

Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Experimental investigation of power capture from pitching vertical cylinders in irregular waves FLOCARD FRANCOIS, FRANDBSEN JANETTE, The University of Sydney, FINNIGAN TIMOTHY, BioPower Systems Pty Ltd — Point absorbers are one of the main categories of wave energy converters being developed worldwide. These devices are classified by their dominant mode of motion relative to the water surface. Most of these converters use either a hydraulic system or direct drive electric generator as a means for power take-off (P.T.O.). These wave energy devices are highly suitable for intermediate depth locations. This paper presents the results from an experimental study on the power capture of bottom-pivoted pitching cylinders in intermediate water depth subjected to regular and irregular waves. All experiments were conducted in the University of Sydney's wave flume. The geometry of the pivoted cylinder, external damping and additional inertia (to simulate the impact of water ballasting) were taken as variable parameters in order to optimize the power capture efficiency in different wave conditions. The devices were subjected to a realistic wave climate obtained from the analysis of on-site buoy measurements from the European Marine Energy Center in Scotland, a location renowned for its wave energy potential, where existing devices have been already tested.

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Date submitted: 08 Aug 2008

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