

**Overview**

Pentair's remote Water Quality monitoring systems have been designed to provide laboratory grade measurements in a robust field installation. The pump sampling system provides:

- Protection of instruments from biofouling and other hazards. This protection allows the system to deliver more reliable measurements with extended periods between maintenance
- A modular system allowing a completely customizable combination of parameters and new instruments to be added without significantly changing the system design
- Maintenance can be performed without the need for divers, reducing the cost of operating the monitoring network

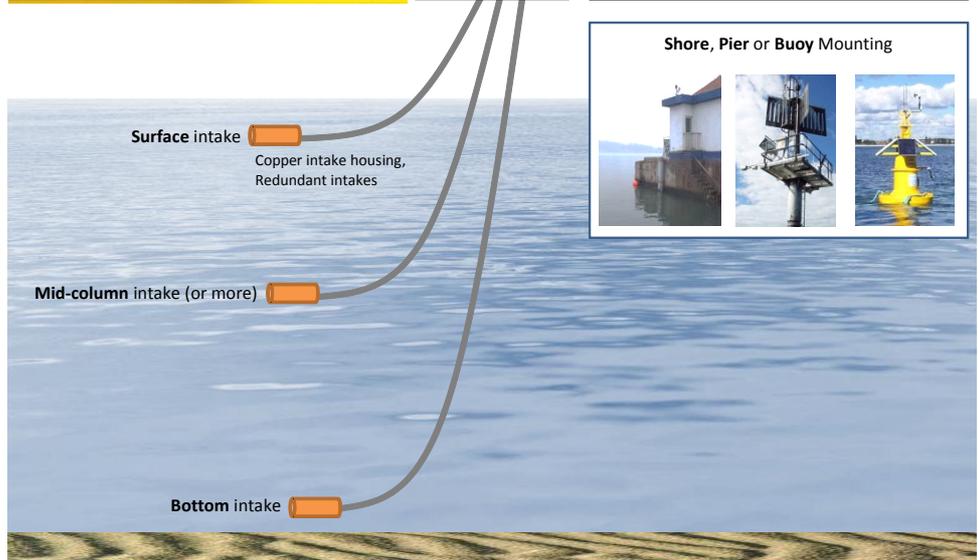
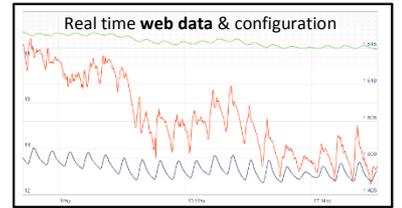
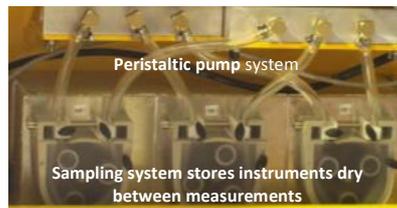
The design has been operating in even the most nutrient rich tropical regions for many years and proven to solve biofouling problems.

The COASTAL-WQ is typically supplied:

- 2.6m coastal buoy platform
- Site specific Naval Architect designed mooring system
- Integrated St Andrews Cross navigation mark, Navigation Beacon (up to 5 Nautical Miles), Radar Reflector and GPS position tracking
- Integrated telemetry system with battery backed solar power supply. Telemetry system includes AtoN transceiver and optional communications link for remote configuration
- Integration into local shore based SCADA or access via online web portal ([www.envault.com.au](http://www.envault.com.au))



<b>Physical Parameters</b> <ul style="list-style-type: none"> <li>- Temperature</li> <li>- Conductivity (Salinity)</li> <li>- pH</li> <li>- Dissolved Oxygen</li> <li>- Turbidity</li> <li>- Total Suspended Solids</li> <li>- ORP</li> </ul>	<b>Nutrients &amp; Pollutants</b> <ul style="list-style-type: none"> <li>- Nitrate</li> <li>- Ammonia</li> <li>- Crude Oil</li> <li>- Refined Oil</li> <li>- Heavy Metals</li> </ul> <i>Optical sensors used wherever possible (over wet chemistry or Ion Selective Electrodes)</i>	<b>Biological Parameters</b> <ul style="list-style-type: none"> <li>- Blue Green Algae</li> <li>- Total Algae</li> <li>- Chlorophyll</li> </ul>	<b>Hydrographic</b> <ul style="list-style-type: none"> <li>- Tide</li> <li>- Current speed &amp; dir.</li> <li>- Wave height</li> </ul>
		<b>Meteorological</b> <ul style="list-style-type: none"> <li>- Air, wind, solar energy</li> <li>- Rainfall, Evaporation</li> <li>- Temperature profiling</li> </ul>	<b>Miscellaneous</b> <ul style="list-style-type: none"> <li>- Water Sampler (bottle)</li> <li>- Camera</li> <li>- Security / Position</li> </ul>



“ As chosen by the Singapore National Environment Agency (NEA) and the Chinese National Academy of Science

Problem	Pentair Sampling System	Traditional In-situ monitoring
<b>Biofouling</b>	<p>After 6 weeks of operation the probes have <b>zero biofouling</b></p> 	<p>Compared to <b>extensive biofouling</b> on a mounting arm in the same location for the same duration</p> 
<b>Maintenance</b>	<p>The period between maintenance visits is <b>greatly extended</b> due to the reduced biofouling problems. When maintenance is to be performed, it can be performed <b>safely in all-weather</b>, by a <b>single person</b>.</p>	<p>Frequent maintenance is required to control biofouling. Maintenance may require <b>divers, boats and multiple people</b>, while being <b>inaccessible</b> or <b>unsafe</b> in bad weather</p>
<b>Theft</b>	<p>Everything is housed <b>securely</b> inside secure cabinets with keyed entry and security monitoring.</p>	<p>Instruments may be visible from the shore and <b>easily stolen</b> even with special mounting structures</p>
<b>Multiple Depths</b>	<p>Adding multiple vertical monitoring depths for profiling applications is <b>economical</b> with only additional pumps required.</p>	<p>An <b>expensive</b> 2<sup>nd</sup> and 3<sup>rd</sup> set of instruments are required for additional depths, or problematic mechanical systems for profiling systems</p>
<b>Multiple Locations</b>	<p>Multiple channels or <b>upstream/downstream from a gate</b> can be monitored with a single system. Not only is this cheaper, but the intercomparison accuracy between locations is often <b>significantly improved</b></p>	<p>Requires an <b>expensive</b> second set of instruments and intercomparison between locations is limited to 2 x accuracy specification of each instrument</p>

“ Having data available via the password protected ENVAULT enabled us to view the data any time of the day. This greatly improved our assessment of the impacts from the dredging program

