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The fight against algae and molluscs

WITH THE LATEST EU REGULATIONS THAT LIMIT THE USE OF GLYPHOSATE IN ANTIFOULING PAINT, SOLUTIONS USING ULTRASOUND HAVE BECOME INCREASINGLY INTERESTING. WE SPOKE TO DAVIDE FATIGATI, CEO OF PANTECNICA, WHICH PRODUCES THE SONICBOAT SYSTEM.

Fouling is a natural phenomenon that affects any object, including a boat in fibreglass, metal or wood, immersed in the sea. It appears initially with the creation of an invisible biofilm – the biofilm forms just a few minutes after a boat is placed in the water – which is then colonised by parasitic organisms (algae, mussels, barnacles etc.). The speed of colonisation depends on the temperature, the amount of nutrients in the water and the light, but it is inevitable. So the hull needs to be protected. The introduction of the latest EU regulations, which first cracked down on the use of biocides and now on glyphosate (they must be withdrawn by the end of 2019) in antifouling, makes the electronic ultrasound antifouling systems increasingly competitive. Traditional antifouling paints risk losing some of their effectiveness, especially in such warm seas as the Mediterranean, without these substances which have proved highly polluting.

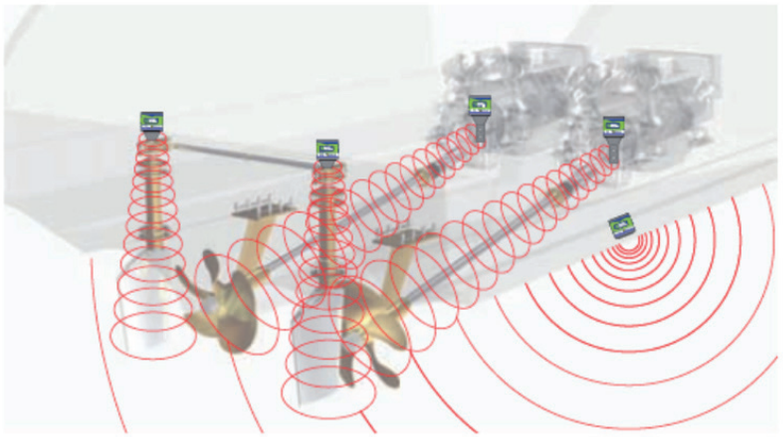
The SonicBoat ultrasound system

"A smooth hull offers less resistance to forward motion, increasing the speed of the vessel and reducing fuel consumption. One or 2 mm of algae or organisms on a hull causes speed loss of about 15%," says Davide Fatigati, CEO of Pantecnica. "Every year tens of thousands of tonnes of antifouling paint are used," says Fatigati, "and it's extremely poisonous. The EU prohibited the use of biocides from December 2017 and, at last, of glyphosate from 2019 for protecting the hull of boats from living organisms." Pantecnica offers a new electronic, ultrasound antifouling system: SonicBoat. "We arrived at SonicBoat on the one hand through our engagement in the safeguarding of the sea. In fact Pantecnica supports the One Ocean Foundation, which has been involved in making people aware of the spread of plastic in the marine environment since it was formed. Then SonicBoat is based on ultrasound, meaning waves, and we have always been involved in antivibration products and vibration, again, means waves even though they are mechanical; so we have in-depth competence as regards behaviour, wavelength, frequencies…"

How does the SonicBoat system work?

A power generators sends to the transducers vibrating impulses

The SonicBoat ultrasound antifouling system.



The ultrasound emitted by SonicBoat also protects propellers and transmission shafts

The position of the transducers is based on the length and type of the boat and the material from which the hull is made

at very high frequency: the sonic vibrations generated are transferred to the exterior of the vessel, creating micro bubbles in the water in contact with the hull (the water molecules pass quickly to the vapour phase because of the high-energy vibrations they receive), and these bubbles implode because of water pressure and the sudden cooling, creating ultrasound shocks that prevent the formation of microorganisms on the hull. The system also protects propellers and transmission shafts.**How is SonicBoat installed?**

It's very simple. A number of transducers are glued to the inside of the hull, with no holes needing to be drilled, and connected to the generator. On the basis of the hull drawings supplied to us and the kind of boat – sale or engine, single hull or catamaran – and the material it is made of, we suggest the correct position for the transducers and the length of the power connectors. The number of these varies according to the length of the boat: consider that each transducer has a range of action of about 6 m: for example, to guarantee complete coverage of the hull of a 30 m boat you need at least five sensors. The power generator must be installed in a dry place at environmental temperature.

Davide Fatigati, CEO of Pantecnica.

Do you need a professional to do the installation?

Preferably a yard would do it, though no particular competences required, but since there are electrical connections to make we prefer to use yards that build or do refitting. Certainly, on a small boat it can be easily installed even by a private individual. The important thing for effective wave propagation is that 100% of the contact surface of the base of the transducer be in contact with the hull.

The bilge may be wet, is this a problem for the transducers?

The transducers are IP65, so they are resistant to salt water but ideally they shouldn't spend all their time underwater.

Does SonicBoat work on boats made in any material?

Unfortunately you can't use it on wooden boats. Wood damps vibrations and inhibits the omission of ultrasound. SonicBoat works perfectly on hulls in steel, aluminium and fibreglass.

How is the system powered?

We have two different solutions, it can be powered with 12 or 24 V with 50 or 100 Watt transducers and frequencies from 28 to 50 kHz. The system is very quiet and creates no problems even at night; the 12 V version can be easily powered even with a solar panel or a wind generator; these are now quite common even on small boats and economic.

To sum up, what are the main advantages of SonicBoat?

Fuel saving is the important thing, since the boat is no longer held back by a hull full of parasites. Members the ecological aspect: it does no harm to marine fauna, fish or people. It's easy to install and you don't need to drill the hull.

And the price?

SonicBoat is a system that completely replaces traditional antifouling. It's difficult to give an average costs, because a lot depends on the kind of boat. But we can say that you amortise the investment in between one and three years compared with antifouling paint, taking into account all the costs of painting, including hauling out and launching.

Pantecnica

With more than 50 years of experience in the industrial sector, Pantecnica offers technical and application consultancy for the design, development, production and supply of products and systems for insulation and the damping of vibration and shocks and the containing of fluids, also with certification of materials and processes. It operates in several industrial sectors, from the mechanical industry generally to rail transport systems, from shipyards to the construction of special and military earthmoving vehicles, from aeronautics to aerospace and food and medical plant and devices. In more detail, Pantecnica is present in the rail transport sector (trams, undergrounds and trains, including high-speed vehicles such as the ETR 1000 Zefiro), in the military field (for example Lince vehicles), in the shipping sector (for example FREMM frigates), in Aerospace industries (with the supply of tie-rods, critical systems for uniting structural parts of aircraft such as the A380). The company Quality Management System is certified as conforming not just with ISO 9001:2015, but also with EN 9120:2016.