

# University of Southampton Hydroscience Tank

LS9

<p><b>Location:</b> University of Southampton, Boldrewood campus</p>	<p><b>Designation:</b> Towing and Wave Tank</p>
<p><b>Owner(s):</b> University of Southampton, Faculty of Engineering and the Environment, Southampton SO17 1BJ</p>	<p><b>Performance:</b>  <b>Mach Number:</b> n/a  <b>Maximum Carriage Speed:</b> ~10 to 12 m/s  <b>Reynolds No:</b> <math>10 \times 10^6</math>/m (max)  <b>Total Pressure:</b> n/a  <b>Dynamic Pressure:</b> Up to 50 kN/m<sup>2</sup>  <b>Total Temperature:</b> Ambient (~288k)  <b>Turbulence intensity:</b> n/k  <b>Run Time:</b> Varies with carriage speed  <b>Typical Recharge Time:</b> n/a.</p>
<p><b>Test Section Size:</b> 140m long x 6m wide x 3.5m deep with 0.5m free board.</p>	
<p><b>Operational Status:</b> Under commissioning</p>	<p><b>Testing Capabilities:</b>  <b>Model Support:</b> Variety of tow posts, either fixed pitch/heave/roll. Forced motions via HPMM or VPMM for surge, sway/yaw or heave/pitch. Multi component dynamometer frame as necessary for resistance/thrust, sideforce, vertical force and moments.  <b>Data Acquisition:</b> Experiment specific – multi-channel minimum 250Hz upto 250KHz for acoustic measurements. Synchronised force/moments with video motion capture/visualisation. Also 9 degree-of-freedom IMU. Surface pressures., PIV/LDV.  <b>Flow visualisation:</b> Multi camera HD Video, surface dye, tufts.          Field Measurement: PIV, LDV, Pitot-static travers</p>
<p><b>Number and Type of Staff:</b>  <b>Scientific:</b> 6-8  <b>Technical Support:</b> 1-2</p>	
<p><b>Test support:</b> Workshop for towing tank model design, manufacture and modification capability.</p>	
<p><b>Specialist Rigs:</b></p> <ul style="list-style-type: none"> <li>(i) Passive beach at end of tank with Active wave makers (6-10) across other end that can generate irregular sea states with max. amplitude of 0.5m for wide range of model scale wave frequencies.</li> <li>(ii) Deployable side beach to damp waves rapidly between runs</li> <li>(iii) Modular instrumentation stations and fixings to walls/floor of tank</li> <li>(iv) Low speed manned and high speed unmanned carriage</li> <li>(v) Mid length divider to provide two test spaces</li> <li>(vi) Automated carriage and test process</li> <li>(vii) Control room with multiple video feeds and live data streaming</li> </ul>	