

Abstract Submitted
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Characterization of floating element balance for field panel testing¹ J. TRAVIS HUNSUCKER, HARRISON GARDNER, GEOFFREY SWAIN, Center for Corrosion and Biofouling Control, Florida Institute of Technology — Multiple experiments were performed to investigate and characterize the uncertainty and bias of a through-hull flush mounted floating element balance designed to measure the hydrodynamic drag forces of biofouling and marine coatings on 25 x 30 cm test panels. The instrument is located in a wet well on the aft portion of a 27' Chris Craft Commander. Testing occurs over a series of speeds ranging from a Froude number of 0.50-2.20 on calm days (force 3 or less) in waters along the central east coast of Florida. Recent modifications have been made to the instrumentation in an effort to improve the overall accuracy of the system. This study compares frictional drag measurements of the floating element balance to those obtained using the Clauser chart and Preston tube methods for a smooth surface. Boundary layer velocity profiles are examined to understand the nature of the flow over the testing section. Roughness function values for 60 and 220 grit sandpaper were calculated from data obtained using the floating element balance. These values were compared with previous work to examine the overall bias of the methodology. Repeat measurements for a smooth panel were analyzed to characterize the overall uncertainty in the system.

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J. Travis Hunsucker
Center for Corrosion and Biofouling Control, Florida Institute of Technology

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