

Foul Release Hull Coating System

At a Glance

What is it?

Fouling release underwater hull coatings, unlike antifouling coatings currently used in the fleet, mitigating biofouling without relying on biocides. They are smooth, low surface energy materials that minimize the adhesion strength of biofouling like barnacles.

How does it work?

The unique surface properties of the coatings make it difficult for biofouling to adhere too tightly. The coating is designed such that while ships are at sea, the biofouling 'sloughs off' under hydro-dynamic flow. This ensures a clean and smooth hull during ship operations.

What will it accomplish?

High operational tempo commercial ship owners claim up to 11% in annual propulsive fuel savings attributed to the use of these types of coatings.

A demonstration program is underway to determine whether or not the US Navy can reap propulsive fuel savings from fouling release coatings despite relatively low operation tempo.

Metrics

Potential Fuel Savings: 1800 bbls/Yr/DDG

Applications

- Surface Combatants
- Amphibs
- Auxilliary

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Description:

The Fleet Readiness R&D Program (SEA05Z) is sponsoring an effort to demonstrate the performance of a fouling release coating on ships. A successful result will include good biofouling control by and physical performance of the coating system, and fuel savings attributable to good coating performance.

The demonstration is being carried out on the hulls of two ships and the propellers of one ship. Fuel savings will be calculated by recording and analyzing the speed/power relationship of a test ship vs. a control ship of the same class and relating that to the degree of biofouling on ship hulls and propellers. The hull coating test ships are USS Cole (DDG-67) and USS Port Royal (CG-73), and the propeller coating test ship is USS Gunston Hall (LSD-44).

Research Challenges and Opportunities:

Fouling release coating manufacturers recommend this type of coating be used on ships with higher operational tempos.

Coating damage such as scratching or gouging reduces overall coating efficacy, especially the ability of the coating to release biofouling.

Understanding triggers for hull maintenance of this coating type.