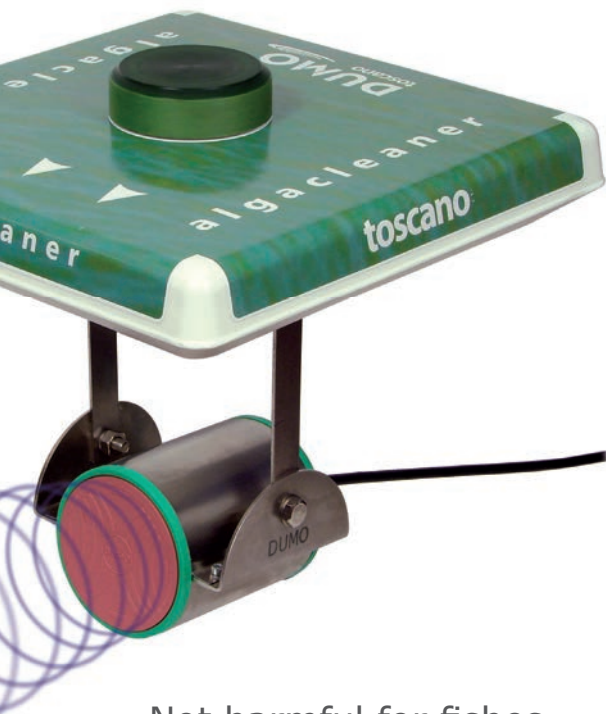
**Fish farms**



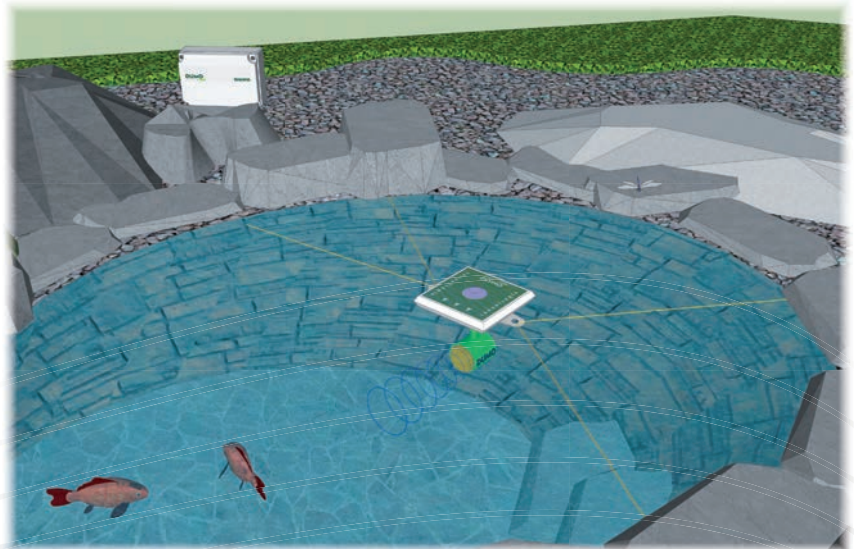
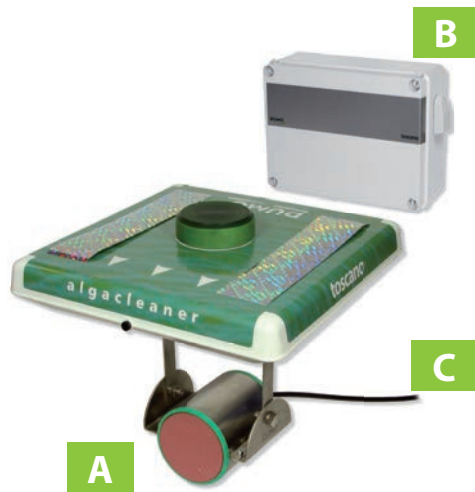


## System description

- A. An ultrasonic transmitter attached to a float is placed under the surface of the water.
- B. An ultrasonic electronic generator to activate the transmitter is installed a waterproof area powered by a 230 V mains circuit or solar panel.
- C. A 30-meter cable connects the transmitter and generator.



Not harmful for fishes



"...there were no alterations the marine fish-farm on other companion animal species..."

University of Huelva

Pools

Marina

Cooling towers





## Reference letters

### 1. SAN JAVIER WWTP (MURCIA, SPAIN)

"To date and seeing the excellent results obtained because of this installation, we communicate our satisfaction in line with our expectations."

Barbara Escalante  
San Javier WWTP Plant Manager  
**UTE Acciona Agua - Cadagua**

### 2. MARINA PUERTO SHERRY (CADIZ, SPAIN)

"(...) during the period that this has been running in Dock V, results in protection against algae in the hull of HIPANIA can be considered as satisfactory."

Francisco Colón  
Port Captain  
**Marina Puerto de Santa María S.A.**

### 3. HORTICULTURAL IRRIGATION POND (ELLIANT, FRANCE)

"The addition of this equipment has exceed the objective of removing algae, without operational problems. We express no doubts about its efficacy."

Olivier Lannuzel  
**Fleurs de l'Odet**

### 4. TUG BOAT JETTY (BERGEN, NORWAY)

"The tug is very clean and ultrasound seems to work very well."

Torgeir Andreassen  
**Slep og Fortøyning AS**

### 5. PUBLIC PARK IN LA VAGUADA (MADRID, SPAIN)

"We noticed a saving both in the amount of chemicals we provided to the water and in cleaning that are now less frequent. We are also more environmentally friendly (...)."

Raúl López  
**Instrumentación y Mediciones Hidrológicas**

### 6. FISH FARM FILTERING LAGOON (KERPERT, FRANCE)

"We can only recommend this type of installation that does not harm the fish or the environment."

Laurent Boutier  
Manager  
**Armorvif EURL**

### 7. SOLAR THERMAL PLANT IN MAJADAS (CACERES, SPAIN)

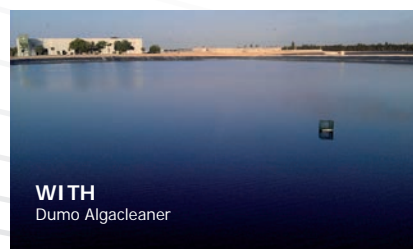
"(...) we can see a significant improvement in mitigating algal growth. Thanks to this technology we have avoided clogging in the piping caused by algae."

Pablo Manuel García Benito  
Plant Manager  
Majadas Solar Thermal Plant  
**ACCIONA Energía**



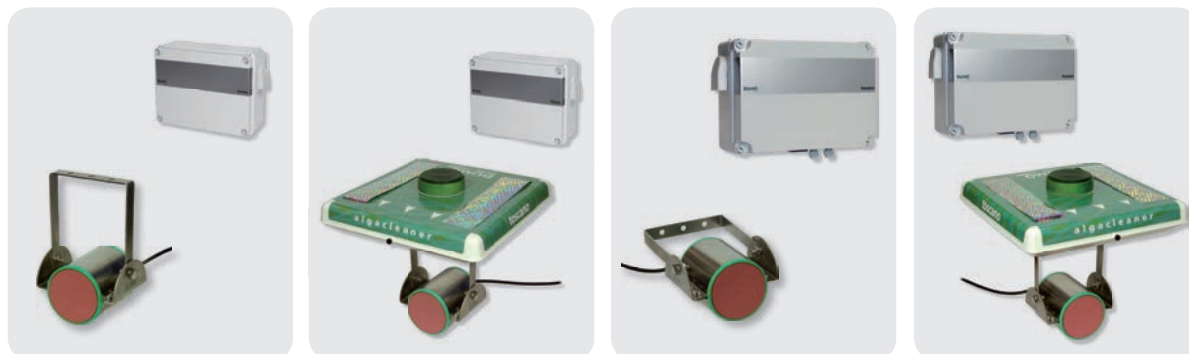
Customer reference letters.  
For further references and FAQ visit [www.dumo.es](http://www.dumo.es).

**San Javier WWTP**  
Murcia (SPAIN)



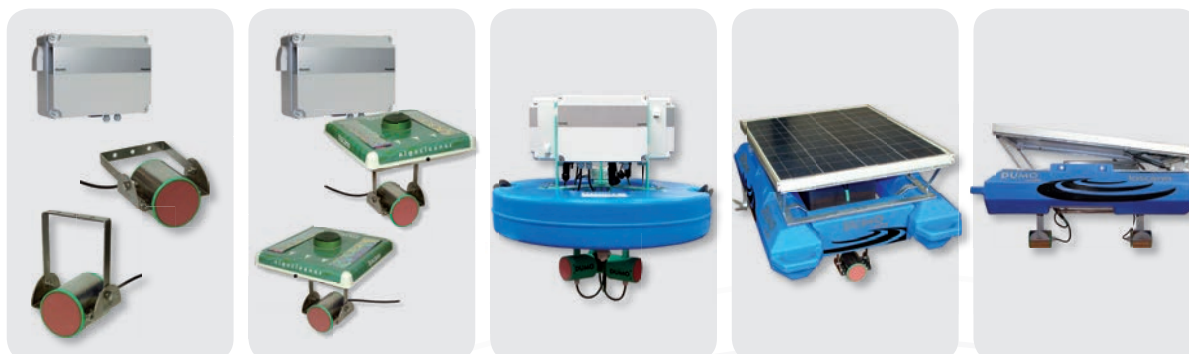
## Technical specifications

- Estimated operating lifetime: 8-10 years depending installation conditions.
- Ultrasonic waves: multifrequency digital generator with automatic sequence programs.
- Alarm output of no emission: auxiliary contact output (3A, 250V).
- Protections: surges, overheating and breakage of transmitter cable.
- Pilot lights: under emission and voltage ON.



Model	AC-50	AC-50-FL	AC-150	AC-150-FL
Supply voltage	230 Vac (50/60 Hz) Other voltages under request			
Transmitter cable	30 m			
Med./max. power	35/80 W	35/80 W	60/130 W	60/130 W
Maximum range*	25...60 m	25...60 m	100...180 m	100...180 m
Control box	240x190x90 mm	240x190x90 mm	300x200x120 mm	300x200x120 mm

\*max. range under optimum conditions.



Model	AC-2x150	AC-2x150-FL	AC-360	AC1-SOLAR	AC2-SOLAR
Supply voltage	230 Vac (50/60 Hz) Other voltages under request			Solar panel + Battery 12 Vdc	
Transmitter cable	2x30 m	2x30 m	-	-	-
Med./max. power	120/260 W	120/260 W	180/390 W	70/110 W	70/110 W
Maximum range*	2x100...180 m	2x100...180 m	3x100...180 m	70 m	2x70 m
Control box	400x300x130 mm	400x300x130 mm	Float Ø 800 mm	Float 900x760x160 mm	Float 900x760x160 mm

Ultrasound  
Level  
Analyzer



Designed to check the ultrasound action field.

AC-360  
Special design



Made under municipality regulations

ACM  
Marina



Specific for boats hull cleaning and fouling prevention

# toscano

## Electronics for the environment



General  
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Controllers

Water & sewage  
Control  
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Flowmeters

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