



SONIHULL

ULTRASONIC ANTIFOULING SYSTEM

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HOW DOES IT WORK?

The Sonihull and Oceonic antifouling systems work by eliminating the first part of the food chain (ie. algae). If you prevent the food source barnacles and other marine life will not be attracted to boat hulls. Ultrasonic antifouling systems work by producing multiple bursts of ultrasonic energy simultaneously in a multiple range of frequencies. This produces a pattern of alternating positive and negative pressure, creating microscopic bubbles during negative pressure and implodes them during positive pressure. It is this process that prevents algae from growing.

For hundreds of years mariners have been plagued with the same old problem of marine growth on the hull, power train and steering gear for their yachts. With this comes the problem of:

- Reduced speed due to extra drag
- Increased fuel consumption, estimated at as much as 20%
- Propeller cavitations (which in turn causes extensive damage to propellers)
- Expensive annual haul outs and repainting costs

ANTIFOULING SOLUTIONS

There are two antifouling systems, the **Sonihull** and the **Oceonic**. The Sonihull system provides antifouling for your boat hull. Designed for the pleasure and commercial boat markets, with applications for larger vessels as well.

The Oceonic systems protect your sea chest, inlets, filters and valve seats from growth. Designed for pleasure, commercial and large vessel applications as well.

Both Sonihull and Oceonic are cost effective antifoul products that work alongside a conventional antifoul paint with additional benefits.

In addition to the reduction in annual haul costs, both Sonihull and Oceonic will help and to ensure that the boats hull, stern gear and bow thrusters prevent the growth of algae and barnacles, thus a clean hull will provide users with a substantial reduction in fuel costs, while still keeping their boat performing as it should.





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THE BENEFITS

SONIHULL WILL REDUCE YOUR FUEL BILLS!

A clean hull can save you about 30% of your fuel bill, it is common knowledge that fouling on the boats hull will lead to increased resistance, which basically means you are going to burn more fuel for every knot you make. The outcome is a compromised efficiency and more fuel usage than with a clean hull.



ENVIRONMENTALLY FRIENDLY

Tests have demonstrated that electronic anti-fouling products have no adverse effect to fish. Sonihull and Oceonic ultrasonic frequencies stays very close to the hull structure and it is demonstratable that the signal does not stray into open water.

Over the past decade environmental cleaning issues have meant so much tighter controls on industrial cleaning products especially biocides and chlorofluorocarbons, with "necessity being the mother of all inventions" industry

needed to find an alternative solution. Ultrasonic cleaning was considered the most viable solution, by embracing the latest in digital electronics and transducer technology, the industry made a quantum leap forward over the last decade to fill the needs of the marine industry.

The concept of ultrasonic cleaning is not new, it has been around for over 30 years. Used for a wide variety of applications, from cleaning of dental and medical equipment, fine jewelry, to de-gunking drains and automotive parts to name but a few. In a subject closer to a sailors heart ultrasonic technology is also used for keeping pipes clean in many breweries around the world.

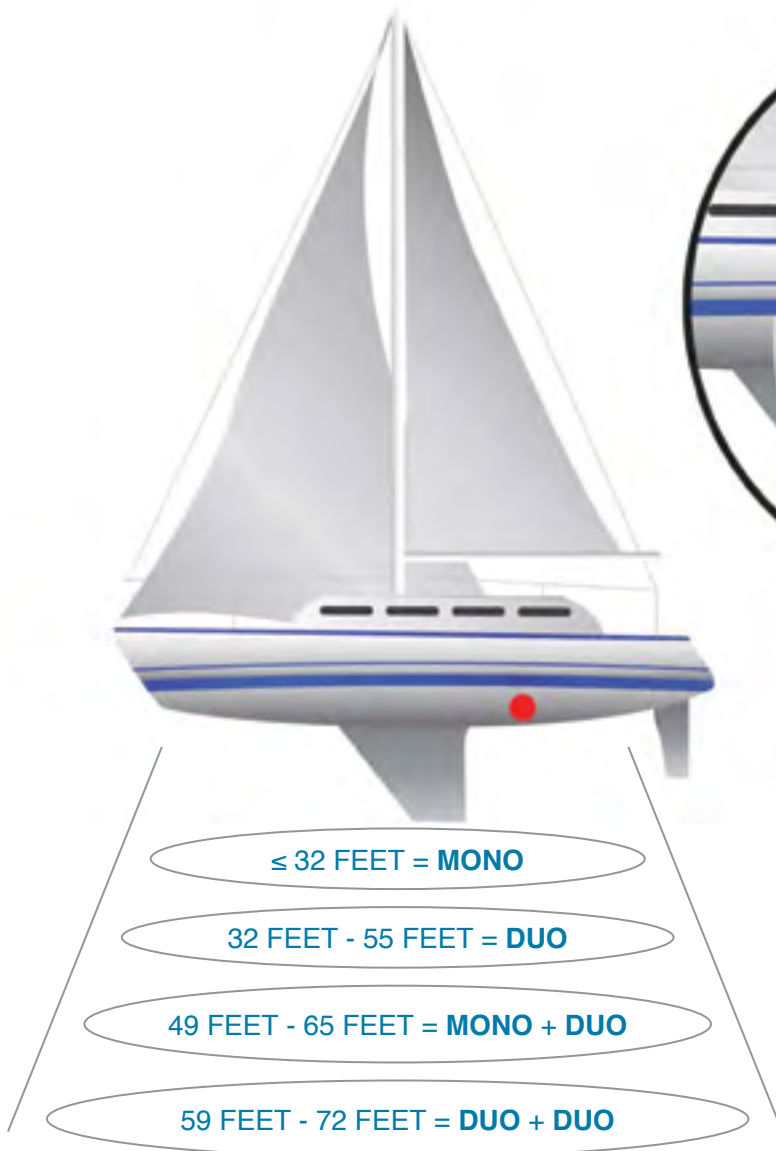
ABOUT NRG MARINE

NRG Marine is a high-tech business specializing in the design and development of environmentally friendly electronic solutions for marine industry as a whole and is the manufacturer and distributors of Sonihull Ultrasonic Antifouling System to a world wide market. Having grown considerably over the past few years, NRG Marine now caters for applications within all marine environments from pleasure boat to military vessels.



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CHOOSING A SONIHULL MONO OR DUO SYSTEM



Contact PYI Inc. to design a system for larger sized hulls.

Note: Twin hull vessels will require the above recommendations to be doubled.
For sandwich construction hulls the transducer must be fitted to the inside of the hulls outer skin.



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SONIHULL MONO AND DUO POSITIONING

Below are diagrams showing you the approximate positioning for optimal performance for a Sonihull Mono or Duo system.

SONIHULL MONO POSITIONING



SONIHULL DUO POSITIONING



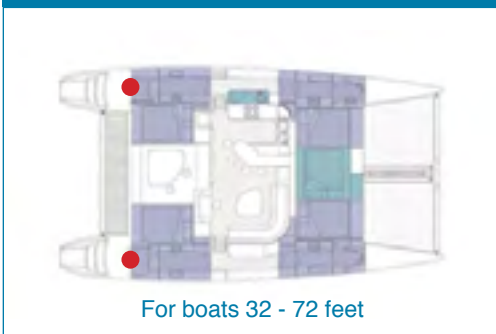
SONIHULL MONO POSITIONING



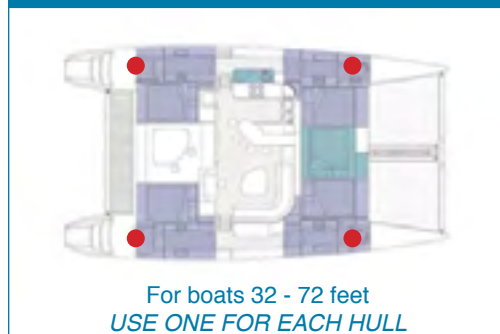
SONIHULL DUO POSITIONING



SONIHULL DUO POSITIONING



TWO SONIHULL DUO SYSTEMS





SONIHULL

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SONIHULL MONO

List Price: \$2,195.00*

For yachts up to 32 feet in length.

Ultrasonic generator system with a single transducer suitable for both sailing and power boats.



SONIHULL DUO

List Price: \$2,995.00*

For yachts up to 55 feet in length.

Ultrasonic generator system with dual transducers suitable for both sailing and power boats.



EXTENSION CABLE

List Price: \$98.00*

A extension cable that measures 8.2 feet in length. Compatible with both Sonihull Mono and Duo system.

**Price effective through 12/31/2014*



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CATAMARANS

For catamarans up to 40 feet in length.

For catamarans over 40 feet we recommend using two Sonihull Mono systems or one Sonihull Duo system, one system for each hull.



LARGER COMMERCIAL VESSELS

Multiple transducers will be installed in the hull. The system is very effective on aluminum and steel hulls. On large vessels each transducer should be calculated to a 13 - 16 feet radius on steel and aluminum hulls to obtain optimal results.





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REDUCE YOUR CARBON FOOT PRINT

With new environmental regulations set to substantially reduce the effect of traditional anti-foul paints, NRG Marine see Sonihull and Oceonic Ultrasonic Antifouling Systems as a credible addition to traditional antifouling methods. Sonihull will play a significant part in the future of marine antifouling.

SIMPLE INSTALLATION

- No hull penetration required
- Transducer are simply bonded to the inside of the hulls outer skin
- For yachts up to 30ft transducer should be installed in the rear 3rd of the yacht
- For yachts up to 56ft transducers should be installed 1/3 and 2/3 along the center line of the yacht hull
- Catamarans up to 30ft transducers should be mounted on the rear 3rd of each hull
- Catamarans up to 56ft two Sonihull Duo systems are required, one for each hull, and to be installed similar to monohulls with spacing of 1/3 and 2/3 along the center line

INSTALLATION GUIDE

Mounting of Control Box

- Find a suitable dry location above the water line with suitable access to either mains or battery power.
- Remove lid to expose mounting screw hole mounting the transducers.

Mounting of Transducer

- Use sand paper to prepare the surface of the Sonihull.
- The surface needs to be flat and smooth to ensure best transmission quality.
- Use a hard epoxy to bond the mounting ring to the

hull. (ensure that there is no residue glue on the inside of the ring).

- Ensure surface to surface contact with no air trapped between transducer and hull.
- Allow epoxy to dry before screwing in transducer.
- Add a smear of Vaseline to the surface of the transducer (1mm) before screwing into the mounting ring.
- Run cables back to the control box and attach.
- Power on, simple as that!

AFTER ONE YEAR WITH SONIHULL AND THE PICTURE SPEAKS FOR ITSELF!

This photo of the boat removed from Dubai's fertile waters



after 1 year with Sonihull.

The owner stated that within the first two weeks he knew it was working as previously every two weeks he would have to de-gunk the speed log paddle wheel. In the last year he has not had to do it once!



12532 Beverly Park Road
 Lynnwood, WA 98087
 425-355-3669
 800-523-7558
www.pyiinc.com

OTHER PRODUCTS BY PYI INC.

