

Abstract Submitted
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Design of a Laboratory-scale Marine Hydrokinetic device UROS MARKOVIC, MARIA BENINATI, Bucknell University, MICHAEL KRANE, The Pennsylvania State University — This study focused on the design of a small-scale marine hydrokinetic turbine, centered on a precision brake to facilitate rotational speed control, torque and power measurement. Generators of size and power capacity suitable for laboratory-scale experiments generally operate at vanishingly small efficiency, making accurate power measurements difficult. A small magnetic particle brake was attached to the shaft of a two-bladed model marine turbine (0.1 m rotor diameter). Preliminary testing of the device was performed to calibrate torque measurement by the magnetic brake. Further testing was conducted in the hydraulic flume facility (9.8 m long, 1.2 m wide and 0.4 m deep) at Bucknell University, to measure turbine torque and power to establish the range of rotational speed control.

Maria Beninati
Bucknell University

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