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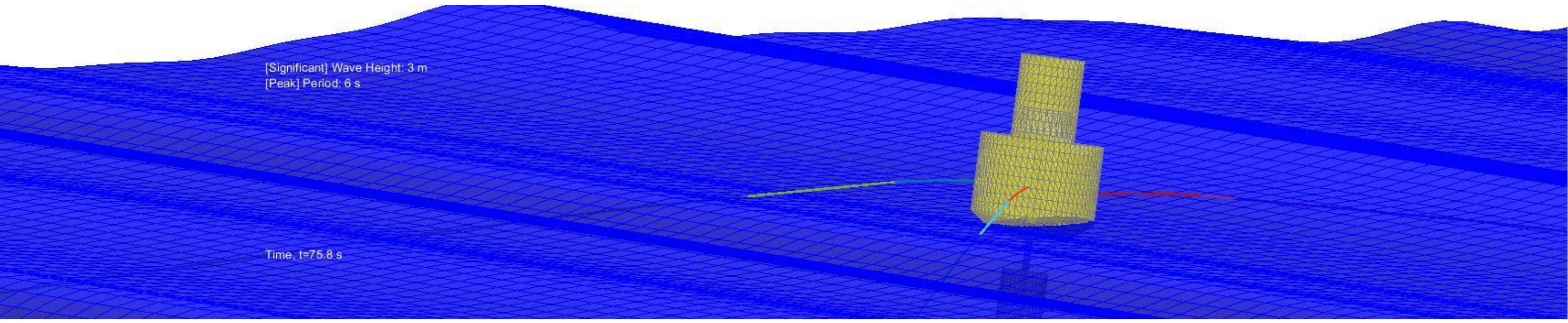
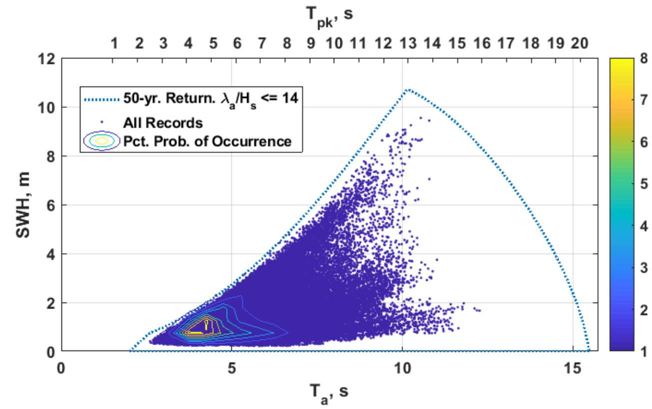


The Healy Wave Energy Converter

Healy Wave Energy, LLC is developing a wave energy conversion (WEC) device that is designed for reliability, safety, and economical power production for island and coastal communities. The unit employs a novel low operating pressure pneumatic Power Take-Off (PTO) and a novel low-impact-force hydrodynamic end-stop feature. The 43-ton prototype device, constructed in Clearwater, Florida, will be deployed at the University of New Hampshire Open Ocean Test Site starting in 2018 for a long-term test of its power production and longevity.



Performance Evaluation

MMC developed a custom model that coupled the multibody hydrodynamics of the device with the pneumatics of the PTO and included hydraulic brake dynamics and the physics of a variable ballast system. This allowed MMC to:

- Quantify system losses.
- Evaluate annual energy production and the system's ACE metric (the ratio of average climate capture width to characteristic capital expenditure).
- Incorporate control algorithms through a simulated Programmable Logic Controller (PLC).
- Advise on critical design decisions.

Extreme event analysis

MMC also incorporated nonlinear, large-displacement mooring dynamics to evaluate the system's response to extreme storms. This included:

- Deriving extreme event parameters (50-year storm conditions) from historical data.
- Analyzing extreme value statistics (e.g. snap loads).
- Implementing best practices in model-driven design to optimize the mooring for cost, power production, stability, and reduced peak loads.

Significant Wave Height, m	Peak Period, s										
2	3	4	5	6	7	8	9	10	11	12	13
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	4.8E-05	0	0	0	0	0	0
0	0	0	0	0	0	1.2E-04	0	0	0	0	0
0	0	0	0	0	0	7.8E-06	1.4E-04	0	0	0	2.2E-04
0	0	0	0	0	0	0	7.8E-06	1.6E-04	6.1E-04	0	9.6E-05
0	0	0	0	0	0	0	0	4.8E-05	3.0E-04	4.8E-04	1.9E-04
0	0	0	0	0	0	0	0	0	1.1E-04	4.0E-04	1.7E-04
0	0	0	0	0	0	0	0	0	8.4E-06	2.1E-04	7.4E-05
0	0	0	0	0	0	0	0	0	7.5E-06	1.4E-04	4.9E-05
0	0	0	0	0	0	0	0	0	0	2.4E-05	1.6E-05
0	0	0	0	0	0	0	0	0	0	7.8E-06	2.5E-05

More information on the Healy WEC System can be found at www.healywaveenergy.com
For more information on MMC's project contact info@mainemarinecomposites.com