



### **“Paint-it” project: eco-friendly anti-fouling marine paints.**

From the LIFE PAINT-IT Project (LIFE 15 ENV/IT/000417), a novel manufacturing process based on a pre-industrial/prototype scale, capable of producing innovative eco-friendly and high-quality safe anti-fouling (AF) paints for naval applications, was implemented and now towards the final validation steps. The high sustainability of the paints will ensure a complete reduction of biocides harmful for the aquatic environment and continuously released from the traditional AF paints especially in form of copper compounds. The preliminary scale-up phase involved the optimization of the formulations for the final application on two medium-sized hulls. In particular, the preliminary characterization on a laboratory scale of the anti-fouling capacity, the mechanical evaluation as well as adhesion to different hull substrates, the control of the rheological properties and aesthetic finishing mainly for spray/airless application technologies, have been previously completed by the coordinating partner, University of Rome Tor Vergata (UNITOR). In addition, the evaluation of the ecotoxicity was carried out by the partner University of Rome Niccolò Cusano on the optimized paints with promising results. Then, three different optimized formulations were selected and produced in pre-industrial prototype scale (150 Kg batches), both in non-continuous and continuous mode, at the partner company site (Cericol, Colorobbia Consulting – Sovigliana-Vinci, Firenze) where the pilot plant is installed and operative.

**Fig. 1** Continuous production of batches of formulations “F gloss” and “I def”, available for the application on hulls.



**Fig. 2** Pictures of the new product application on Azimut 77S and V40 vessels.



The novel coatings obtained from the industrial process have been validated respect to

their chemical-physical and mechanical properties, and LCA assessment on real production data was performed in collaboration with University of Rome Niccolò Cusano. During the summer-fall season of 2019 two selected paints from the pilot plant were applied on the hulls of two testing prototype vessels by the involved partner company (Azimut-Benetti – Avigliana, Torino), in order to assess the AF activity and fuel consumption for a standard navigation period at sea. Moreover, the final validation step of the anti-fouling activity in close-to-real conditions is in progress and will continue during the first months of 2020. In fact, in order to demonstrate the performance of the innovative antifouling product in extremely controlled conditions and to better clarify its aspects, dedicated performance tests of the new product will be conducted in lake waters on two easily manageable boats of reduced dimensions, both equipped with all the necessary measurement instruments under the supervision of dedicated professionals in collaboration with UNITOR. Particularly, such evaluation will involve the validation of the anti-fouling performance in real conditions, from one hand, and the determination of the resistance to motion and gliding of the hulls through accurate dynamic tests, from the other. At the same time, the tests will also be conducted on a comparative basis with respect to the use of traditional commercial anti-fouling product.

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