

VISUALIZATION TANK

VIZ TANK@UW

The oscillation visualization tank is a water-filled acrylic cube with an open top useful for a diverse set of marine energy and fluid dynamics experiments.

Though well suited to a variety of tests, to date this visualization tank has been used primarily to study heave plate hydrodynamics. A linear oscillator can be used to drive heave plates, and other test articles, through strokes of controllable amplitude and period. During oscillation, a submersible 6-axis load cell can measure forces and torques on a test article, while position is tracked by an encoder. From this, phase-dependent and phase-independent estimates of inertial and drag forces can be obtained. The acrylic walls allow optical access from all sides for qualitative and quantitative flow visualization (e.g., dye injection).

FACILITY INSTRUMENTATION

- Linear actuator with 532 mm stroke
- 6-axis submersible load cells (ATI Nano25, ATI Mini40, and ATI Nano17)
- Dye injection for coherent structure visualization

AREAS OF EXPERTISE

- Hydrodynamic force decomposition (drag and inertia) for bodies oscillating in heave

FACILITY DESCRIPTION

- > Optical-quality acrylic cube with open top
- > Dimensions: 1.27 m long, 1.27 m wide, 1.45 m high
- > Water depth: 0.1 – 1.25 m
- > Ambient temperature, quiescent water

