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Alfond W2 Ocean Engineering Lab

Advanced Structures & Composites Center, University of Maine

THE UNIVERSITY OF MAINE

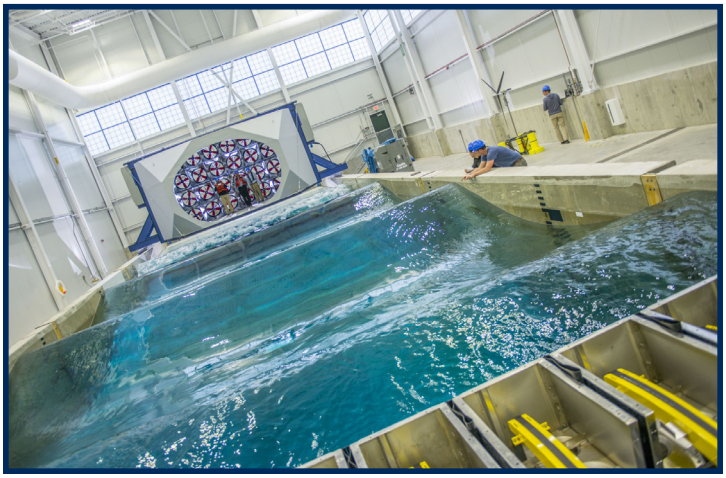
ADVANCED STRUCTURES & composites center

Alfond W² Ocean Engineering Lab

Combined wind-wave simulation basin with tow carriage and variable depth floor

The **Alfond W² Ocean Engineering Lab** at the **University of Maine Advanced Structures and Composites Center** is a unique facility equipped with a high-performance rotatable wind machine over a multidirectional wave basin. The facility will accurately simulate towing tests, variable water depths, and scaled wind and wave conditions that represent some of the worst storms possible anywhere on Earth.

This world-class ocean engineering facility will assist businesses in developing products for the marine economy while offering hands-on training for students. These products include improved boat and ship hulls; ocean energy devices such as wind, wave and tidal energy; aquaculture technology; oil and gas structures; waterfront infrastructure such as bridges, piers, docks and port facilities; as well as systems to protect coastal cities from effects of erosion and extreme storms.



UMaine W² Capabilities

Basin Dimensions

- 30 m long × 9 m wide (98 ft x 30 ft)
- Working depth of floor 0 m to 5 m (0-16.4 ft)

Wind Machine

- Dimensions: 5 m x 3.5 m x 6 m (16 x 12 x 20 ft) across flow x height x along flow
- Wind speed: 0 to 12 m/s (0-27 mph)
- Flow direction relative to waves: 0 to 180°
- Capable of simulating turbulent wind fields representative of IEC-61400 requirements
- Capable of simulating vertical wind shear

16-paddle Wavemaker

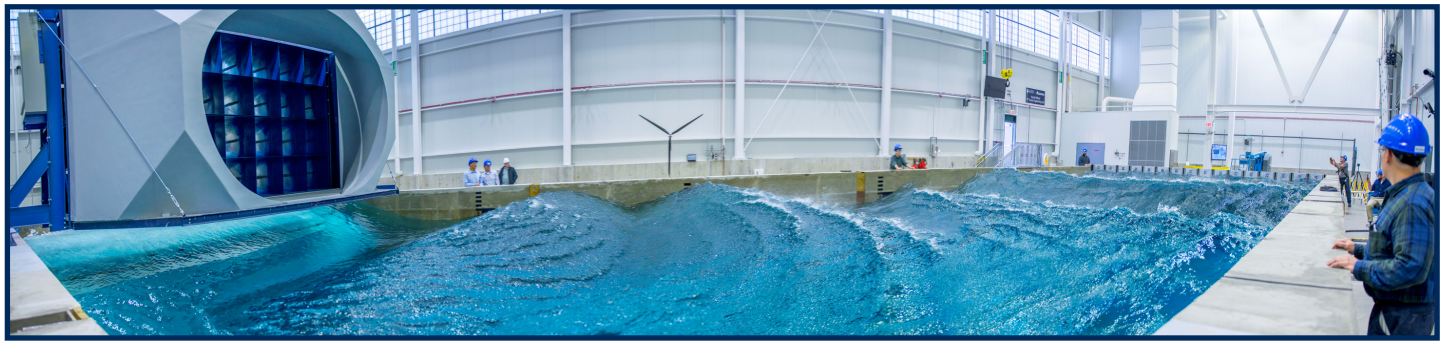
- Max height: 0.6 m (24 in) at T = 1.65 sec, 0.8 m (30 in) at T = 2.3 sec
- Regular waves and all standard spectra in addition to custom random seas
- Wave angles in excess of +/- 60 degrees relative to the basin center line

Tow Carriage

- Max speed: 1 m/s (3.3 ft/s)
- Max towed model dimensions: 4 m x 4 m x 1 m length x beam x draft (13 x 13 x 3 ft)

Advanced model fabrication capabilities

- Rapid modular 3D printing 0.6 m x 0.6 m x 0.9 m (2 x 2 x 3 ft)
- 3D CNC Water Jet 2.0m x 4.0m x 0.1m (6.5 x 13 x 0.5 ft)



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