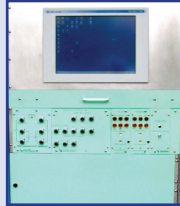


Technical Associates - Ship Ballast CBRN Water Monitor



GENERAL DESCRIPTION:

Ships take on ballast water, including local microorganisms and other pollutants native to the departure location. Ballast release takes place during the voyage or at the destination port releasing these transplanted microorganisms and toxins into a new environment. The Ship Ballast CBRN Water Monitor, UniTect, contains 20 sensors detecting radiation, microorganisms, and chemicals.



Ballast water monitor is a state of the art integrated chemical, biological, & radiation continuous real-time water monitoring system. It combines several detection goals in one continuous, real-time, on-line monitor.

- 7 Major Chemical Tests
- Detects Alpha, Beta, Gamma, Tritium, Radon, Radium.
- Detects More Than 12 Microbes
- Customer Controlled Alarm Threshold
- Calibration Can be Customized for Specific Contaminants
- SCADA compatible
- Remote Control & Communications

The Ship Ballast CBRN Water Monitor is a multi-detector water monitor for simultaneous measuring of alpha, beta and gamma-emitting radio nuclides, chemical and biological contaminants. The pre-amps are plug in modules for easy maintenance. Additional monitoring is available tailored to specific needs upon request. Measurements are logged 24 hr/day - 7 day/week, with alarm capability and a universal read out adaptable to mainframe infrastructure computers.

TECHNICAL DESCRIPTION:

The Ship Ballast CBRN Water Monitor combines several detection goals into a single monitor. It continuously monitors radionuclides with crushed scintillation crystals and NaI Gamma Spec scintillation crystals, ion exchange resin beads and charcoal filter and performs isotope identification. Chemical sensors include amperometric electrodes, UV spectrometer, and solid state detector. Laser based technology is the sensor method for biological particle counting and analyses. Chlorine, TOC, and Nitrogen are also monitored with detectors integrated within the Ship Ballast CBRN Water Monitor system.

- Measures at or below EPA/DHS/PAG levels
- Protective action guideline levels and military drinking water limits
- Real time, in-line, continuous
- No reagent tanks to fill
- No waste stream
- Easy calibration.

Tier Selection

Final tier assignment is based on overall product score.

- Top Tier
- Second Tier
- Third Tier
- ◐ Fourth Tier
- Bottom Tier

RANKINGS

	Biological	Chemical	Radiological
FIELD USE System			
MOBILE Laboratory			
DIAGNOSTIC Laboratory			
ANALYTICAL Laboratory			

Survey Source

Vendor Supplied Information

CONTACT INFORMATION

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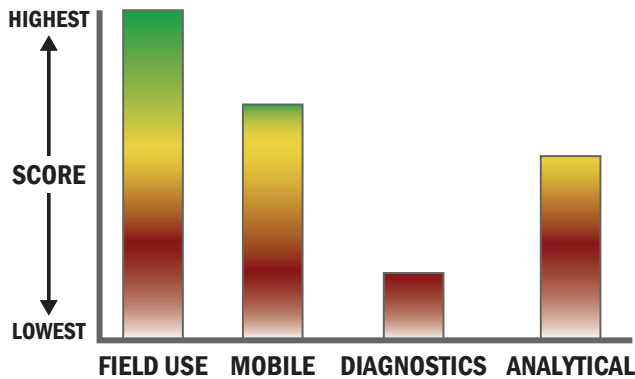
COST

- \$379,440/system
- <\$1.00/analysis



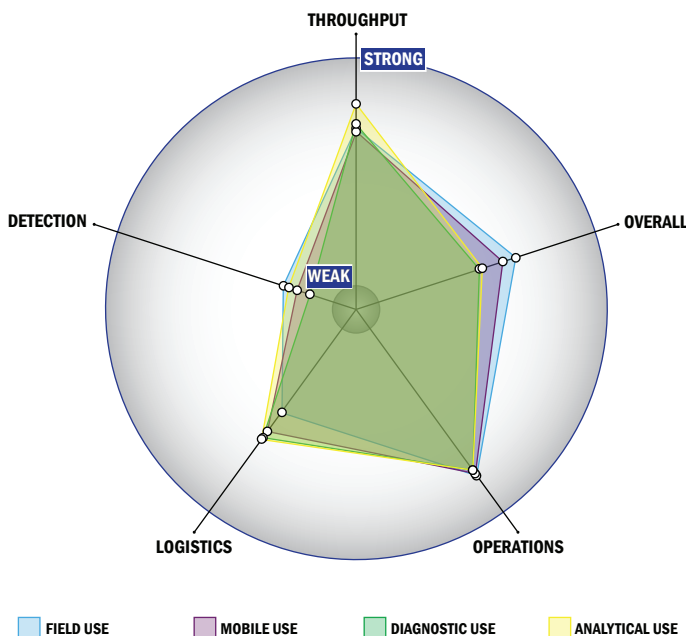
Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.



Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.



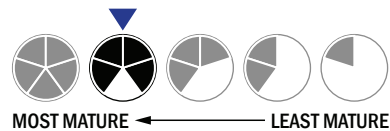
Evaluation Criteria

Throughput:

- Between 2 and 15 minutes for detection
- Continuous operation with no defined runs
- System is continuous and provides real time analysis with no defined tests/samples
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 0 components
- 10-20 minutes is required for set-up
- Automatic detection

Logistics:

- An afternoon of training and some technical skills required
- Approximately the size of a home dishwasher
- More than 50 kg
- Satellite and wired connections are available
- System or device has 110V electrical requirement



Operations:

- Can be used from 4 °C to 37 °C
- Performance is not influenced by relative humidity
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system or device is currently fully autonomous
- The system software is open and available for modification
- The system hardware is open and available for modification

Detection:

- Greater than 250 µL
- Excellent specificity. System has occasional false alarms under certain conditions (<2%)
- 100-1,000 ng per mL
- >1 ppt
- Efforts underway to identify liquid chemical agent
- Total dose, dose rate and count rate with simultaneous display readout and automatic differentiation between types of radiation detected
- Down to background level radiation for dose rate
- Down to background level radiation for count rate
- System is used for surveying