Hach Company - GuardianBlue Early Warning System

GENERAL DESCRIPTION:

The revolutionary GuardianBlue® Early Warning System is designed for water utilities to provide them with the information they need to ensure their drinking water is safe. Its patented technology lets users detect, alert and classify a wide variety of contaminants. It also will detect, alert, classify, and learn real-world events. GuardianBlue's breakthrough technology will detect and alert on unknown water quality deviations. Key water quality parameters used include pH, turbidity, conductivity, chlorine, and total organic carbon (TOC). Advanced algorithms are used to interpret the sensor data and used to classify potential contamination. The GuardianBlue was the first event detection system for drinking water to receive SAFETY Act certification.

TECHNICAL DESCRIPTION:

The GuardianBlue Early Warning System includes the GuardianBlue Water Panel, TOC analyzer, Event Monitor, and purge gas generator.

The Water Panel, comprised of Hach's leading water quality sensors, continuously monitors for chlorine, conductivity, pH, turbidity, temperature and pressure. The TOC analyzer provides increased sensitivity to organic contaminants and uses a persulfate oxidation with non-dispersive infrared detector (EPA method 415.1). The Event Monitor contains patented water security algorithms and integrates multiple sensor outputs.

Every 60 seconds, signals are processed from a 5-paramater measure into a single scalar trigger signal. A deviation of the signal from the established baseline is derived and a gain matrix is applied that weights the various parameters.

When the signal exceeds the threshold, the deviation vector is compared to agent vectors in the threat Agent Library to see if there is a match within a tolerance. This heuristic system also classifies normal operational events that are named and categorized by the system operator, and stored in the Plant Library. The Purge Gas Generator is a crucial component to maintaining the stability and continual operation of GuardianBlue's TOC Analyzer, by producing ultra-dry, CO2-free air.

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	Third Tier	Fourth Tier	N/A
MOBILE Laboratory	Bottom Tier	Bottom Tier	N/A
DIAGNOSTIC Laboratory	Bottom Tier	Bottom Tier	N/A
ANALYTICAL Laboratory	Bottom Tier	Fourth Tier	N/A

Survey Source

Vendor Supplied Information

CONTACT INFORMATION

Hach Company
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Loveland, CO 80539
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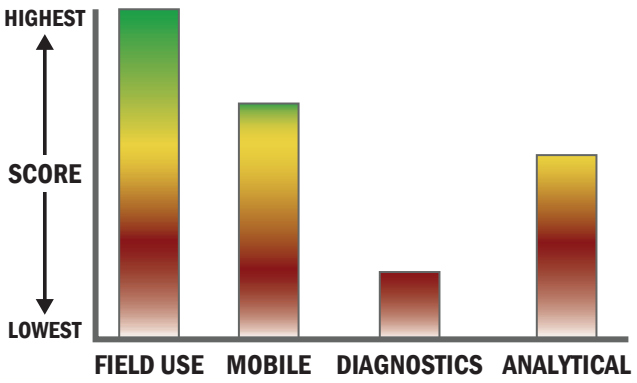
COST

- $65,650/system
- $0.0384/analysis

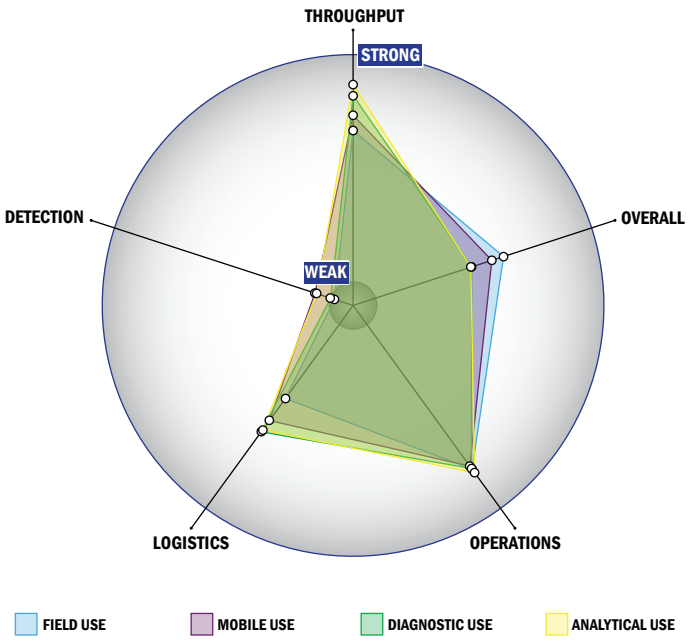
Scoring Analysis

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.



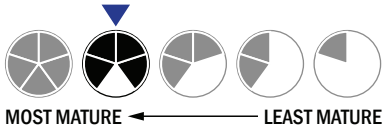
Evaluation Criteria

Throughput:

- 2 minutes or less 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
- 4 solutions, buffer, eluents, and/or reagents
- 0 components
- Greater than 20 minutes is required for set-up
- Automatic detection

Logistics:

- A day of training and technical skills are required
- Larger than a home dishwasher
- More than 50 kg
- Wireless and wired connections are available
- System or device has 110V electrical requirement



Operations:

- Can be used from 4°C to 41°C
- Components must be stored at room temperature (27°C)
- Performance is not influenced by relative humidity
- Greater than 3 years shelf life
- 5-10 years expected life
- Results can be viewed in real-time
- The system or device is currently fully autonomous
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

Detection:

- Greater than 250 µL
- Good specificity. System has a consistently low level of false alarms (2-5%)
- Greater than 10,000 ng per mL
- 1 ppm-100 ppm
- System currently can identify liquid chemical agent