

1000 blue bubbles

AN ALTERNATIVE TO TRADITIONAL ANTI-FOULING PAINT COMES FROM PANTECNICA WHICH IS PRESENTING AND PATENTING BUBBLEBOAT, A NEW, “NON-CHEMICAL” SYSTEM FOR PROTECTING THE HULL. WE SPOKE ABOUT IT WITH COMPANY CEO DAVIDE FATIGATI

Paola Bertelli

Exploiting a wall of bubbles created by a porous tube and an air pump to keep the hull of the boat clean and free from algae, limenans and molluscs. This, briefly, is the aim of BubbleBoat, the new Pantecnica patent.

This patent comes a year after SonicBoat the ultrasound antifouling system created and patented by the same Milanese company. BubbleBoat and SonicBoat are two alternatives to the classic “brush on” antifouling paints. They also have the advantage of not creating problems of biocides and glyphosates which are very harmful to the marine environment and recent EU regulations have limited and controlled their use.

The operating principle of BubbleBoat is based on the creation of a wall of micro bubbles that protects the entire submerged part of the vessel. This wall cannot be crossed by microorganisms large or small, and so keeps the hull clean. The creation of this impermeable wall is effected by an air pump connected to a porous tube which produces the bubbles.

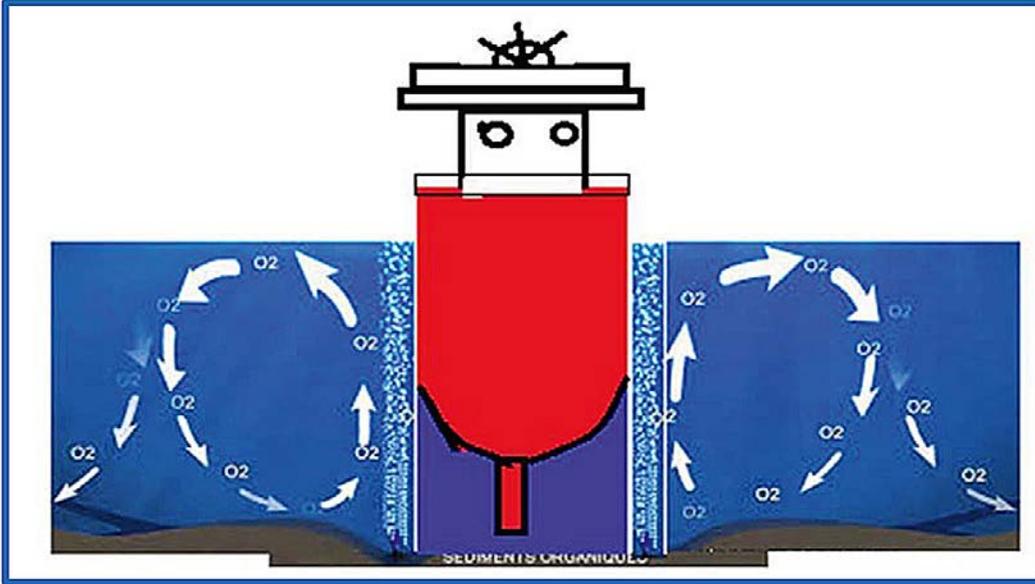
“This intuition,” explains Pantecnica CEO Davide Fatigati, “came to us as we looked at the efficacy of our other antifouling system, SonicBoat, which works by stimulating the formation by cavitation in the water around the hull of microscopic bubbles that form a sort of protective covering around its external surface that cannot be crossed by marine microorganisms such as mussels and algae, which thus cannot colonise it or forming crustaceans. In this way the hull remains clean for a long period of time avoiding costly operations of cleaning and the application on the surface of the hull of traditional antifouling paints, which are polluting and harmful to marine fauna.”

You have created two versions of BubbleBoat, one for individual boats and one for ports and marinas...

Yes, we have created these two versions of BubbleBoat: one is a portable kit that is particularly suitable for individ-



Davide Fatigati,
CEO of Pantecnica



The operating principle of BubbleBoat is based on creating a "wall" of micro bubbles to protect the submerged part of the boat. Since microorganisms cannot pass through the wall, they do not attack the hull

ual yachts of up to 14 m overall (for longer boats it is better to use the SonicBoat system), the other is a modular telescopic to be fixed to the quay next to each mooring.

What is in the portable kit?

The version to fit on an individual boat consists of an air pump with a flow of about 3000 L an hour (with a power source of no more than 12/24 V, so it can thus be powered with a small

win turbine and/or solar panels), leading to a porous tube long enough to provide complete coverage of the submerged part of the hull. The tube is placed in the water around the hull and then positioned below in parallel to the waterline as close as possible to the keel. In this way the tube pumps the micro bubbles directly into the water, sending them up the hull as far as the surface and they create the wall that keeps out marine microorganisms



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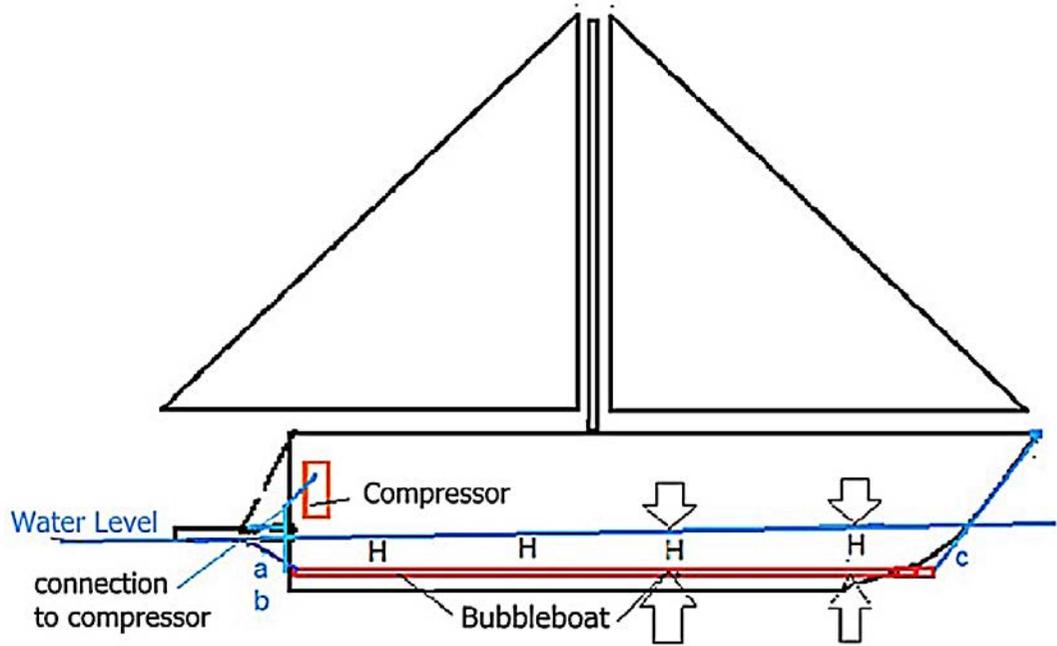
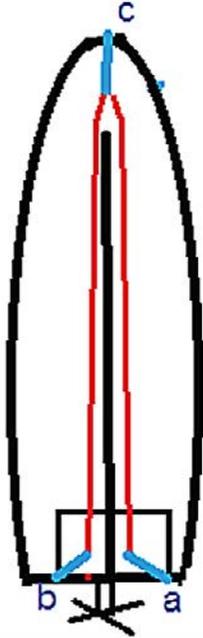
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PRODUCTS

Sketch from top of the boat

- RED = BubbleBoat hose
- BLU = Straps - Couplers a, b, c



The perforated tube is positioned parallel to the waterline and as close to the keel as possible. It is held in place by three rubber belts fixed to the bow and stern

and thus provides an effective and natural curtain of protection around the hull of the boat. The tube is held in position by three rubber belts, the first fitted to the bow and the other two at the stern. Note that the belts must be installed and the BubbleBoat tube adjusted with the compressor in operation to avoid the tube kinking. As an example, for a boat about 12 m long at the waterline you need a tube of nominal length of about 20 m.

And in the version of BubbleBoat designed for marinas how is the system organised?

In the marina version, the system is made up of at least one air pump of a size suitable for the number and length of the moorings and special telescopic arms (which can be motorised) to fix to the quayside next to each mooring to give complete coverage of the submerged part of the hull. Here too, the pumps can be powered by renewable energy sources and the combination of the effect of oxygenising the water in the port and using renewable energies would give concrete proof of the port management's commitment to the environment, with undeniable competitive advantages (ESG - Environmental, Social, Governance).

Does the pump only send compressed air into the tube or is there another component?

The pump is used to compress only air into the tube because our primary objective is not to introduce into the marine environment any extraneous component (Pantecnica supports the

Pantecnica

With more than 50 years of experience in the industrial sector, Pantecnica offers technical and application consultancy to the design, development, production and supply of products and systems for insulation and damping of vibrations and shocks and fluid sealing, also with certification of materials and processes. It operates in various industrial sectors, from mechanical industry generally to rail and tram transport, shipyards and the construction of earthmoving equipment, special and military, from aeronautics to aerospace and food and medical systems and devices. In particular Pantecnica is present in the rail transport sector (trams, undergrounds and trains, including such high speed vehicles as the ETR 1000 Zefiro), in the military sector (for example Lince vehicles), in the naval sector (for example FREMM frigates), in the aerospace industry (supplying tie-rods, critical elements for linking structural parts of aeroplanes such as the A380). The company quality system is certified as conforming not just with ISO 9001:2015, but also EN 9120:2016.

One Ocean Foundation, which is committed to contrast Inc the spread of plastics in the marine environment, editor's note). It is also worth remembering that a lack of oxygen is a grave threat for marine fauna above all in ports, where to protect vessels the infrastructures inhibit the beneficial effects of the tides, leading to stagnation of the water in the port and its deoxygenation under the effect of sunlight, and the situation is aggravated by discharges from the boats moored (wastewater, kitchen water, washing etc.).

So the BubbleBoat system, activated just for a few hours a day rather than continuously, not only solves the problem of fouling without polluting but favours oxygenation of water against pollution and contributes to molecular renewal.

How is the pump managed and how noisy is it?

In the version mounted on an individual boat, the pump is relatively small and normally has sound emissions of less than 60 dB. Obviously it has to be operated for medium to long periods when the boat is not sailing.

In the marina version, the pumps are bigger and inevitably noisier, and they have to operate for the time needed to guarantee proper protection to all the boats moored.

However, they can be screened, and Pantecnica is collaborating with the Milan Polytechnic start-up Phononic Vibes which is developing innovative NoViDamp sound screening in 100% recycled and recyclable material.

Does BubbleBoat completely replace antifouling paint or simply prolong its effect?

The aim of our two alternative systems, SonicBoat and BubbleBoat, is to completely eliminate the use of antifouling paints.

Do you need to start from a hull treated with antifouling paint or does the hull just have to be clean before installing BubbleBoat?

As with SonicBoat, the hull just needs to be clean and free from encrustations.

In terms of cost, how is BubbleBoat placed compared with traditional antifouling paint?

In the version mounted on board, recommended for a boat of about 12 m waterline length, the cost, if compared with antifouling paint and taking into account all the costs it involves, including hauling out and launching, is amortised within two or three years.

Is BubbleBoat already available on the market?

Yes, after a year of tests in the La Rochelle Marina in France, BubbleBoat is now on the market.

And one customer has already bought the first kit to install on board, and we hope to have his feedback and further data before summer 2020.

We had also entered an agreement with an important private Italian marine to start a test at the end of February 2020, but the COVID-19 pandemic has unfortunately put a stop to this for now.

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