Summary

Antifouling coatings are designed specifically to control marine growth and maintain ship hulls in a smooth and hydrodynamically efficient condition. Recent international regulations have removed the most effective antifouling coating from the market (TBT-self polishing). At present, there is no clear alternative that provides similar performance. Present accumulation of fouling and surface roughening leads to significant economic, performance and ecological penalties to an industry critical for world economic exchange and growth: the shipping industry. The race is now on to develop reliable and environmentally acceptable alternatives. This requires a scientific testing protocol (ccbc.fit.edu) that imitates the service conditions experienced by the coatings.

The Technology

During the last year, a dynamic aging system was designed, constructed and tested. The system operates by using a large stirring apparatus to move sea water around a 1.6m diameter tank. The paddles are made of 0.5m x 1m high pvc plate. They are rotated on automobile bearings using a 1.5hp dc motor with a 30:1 reduction. This allows the motor to efficiently supply high torque at 60 rpm and generate a flow across the test panels at 20 m/s (10 knots). Currently, the system accommodates up to four 0.254m x 0.305m (10in x 12in) panels with a capacity of up to eight panels. Sea water is supplied from the Indian River Lagoon in Melbourne, Fla., and is continually changed over every 3 hours. The test panels are flat and lay lengthwise into the flow. The flow across the panel was measured using a boundary layer probe positioned through a test panel. The flow was found to be highly turbulent, and the velocity of the flow is about that of the paddles with little boundary layer development. The actual shear stress across the panel can be measured with a floating element force gage under the panel.

Corporate Research and Technology Transfer
Florida Institute of Technology
150 W. University Blvd.
Melbourne, FL 32901
Phone: (321) 674-8960 | Fax: (321) 674-8969

Inventor: Geoffrey Swain and Arthur Touzot
Contact: (321) 674-7129
E-mail: swain@fit.edu