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Ship Hull Anti-Fouling Coatings Solution to Help Protect the Marine Environment

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Abstract : The marine biofouling phenomenon is the undesirable accumulation of biological matter on the surfaces of submerged floating or fixed structures and ship hulls. The roughness increased on the ship hull surface is directly related to biofouling growth which directly affects other factors that will make the ship's performance suboptimal, such as increased resistance to advance, fuel consumption increase, higher pollutant gas emissions, freight costs and maintenance costs. Antifouling paints follow a co-polymer approach where a biocide compound is embedded within a resin by which, through interaction with water, a constant release rate of settlement-inhibiting organo-metals and biocide is achieved. This study evaluates the action of biofouling on ship hull surfaces with different enamel coatings. The coatings were tested in a real environment according to ASTM D4939-89. The results obtained corroborated that the behaviour of ship hulls with enamel coatings maintained the antifouling properties intact compared to conventional paints during the experiment. The CFD results show that the drag in hulls coated with conventional paint is 22% greater than that in hulls with enamel coating.

Keywords : biofouling, coating, hull ship, enamel, antifouling
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