

# SIMULATED AND DEMONSTRATED FIELD PERFORMANCE OF A WAVE ENERGY CONVERTER

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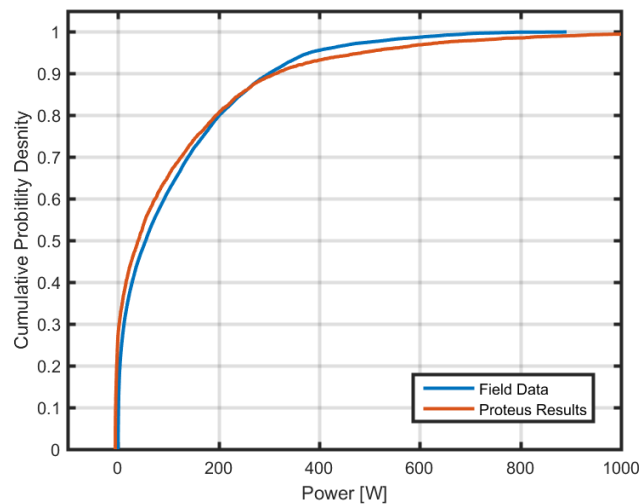
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A prototype Wave Energy Converter (WEC) was deployed for eight hours in 10 s, 1.3 m ocean waves of the coast of California. Information about device motion and power output were recorded using on-board instruments, and in situ measurements of the wave field near the device were collected by SWIFTs [1]. The WEC was also simulated using a dynamic analysis package (Proteus DS) and model output compared to motion and power output in the field. As shown in Figure 1, the statistical comparison of the power output in simulation and the field is in close agreement. Additionally, a reduced-order analytical model is developed, allowing for rapid iteration on device design. Time-resolved output from the model, simulation, and the field trials is compared, assessing strengths and weaknesses of reduced-order and mid-fidelity simulation. Inaccuracies in the models are addressed and recommendations given on methods to more accurately estimate device behavior.



**FIGURE 1. CUMULATIVE PROBABILITY DENSITY FOR FIELD DATA AND PROTEUS RESULTS, SHOWING THE CUMULATIVE PROBABILITY OF THE GIVEN POWER OUTPUTS.**

## ACKNOWLEDGEMENTS

We would like to acknowledge Columbia Power Technologies and the Monterey Bay Aquarium Research Institute, as well as Paul Gibbs, Aaron Marburg, and the other APL engineers for their contributions to the prototype WEC design, fabrication, and testing.

**REFERENCES**

[1] Thomson, J., 2012, "Wave breaking dissipation observed with SWIFT drifters," *Journal of Atmospheric and Oceanic Technology*, **29**, pp. 1866–1882.