Battelle Independent Research and Development

DYNAMIC TEST FIXTURE: Coating Erosion Testing at High Water Velocities

The Problem: Current Erosion Testing Method

Existing erosion testing approaches utilize a flume or rotating drum design for testing samples of potential hull coatings.

Flumes are high maintenance devices that require a large amount of energy to produce the necessary water velocity. Additionally, their small size supports only a limited number of samples. Drums produce vortices which do not realistically simulate hull flow patterns.

Figures 1&2: Drum coating test method.

The Solution: Battelle's Dynamic Test Fixture

Battelle's Dynamic Test Fixture uses spinning disks half-submerged in water to replicate ship's movement through water. The disks range in size from 8-12 feet and could rotate up to 80 samples at speeds of 50-60 knots. The system produces greater energy efficiency than traditional fluid pump systems and may replace both drum and flume testing systems.

AQUALIBRIA is easily scalable in both size and number of disks. As a result, larger numbers of samples can be tested. Erosion rates may also be increased because of the repetitive immersion cycle. Because the AQUALIBRIA system creates linear flow patterns from its discs, the coating samples are tested in an environment that more accurately represents the hull of a ship gliding through water.

Figure 3: AQUALIBRIA test apparatus.

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