



**ULTRASONIC ANTIFOULING
FOR SAILBOATS, YACHTS AND SHIPS**

TWIN-f



**ALGAE, THE CONTINUOUS BATTLE FOR
EVERY BOAT OWNER**



TWIN-f

fluid
IMPACT

**THE INNOVATIVE SOLUTION
EASY TO USE WITH PROVEN RESULTS**

TWIN-f

Ultrasonic Antifouling for Yachts and Ships

The basic science behind the TWIN-f system is sound

TWIN-f uses resonance of ultrasonic waves to kill algae.

The TWIN-f system is installed on the inside of the hull of the boat, below the water line. The transducer generates ultrasonic waves that form an ultrasonic barrier around the hull of the boat. The ultrasonic signal will attack and kill the algae by tearing the gas vacuole.

Ultrasonic Antifouling Technologies

The basic science behind our TWIN-f system is sound

Continuous inaudible ultrasonic vibrations are generated by the TWIN-f system that cause oscillations of the algae vacuole leading to its death.

The broad frequency range achieved by this new technology allows ground breaking performance, far surpassing mono-transducer designs.

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The ultrasound challenge

The challenge to ultrasonic algae control is the fact that each algae species has its own resonance frequency that's required to destroy it. With over 30,000 known species ranging from unicellular to over 30m in length, there are many more frequencies needed than any single transducer system could technically achieve.

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The ultrasound challenge

Algae and molluscs are a constant and costly battle for every boat owner in order to maintain his investment and performance.

The boating industry has grown accustomed to the intensive maintenance necessary to maintain performance and prevent serious hull damage, periodic antifouling painting, water jetting the hull and even paint stripping.

The toxic materials used in antifouling paints lead to increasing restrictions and regulations worldwide in order to protect the environment.

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The TWIN-f advantage

With two unique transducers and with the help of a law of physics, the new TWIN-f system achieves full range algae control, regardless of geographic location and regionally dominating species.



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Ultrasound affects algae

Ultrasonic sound waves, tuned to precise frequencies to control algae is not science fiction. It's actually a very effective tool to control algae, and it will help to minimize the use of antifouling bottom paint used on boats, eliminate the need for chemical algaecides, lower maintenance costs and contribute to a healthier environment.

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A law of physics offers solution

The TWIN-f combines multiple frequencies to provoke what is called “heterodyning”, generating new frequencies and power peaks.

This technology allows us to achieve the full frequency range required for reliable and efficient algae control.

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A law of physics offers solution

Unlike existing pulsed ultrasound technologies TWIN-f adds an additional distinct transmitter that succeeds to expand the frequency range and achieves unparalleled efficacy and reliability.

TWIN-f wins the battle against algae and eliminates the chores and repetitive cost associated to keeping the hull clean and performing.

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Benefits of the TWIN-f system

- For boats and yachts of all sizes
- Best cost / performance
- Ends painting and scraping
- Stops molluscs
- Protects the drive gear
- Reduces hull resistance
- Increases performance
- Increases fuel economy



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Universal

- Suitable for all yachts and boats, over 15m (>50 ft)
- Efficient on fibreglass and metal hulls (not wood)
- Simple installation
- No maintenance



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Performance

- Full spectrum algae control
- Adjustable power settings
- Programmable for season, boat type, algae level
- Suitable for solar power (optional)

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Economical and ecological

- Reduces boat friction and enhances performance
- Maintains top boat speed throughout the season
- Operating cost savings
- Fuel economy

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Safe and effective

This system will not harm fish or aquatic life. Ultrasound has proven to be very safe for fish and other marine wildlife. It's important to note that our TWIN-f ultrasonic units are frequency tuned to damage only the cellular wall of the algae. The frequency range used is not harmful to marine wildlife and other plants.

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Safe and effective

The damaged vacuole prevents the algae from regulating its flotation level in the water for optimal chlorophyll synthesis and as a result leads to its death.

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TWIN-F Ultrasonic Algae Control

Ultrasound technology for algae control is becoming one of the top treatment methods for a variety of unwanted algae growth in sailboats, yachts and ships, large and small, and industrial applications.

Benefits of using ultrasound include safe, eco-friendly control of algae, which either eliminates or limits the use of antifouling paints. The installation is often quite simple and easy. And the technology is safe for fish and wildlife. Annual treatment costs are often reduced as well.

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Even the remote and hard to reach locations can now be treated with our ultrasound system effectively thanks to their lower power demand, and our solar power kit. This system includes everything needed to power all of our ultrasound units for 24/7 around the clock operation economically.

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Boat owners around the world all have the same problem: keeping their hulls clean and free of marine growth. Boats left in the water will quickly develop algae growth below the waterline.

Algae is a food source for barnacles, sea pocks, mussels and molluscs. Once these creatures attach to your hull and running gear, they quickly multiply, causing your boat's performance to suffer. As we all know, drag means less speed and more fuel consumption.

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This new and innovative TWIN-f antifouling system incorporates the latest proven ultrasonic technology which emits low frequencies which are radiated through the boat's hull in order to destroy algae that are the basis of all weed growth and micro organisms such as, barnacles, zebra mussels, oysters, clams and tube worms and will prevent them from attaching themselves to your boat's hull and drive system. Our unique system creates a barrier that covers the hull and the running gear including z-drives, propellers and propeller shafts. Our system is proven to work.

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Economical and safe for the environment

Our TWIN-f ultrasonic anti-fouling system's performance will convince even the hardened sceptics with significant cost savings over as little as a one year period (compared to yearly slippage and conventional antifouling paint treatments).

After the first year the savings will grow and grow!

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Installation

Our TWIN-f system comes in four versions, single, two, three and four-pair transducer system. The basic system consists of a pair of transducers connected to a control box. This system is used for boats 15 meters and up in length.

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Installation

The transducers with its installation kit are installed inside the hull with epoxy glue and no holes in the hull are required. All kits come complete with all necessary cabling.

It is up to you where to place the control box but it is important that it is placed above the waterline in a dry suitable place in the vicinity of an electrical power source.

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Installation

The TWIN-f ultrasonic transducer(s) should be placed below the water line. One must make sure that the transducers are not mounted on any false floor or internal skin.

Mounting the transducers within 1 to 1.5 meters of the propeller(s) or drive unit(s) will help to keep these clean from fouling as well as they will be within the effective area of the transducers effectiveness.

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The ultrasonic revolution in algae control

Like many hi-tech devices, ultrasonic transducers used in marine anti-fouling systems have improved significantly since their commercial inception in Belgium and in the USA in the early 1980's.

The earlier versions of the ultrasonic antifouling systems were restricted by limitations of transducer technology which only produced a narrow band of output pulses.

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The ultrasonic revolution in algae control

The newly designed TWIN-f ultrasonic antifouling protection system uses the latest digital technology which produces a far wider range of output pulses resulting in a significant improvement in effectiveness.

Ultrasonic Antifouling Technologies

The ultrasonic package

The TWIN-f system will unleash your boat's potential, give you enhanced fuel economy and will protect your boat 24 x 7. No barnacles, no drag, no fatter boat and most importantly, you will use less fuel to drive your boat through water.

Our TWIN-f anti-fouling system reduces costly bottom maintenance and it easily pays for itself in a short period.

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The ultrasonic package

Apart from eliminating the hassle and recurring expenses of conventional antifouling, the big benefit of an ultrasonic system is that it also protects items like cooling water intakes and other inaccessible areas.

A good installation should also cover parts that are subject to high abrasion, such as propellers, trim tabs and rudders.

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The solution

The TWIN-f ultrasonic system is designed to prevent algae build-up under the boat's/yacht's waterline, thereby preventing growth on the hull. The TWIN-f solution produces an ultrasonic wave pattern, which travels through fibre, gel-coat, polyester, metal and water to prevent the build-up of algae and barnacles on the boat's hull.

Our system is guaranteed to prevent barnacles and other calcareous attackers to settle down. Only a slight slime film might build up when your boat has been moored for a long period. This slight slime will fall off once the boat is under way.

Ultrasonic Antifouling Technologies

The solution

With our solution your hull remains clean and will increase the efficiency of your engine, reduce cleaning time and associated costs when the boat/yacht is hauled out of the water for maintenance.

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The Benefits when using our TWIN-f system are

With the TWIN-f ultrasonic system you will achieve higher speed as your hull will remain clean and therefore will allow you to maintain your maximum speed.

It will also keep clear all those underwater areas that are critical to the performance of your boat, that is, speed log impellers, water intakes for engine and air condition units, propellers, rudders, transducers, etc.

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You will save fuel

The fuel savings will be substantial, especially for boats with inboard / outboard engines. Pushing a heavily fouled hull through the water takes considerably more power than a clean one which has much less resistance. It can take up to 20% more fuel to push a dirty hull through water.

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Save time and money

You only buy and install our system once. There is no maintenance what so ever. You will not inhale toxic dust from your antifouling or get covered in poisonous paint as with conventional antifouling paints, so you can look forward to more time on the water and less time sanding and painting.

Our system will pay for itself in a very short time if you consider the cost of the lift in and out of the water, the cost of the antifouling paint and the labour cost to remove the old paint and apply the new coat.

Ultrasonic Antifouling Technologies

Environmentally friendly

You'll be doing your bit for the environment as there are no pollutants associated with this method of preventative antifouling. It is also completely harmless to humans and marine life.

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Installation

The installation of the TWIN-f system is quite simple and straight forward. It can easily be self-installed in 60 minutes (per pair). You do not need to make any through hull fittings installation. All installation is done on the inside of your boat hull, below the water line with Epoxy.

Once the installation is complete, your ultrasonic system is ready to operate off your 24 volt DC on-board battery system. The operation is automatic. You set it ON and forget about it. There is no need for any maintenance.

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Summary

The TWIN-f ultrasonic system will:

- Reduces algae, micro and macro bio-film and barnacle build-up
- Improves antifouling performance
- Extends the period between cleaning
- Reduces drag, maximises fuel economy and boat speed
- Cost effective, reduces down-time and maintenance
- Reduces fuel consumption