Greener anti-fouling solutions attract shipping industry interest

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The four-year SEAFRONT project, launched in 2014, has trialled new processes and methods designed to increase scientific understanding of exactly how biofouling occurs and how this problem can best be addressed. This initial work will help in the development of a new generation of anti-biofouling technologies, which will be able to effectively minimise biofouling on marine infrastructure and tools without damaging the ecosystem.

'Although it is still a little early to report on concrete results, we have already received interest from a number of companies looking for innovative antifouling solutions for their boats, stationary applications, fishing nets and cables,' says SEAFRONT project coordinator Dr Arie Brouwer from the Stichting Dutch Polymer Institute in the Netherlands.

'We are confident that the companies and knowledge institutes involved in this project will benefit by being able to generate new products and services.'

Biofouling involves the accumulation of microorganisms, plants, algae, and marine invertebrates onto surfaces exposed to the aquatic environment. The build-up of biofouling on marine vessels for example can pose a significant problem, reducing efficiency, damaging hull structures and propulsion systems.

This represents both an economic and environmental challenge. Over time, the accumulation of biofoulers can increase the hydrodynamic volume of a vessel and the frictional effects, leading to significantly increased drag. Researchers have found that this drag increase can decrease speeds by up to 10 %, which can require up to a 40 % increase in fuel to compensate. With fuel typically comprising up to 70 % of the entire operating cost of a typical commercial ocean going vessel, antifouling methods can save shipping companies billions and help them to cut emissions.

'The SEAFRONT project aims to develop coatings that achieve a 50 % improvement in biofouling deterrence and / or biofouling release, measured using newly developed test methodologies,' says Brouwer. 'Coatings will also be developed that achieve significantly reduced hydrodynamic drag, leading to improved operational efficiencies.'

All these solutions will be environmentally benign, sustainable and scalable, limiting the need to introduce biocides, hydrocarbons and heavy metals into the marine environment. SEAFRONT's approach will not only take into account today's increasing stringent environmental legislation, but will also anticipate future regulations by avoiding any potentially harmful chemicals that could become restricted at some point.

'This project requires a European approach as the size and diversity of the European market for antifouling coatings covers large and small enterprises involved in shipping, marine energy and other offshore sectors,' adds Brouwer. 'The multidisciplinary approach we've taken will also allow us to link key enabling technologies, product development and end-user applications together. No single nation or local region would have been able to mobilise all these disciplines. In addition, many Member States share the same seas and oceans and we therefore face the same challenges.'

In June 2016, a special workshop attached to the 18th ICMCF (International Congress on Marine Corrosion and Fouling) conference in Toulon, France will be held so that industry and academia can hear more about SEAFRONT's results along with opportunities for future collaborations. The project is due for completion at the end of 2017.

More information: For further information please visit SEAFRONT project website: seafront-project.eu/

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