



MONITORING PLATFORMS MEASUREMENT SYSTEMS

SYSTEMS, SOLUTIONS & SERVICES



BETTER MONITORING. BETTER RESULTS.

Whatever your application, understanding and managing water conditions is vital to your success, for fish production, drinking water, port operations or public safety.



PENTAIR

YOUR PARTNER IN A CHANGING WORLD

Pentair Environmental Systems offers solutions and expertise to monitor and understand your operating conditions and to better understand risks that may threaten your operations.

PENTAIR: AS ONE COMPANY WE HAVE THE GLOBAL RESOURCES

30,000

EMPLOYEES

SIX

CONTINENTS

100+

MANUFACTURING FACILITIES

90+

SERVICE CENTRES

With Pentair Environmental Systems you get deep expertise in environmental monitoring in challenging environments, combined with resources accessible from other companies within the Pentair family of companies

- Able to pull expertise and resources from a multitude of technology sectors including, pumping, valve & control, filtration, water treatment and aquatic eco-systems.
- Extensive product line with many Pentair products or suppliers being Pentair-owned
- Easy for engineers and end users to plan projects as complete solutions are available
- Technicians and Engineers are available for all levels of technical support

Why Monitor?

Detect and remediate problems before damage occurs. Real-time insitu monitoring provides:

- Better understanding of natural seasonal, daily and event variations
- Early detection of potential problems
- The ability to model and forecast the movement and magnitude of the problem

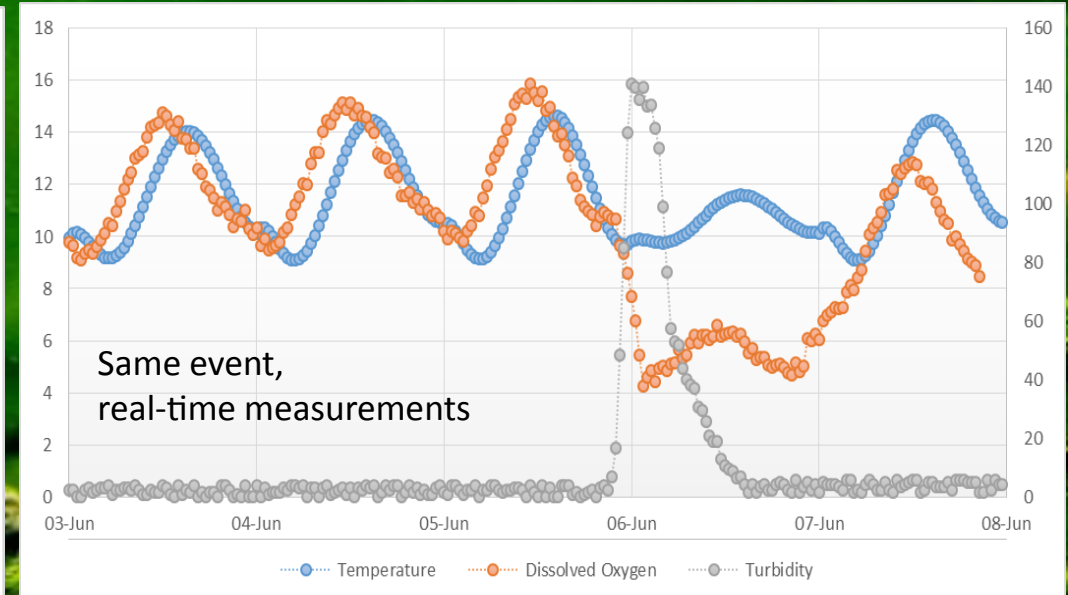
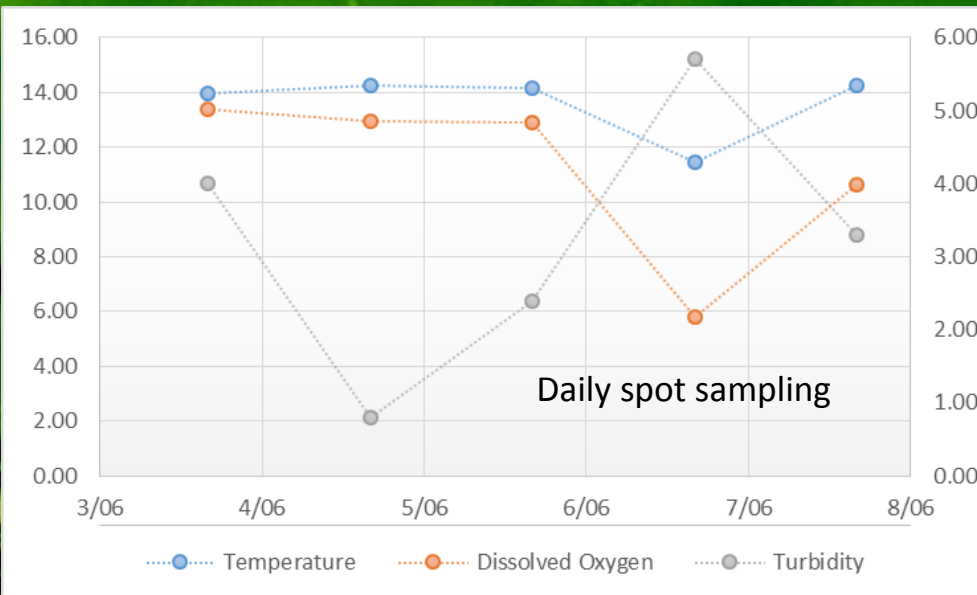
What Problems can be Identified?

- Potential fish losses from lack of oxygen
- Excessive nutrients driving algae blooms
- Oil spills or other toxic chemicals
- Weather and ocean currents that transport problems
- Sea conditions that increase accident risks or navigation hazards

“Algae invades China Olympics”

BBC News

Real-time monitoring can reveal trends and events that spot sampling fails to capture



CUSTOMER CHALLENGES. PENTAIR SOLUTIONS

MARINE ELECTRONIC HIGHWAY Indonesia

The straits of Malacca are the shortest route between the Indian Ocean and the South China Sea and one of the busiest thoroughfares in the world. Pentair's monitoring solutions provide real time wave, tide, current and meteorological information broadcast to all passing traffic and vessel tracking systems, seeking to reduce collisions and groundings in the area



PROJECT NEPTUNE Singapore

A nationwide network of buoy mounted monitoring laboratories provide early warning of water oil and nutrient pollution problems for coastal protection and harmful water quality conditions for fisheries production. Coupled with hydrodynamic models, the system forecasts what may eventually occur, aiding planning of event response operations



COASTAL FISHERIES China

Hundreds of thousands of acres of China's north eastern coastline is used for fisheries production with the Sea Cucumber being one of the most valuable industries. Pentair's buoy and floating platform systems are providing real time data via a secure web login to the Fisheries Agency, assisting in fisheries management and event response in the coastal region, especially through winter conditions when the sea freezes



DESALINATION PLANT MONITORING Australia

To ensure the concentrated brine from a desalination plant does not adversely affect coastal waters, Pentair provide monitoring systems to measure salinity and oxygen profile conditions, particularly near the ocean floor where high density brine may concentrate. The system can be used to shut down the plant or divert intakes should dangerous conditions occur.



MEASURE TO PROTECT

Almost any water condition can be monitored in real-time with the right combination of Pentair solutions

CRUDE & REFINED OILS

RAINFALL

TURBIDITY

MOVEMENT

WEATHER CONDITIONS

VISIBILITY

NUTRIENTS (NITRATE, AMMONIA, PHOSPHATE)

ORGANIC MATTER

DISSOLVED OXYGEN

TEMPERATURE

CHLOROPHYLL-A

SUNSHINE

pH

LIGHTNING

WAVE HEIGHT & DIRECTION

SAMPLE COLLECTION

LOCATION

SALINITY

WIND SPEED & DIRECTION

BLUE GREEN ALGAE

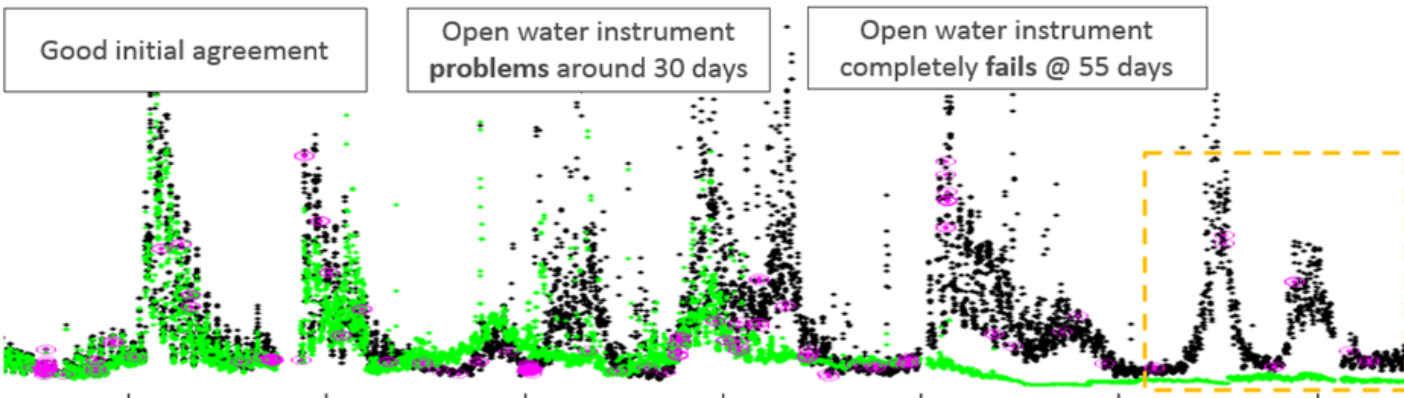
TIDE LEVEL

CURRENT PROFILE

INNOVATIVE SAMPLING SYSTEM PROTECTING INSTRUMENTS

Coastal waters provide a rich environment for growth with abundant nutrients and light. Instruments deployed in the open water rapidly foul from algae, barnacles and corals, regardless of the protection used. Pentair have developed an innovative multi-depth sampling system that eliminates the growth factors of moisture and light resulting in significantly longer periods between maintenance. A sample is rapidly analyzed and returned, with the instrument drained between measurements and housed inside the buoy. Side by side comparison data shows the improvement in the sampling system over instruments directly deployed in open waters. Along with the benefit of better measurements for longer, the multi-depth sampling system features:

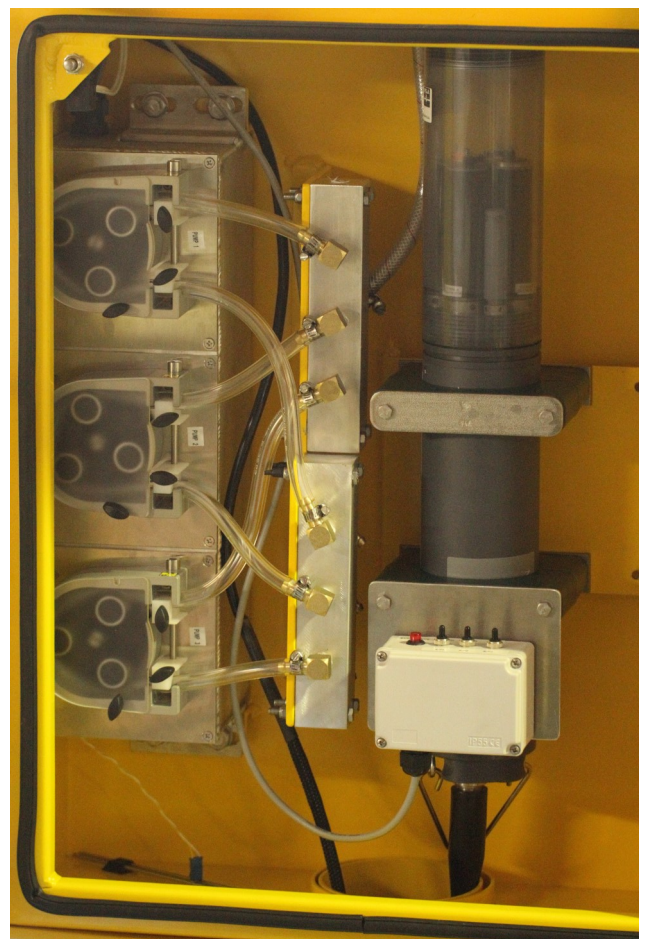
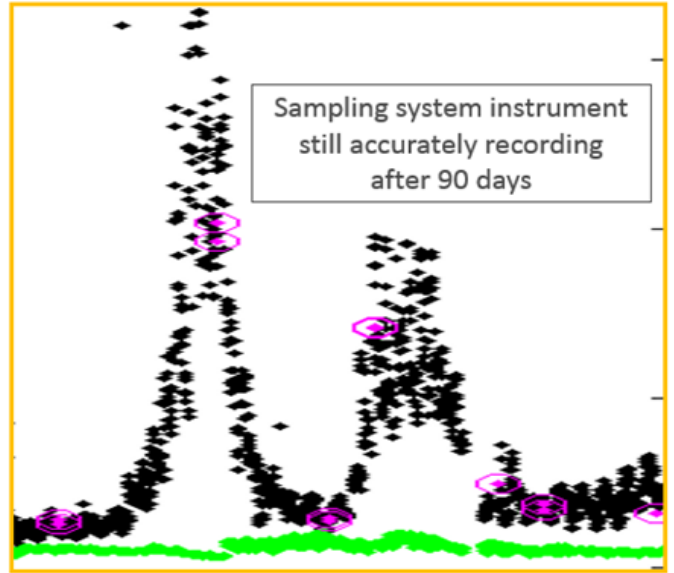
- All valuable assets are housed inside the buoy, a more secure location
- Equipment can be serviced and maintained from the surface, with no need for divers
- More precise comparisons between different depths can be made by using the same instrument
- The system can be easily updated with new instruments with minimal changes



90 day monitoring period →

- Instrument in sampling system
- Instrument in open water
- Validation measurement

The same Chlorophyll-a instrument installed inside a sampling system provides better measurements for longer



3 STANDARD TYPES

BUOY-WQ

The Buoy-WQ (Water Quality) is the most flexible platform with a multi-depth pump sampling system providing laboratory quality water quality measurements in-situ and in real time.

- Configurable profiling measurements (multi-depth intakes) with high resolution differences between depths
- Bio-fouling resistant
- Instruments mounted inside the buoy for protection and easy maintenance
- Optional composite sampler for collection of water quality grab sample for further analysis
- Field upgradable connection system for additional instruments
- Ideal solution for fisheries or public health

BUOY-HM

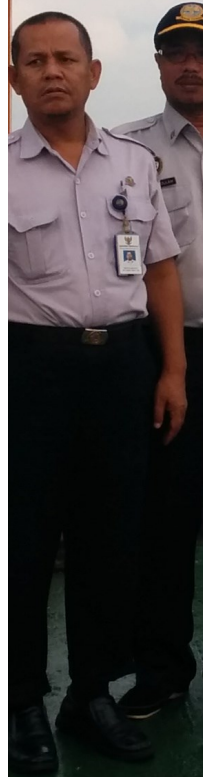
The Buoy-HM (Hydro-Met) is the standard for hydrological or meteorological applications such as ports and harbours (for assisted navigation) or hazardous coastal conditions

- Broadcasts all data on the AIS AtoN network fitted on every passenger vessel and cargo ship
- Can measure the complete set of Aides to Navigation (AtoN) parameters including tide, current, real time waves, swell, sea state, visibility, wind gust and other meteorological conditions.

BUOY-OS

The Buoy-OS (Oil-Slicks) is designed to provide the highest reliability early warning system for oil slick hazards, either to protect intakes for desalination or other membrane water treatment system or as an early warning system to assist clean up operations..

- Double redundant measurement system utilizing independent detection techniques to ensure detection in all conditions
- Redundant system detects the widest possible range of hydrocarbons
- Minimized maintenance
- Integration into control room SCADA or provides direct email/SMS alarming via on-board satellite



DATA ACCESS & SOFTWARE

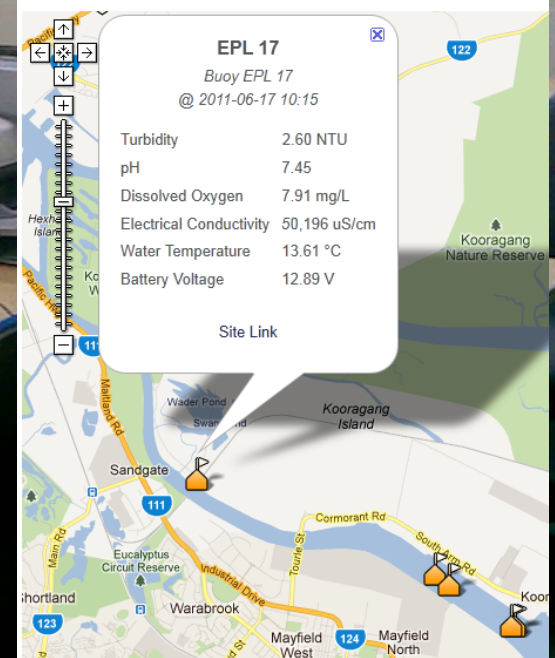
Access data via dedicated control centres or via the secure ENVAULT hosted solution. Software tools include Automatic QA/QC processing, alarm notification (email/SMS), integration to VTS (Vessel Traffic Service) or real-time hydrodynamic modelling systems. Consult Pentair for system design.

“ Having data available via the password protected ENVAULT enabled us to view the data in a realtime format from any PC with an internet connection any time of the day. This greatly improved our assessment of the impacts from the dredging

Paul Boyd

Manager, Environmental Monitoring
Channel Dredging Project

Site Location Map



MOUNTING OPTIONS

- Fixed position system (hut, jetty, pier, channel marker)
- Lake & Pond Buoy OR Square Platform
- Coastal Buoy

COMMUNICATIONS OPTIONS

- Cellular OR Radio (for near shore)
- Automatic Identification System (AIS) transceiver broadcasting AtoN (Aides to Navigation) data to VTS and passing vessels
- Satellite

COMPLETE DEPLOYMENT SERVICES

Pentair have the staff to perform complete deployment services including:

- Site surveys for final system design
- Navigational Aides to suit local regulations
- Deployment plans
- Naval architect design of mooring system to suit local conditions
- Mooring system supply
- Support vessels and crews
- Support divers
- Bathymetric surveys
- Data management (QA/QC) and hosting
- Maintenance & calibration services
- Calibration standards
- Spare parts & consumables







SYSTEMS, SOLUTIONS AND INSTALLATION EXPERTISE

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