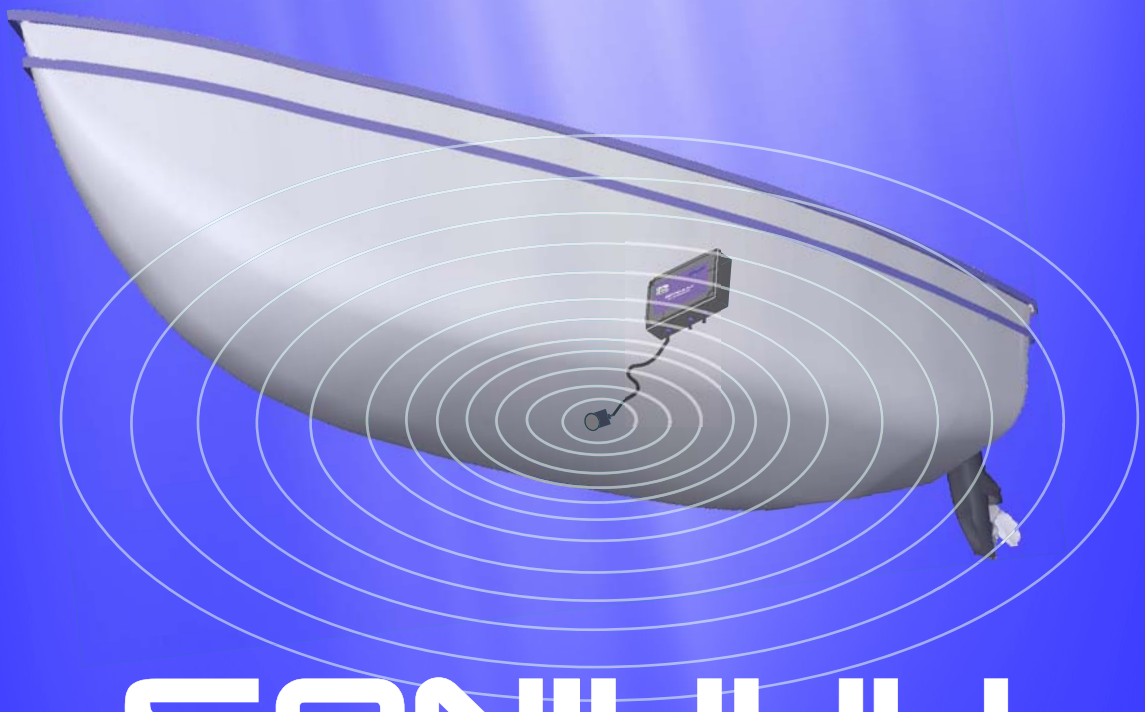
NRG Marine Ltd.

Project Report



SONIHULL

Ultrasonic Antifoul System

Banish the Barnacle with Sonihull!

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PROJECT REPORT

NRG Sonihull ultrasonic anti-foul system - Raw Water Inlets (Sea Chests) and Water Maker installation onboard 51m yacht located in Dubai, United Arab Emirates.

Vessel: Trinity Hull 054
Make: Trinity 51m
Location: Dubai international Marine Club
Captain: Geoff Clarke.
Chief Eng: Blake Holloway.
Installation by: E-Tech Group FZE

The Solution:

Engineers from E-Tech Group's Dubai facility were asked to survey the problem and proposed the installation of the NRG marine Sonihull ultrasonic anti-foul system to the Sea Chests and Water Maker inlet. This already proven hull protection system had yet to be applied to aforementioned problem.

The Problem:

Two raw water inlets (sea strainers) supplying all systems (engines, generators, air conditioning, fire pump and load bank). The two inlets have a conical shaped nylon mesh filter providing very fine filtration of the water entering the cooling system. Due to the fertile nature of the Dubai waters the filters were plagued with rapid algae, vegetation and barnacle growth, to such an extent that the filters required extensive cleaning every week in order to maintain the necessary flow of water. This cleaning process was time consuming, involving a lot of scraping and scrubbing to remove the growth that had managed to weave its roots into the fine filtration mesh.

The Installation:

Given the layout of the engine room, the installation involved using 1x Sonihull duo and 1x Sonihull mono system. The IP67 Transducers were mounted on each of the sea chests below the water line and in this case were conveniently located below the floor plates. A third Transducer was mounted onto the side of the isolation valve for the water supply to the water maker, this was to provide protection not only to the valve from the build up of growth that could stop the valve from operating correctly, but also for the pipe work leading to the water making plant equipment. The IP65 Control boxes were mounted above the floor plates, allowing the crew to observe the indicator LEDs. The supply came directly from the 220VAC Distribution board at the aft of the engine room and all cabling was suitably dressed and secured on existing cable trays beneath the floor plates.



The Result:

Following commissioning, the system was monitored over a four-week period, after which an inspection of the Strainers within the Raw Water Inlets (sea strainers) was carried out. The strainers were found to have very little growth and were still functional. The strainers did have a minor level of blockage due to the sand and silt, but this has to be expected and cannot be controlled by the sonihull system.

Summary:

Since the success of the trails, the solution has been widely accepted by many of Owners, Captains and Engineers. The recommendations and endorsements have resulted in a number of Super Yachts in the region having the system fitted.


One of the filters after a quick hose down - previously weekly scrubbing of heavy build up was needed.

Comments from the Crew:

Captain Geoff Clarke stated, “It is fantastic to find an innovative marine product on the market that does the job that it’s designed to do, and as in our case, could be adapted to deal with other problems that arise from unwanted growth. I think NRG Marine along with ETech’s experience within the marine industry have a big future together”.

Chief Engineer Blake Holloway Commented, “I am delighted to see how effective NRG Marine’s ‘Sonihull’ product has performed during our trials. Previously when we removed the Strainers before having Sonihull I found up to 40 mm of growth per week. Now we find that we have very little around 5mm, and is mainly sand and silt. The sea strainers are cleaned on a fortnightly basis now and the system has had a great impact on the growth and minimised the time taken to clean.”

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PROJECT REPORT

After one year with Sonihull and the pictures speak for them selves.

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

Vessel: Samahani
Make: Beneteau Oceanis 37 hull No. 056
Location: DIMC Dubai, U.A.E.
System Installed: Sonihull Duo
Transducer locations: 1. Near to the prop shaft tunnel
2. Just in front of the keel

This boat is owned by our technical Director and was used for field trials for 18 months prior to the product being launched in to the Middle East at the Dubai Boat show. During this period the extensive Alpha and Beta testing carried out ensured that the product was suitable for the warmer climates you would expect in the Middle East, Southern Med, Gold Coast and other tropics around the world.

The system has been installed for well over 2 years now with excellent results. So much so that the speed log paddle wheel has not needed cleaning since the Sonihull system was installed!

Pictures of boat being removed from
Dubai's fertile waters after 1 year with Sonihull

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PROJECT REPORT

Vessel: Talissa
Make: Sunseaker Manhatten 60
Location: Dubai Marina U.A.E.
System Installed: 1x Sonihull Duo, 1x Sonihull Mono
Transducer location: Duo, both mounted adjacent to the propellers shaft's . Mono, mounted directly to the bow thruster tunnel.

The aim of this installation was not just to cover the hull, but also to add extra protection to the running gear and rotating equipment. Prior to using Sonihull this vessel was burning 280 litre's of fuel an hour, due to the fouling, now with the clean hull being maintained by Sonihull the consumption has dropped to 240 LpH 40 litre's an hour.

The owner was keen to point out, that although the savings in fuel cost was nice, he was more impressed by the potential savings on wear and tear of his engines not having to work so hard.

Transducer location:
Sonihull Duo mounted directly to the bow thruster tunnel.

Transducer location:
Sonihull Mono mounted adjacent to the propellers shaft's.

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PROJECT REPORT

Vessel: Samahani
Make: Aicon 62
Location: Seychelles
System Installed: Sonihull Duo
Transducer locations: Both mounted adjacent to the propeller shaft;s.

The Owners Captain stated in the Seychelles, every this need to be imported, so the cost of fuel and antifouling a boat is so expensive that he was very keen to experiment with the Sonihull system.

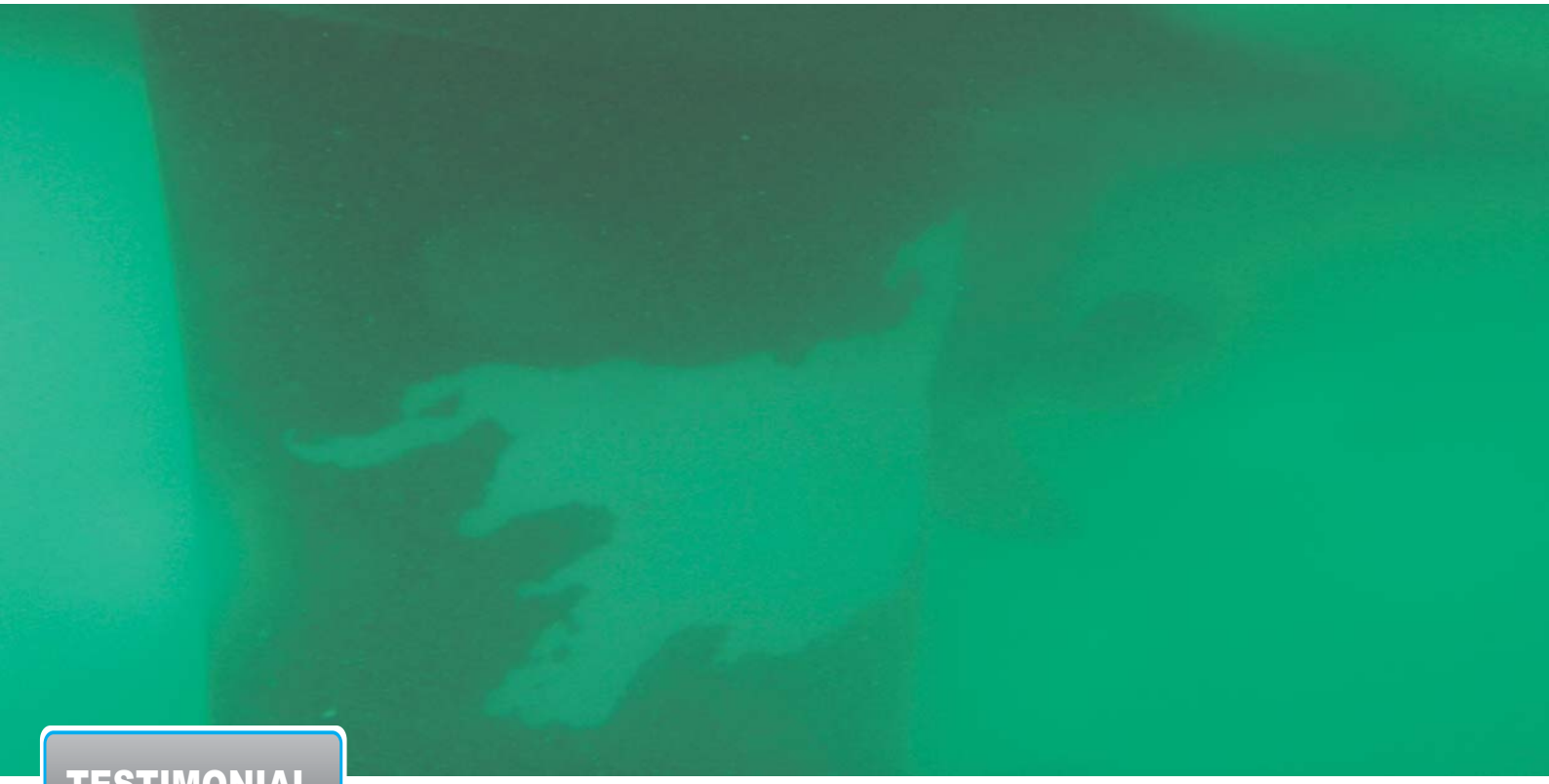
The results have been fantastic and now plans to add an additional mono to protect the bow thruster and bow area of the boat that are not covered too well by the transducers mounted at the rear of the 62 footer.

PROJECT REPORT

Vessel: Bright Wing
Location: Phuket Thailand
System Installed: Sonihull Duo

This steel hulled Ketch has been lovingly restored and renovated by its current owner.

With the owner living and working in Dubai, the boat would not be used for long periods of time, so fitting the Sonihull became “a no brainer” to the Owner who wanted to enjoy using his pride and joy from the moment he arrives rather than spending his time diving to clean the hull.



TESTIMONIAL

The following picture was taken of the rudder of a sailing yacht that had recently been antifouled, but due to the paint on the rudder not being prepared correctly resulted in the paint being striped from the rudder on the first time it was used.

Some 6 weeks later with very little use. There is no growth on the bare gel coat of the rudder. Normally in the Arabian gulf waters in summer you would expect everything to be totally covered in less tan a week.

Luckily the yacht had been fitted with the Sonihull ultrasonic anti-foul system installed by ETech services in Dubai.

The owner of the yacht who sent us this picture stated that he knew the Sonihull worked well on the hull, but was most impressed that it managed to keep the rudder so clean as this is isolated from the hull by bearings and linkage gear.

Steve Worrell regional director of E-tech stated that on this 38ft yacht they had installed a Sonihull Duo, mounting one transducer adjacent to the prop shaft tunnel and the second transducer in front of the keel.

Steve also mentioned that although he is pleased with the result he was not surprised as they had managed to achieve excellent results with power boats keeping the stern drives clean by the correct installation of the Sonihull system.

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Larger Commercial Vessels

SONIHULL SYSTEM PROVIDES

- *Improved hydrodynamics & speed.*
- *Noticeable reduction of maintenance expenses.*
- *Return of investment within a short time.*
- *Less fouling of ship's hull.*
- *Available in 12-24Vdc. and 240 ac*
- *Improved efficiency of propulsive fuel & performance.*

Multiple transductors installed in the hull. The transfer rate of the utrasonic signal is much higher on steel than fibreglass and therefore most effective. On commercial ships each transducer should be calculated to a 3-5 metre radius on steel hulls to obtain ultimate results.

SONIHULL

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- ENVIRONMENTALLY FRIENDLY
- INCREASE FUEL EFFICIENCY
- COST EFFECTIVE
- EASY TO INSTALL!
  NO HULL PENETRATIONS REQUIRED
- AUTO LOW VOLTAGE CUT OFF AT 11 VOLTS TO PROTECT AGAINST BATTERY DISCHARGE
- EFFECTIVE REMOVAL OF A WIDE RANGE OF ALGAE

SONIHULL

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

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

SONIHULL WILL REDUCE YOUR FUEL BILLS

A clean hull can save you about 20% of your fuel bills, It is common knowledge that fouling on the boat's 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 show that there is no danger to fish, (but if they can hear the ultra high frequencies and don't like it, they only have to swim a few more inches away from the hull to avoid the problem!)

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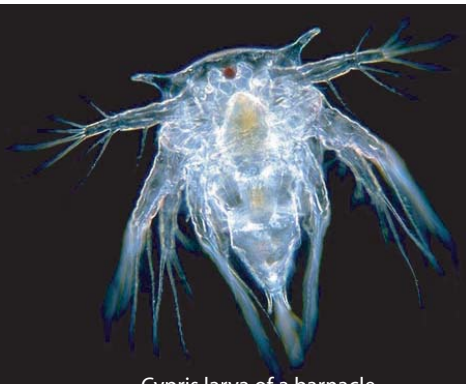
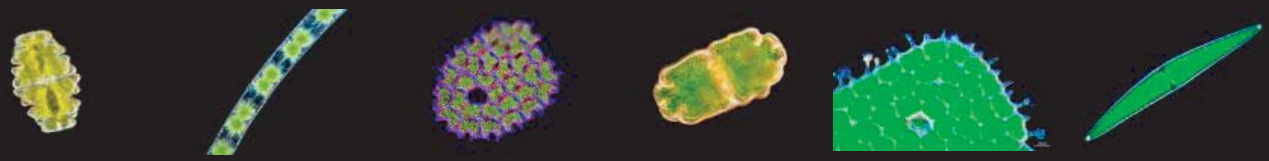
The Nauplius larva of a barnacle



Cypris larva of a barnacle

A barnacle



BARNACLES

Living on the edge. . !

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Banish the Barnacle with *Sonihull!*

How does it work?

The NRG Marine Hull protection system utilizes the latest digital electronics and Ultrasonic transducer technology, by producing multiple bursts of ultra sonic energy simultaneously in a multiple range of frequencies. This energy produces a pattern of alternating positive and negative pressure.

The alternating pattern creates microscopic bubbles during periods of negative pressure and implodes them during periods of positive pressure in a phenomenon known as "cavitation." The implosion creates a micro-jet action that not only provides the cleaning effect on the hulls surface below the water line, it also resonates and destroys single cell organisms such as algae. The removal of the initial link in the food chain inhibits the growth barnacles and other marine life that feed on the algae.

Don't let your boat END UP like this..!!

NRG Marine **Dealers**

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