

TWIN- f_2

Algae, the continuous battle for every vessel owner

INNOVATIVE PROTECTION AGAINST ALGAE
FOR BOATS AND SHIPS ALIKE

TWIN- f_2

NOW

- FOR YACHTS/SHIPS OF ALL SIZE
- BEST COST / PERFORMANCE RATIO
- ENDS PAINTING & SCRAPING
- STOPS MOLLUSKS
- IMPROVED FUEL ECONOMY
- INCREASED PERFORMANCE
- REDUCED HULL RESISTANCE



Inaudible and continuous ultrasonic TWIN- f_2 vibrations effectively protect small and large hulls against algae deposits. TWIN- f_2 is a new technology originating from Cleanship, an EU sponsored FP7 project. The original TWIN- f technology was enhanced to attain new levels of efficacy, energy consumption and environmental friendliness... TWIN- f_2

STOP algae deposits NO MORE toxic antifouling paints END scraping and paint stripping

LAW OF PHYSICS OFFERS SOLUTION

TWIN- f_2 uses an innovative combination of multiple frequencies and guided waves, resulting in long-range 'heterodyning' (generating new frequencies and power peaks) performance.

The latest technology now achieves a broad frequency spectrum effective for any size hull. These frequencies assure broad spectrum algae control.

Conventional ultrasound technologies were limited by their short effective range and offered protection only against a limited spectrum of algae. TWIN- f_2 steps beyond.

TWIN- f_2 wins the battle against algae by eliminating the chores and repetitive costs associated to keeping the hull clean and performant.

LARGE DIVERSITY OF ALGAE

The challenge with ultrasonic algae control is that each species of algae requires its own resonance frequency to be destroyed. With over 30'000 existing species ranging in size from unicellular to over 30m in length, many more frequencies are needed than a single transducer system can technically achieve.

TWIN- f_2 broad spectrum protection

LIMITED EFFECTIVE RANGE

Conventional ultrasound used on ship hulls suffers from a high energy leakage into the ambient water body. TWIN- f_2 technology drastically reduces leakage and focuses energy where needed.....on the hull.

TWIN- f_2 from yachts to ships

UNIVERSAL



- Suitable for any hull from approx. 50' (13m)
- Efficient on steel, aluminium and fibreglass hulls (not wood)
- Simple installation
- Low maintenance
- Suitable for solar power on shorter hulls

PERFORMANT



- Full spectrum algae control
- Long range effectiveness
- Adjustable power to suit each application
- Programmable for each season, boat type and algae level

ECONOMICAL AND ECOLOGICAL



- Reduces friction and enhances performance
- Maintains hull speed throughout the season
- Saves operating cost
- Reduces fuel consumption



THE ECONOMICAL AND ECOLOGICAL SOLUTION FOR PERMANENT HULL PROTECTION
AGAINST COSTLY MARINE DEPOSITS

CLEANSHIP consortium: Fluid-Impact-Sofchem•France, Lloyds Register•UK, Brunel University•Cambridge UK, CERETETH•Greece, TECNALIA•Spain, WRS•Holland, Enkon•Turkey, Innotek•UK, sponsored by FP7 framework

