Partner Airogistic, LLC - AIROCOLLECT-DETECT-288

GENERAL DESCRIPTION:

The AiroCollect-Detect is a combined laser induced florescence (LIF) detector and wetted-wall plastic cyclone (WWPC) bio-aerosol sample collection device that runs on AC power or batteries. This product was developed to be power efficient, light weight, and portable with the option to configure the product into a man portable backpack. The LIF detector continuously analyzes air samples for airborne pathogens. It statistically correlates particle size and florescence comparing samples to statistically known signatures of dangerous pathogens. If it finds a match, it triggers real-time collection of the airborne particulates into a saline solution. The AiroCollect-Detect is easy to operate and designed in modular fashion, so it can be easily packaged into larger systems. Alternatively, it can be environmentally enclosed and temperature regulated to operate standalone.

TECHNICAL DESCRIPTION:

The WWPC Collector uses inertial aerodynamic separation of bio-aerosols particulates in the human aspiration size range. Particles larger than 10 microns are removed using a pre-separator and inlet. Particles smaller than ½ micron escape the cyclonic force. The walls of the cyclone are wetted to achieve high collection efficiencies and concentration factors. The LIF Detector operates on the principle of Mie scattering, concurrently examining each particle for the presence of the metabolites NADH and riboflavin. The detector simultaneously measures particle size and florescence with a single illumination. It processes the two signals and compares results to known biological signatures.

CONTACT INFORMATION

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COST

- $25,000-$50,000/system
- $0.01/analysis

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	● Bottom Tier
MOBILE Laboratory	◒ Fourth Tier	● Bottom Tier	● Bottom Tier
DIAGNOSTIC Laboratory	● Bottom Tier	● Bottom Tier	● Bottom Tier
ANALYTICAL Laboratory	◒ Fourth Tier	● Bottom Tier	● Bottom Tier

Survey Source

Vendor Supplied Information

Scoring Analysis

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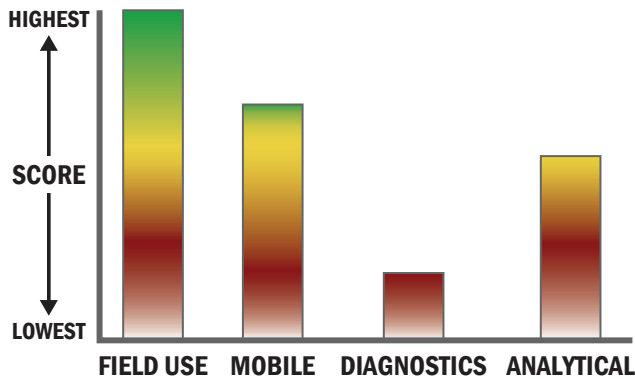
Impact Chart

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.
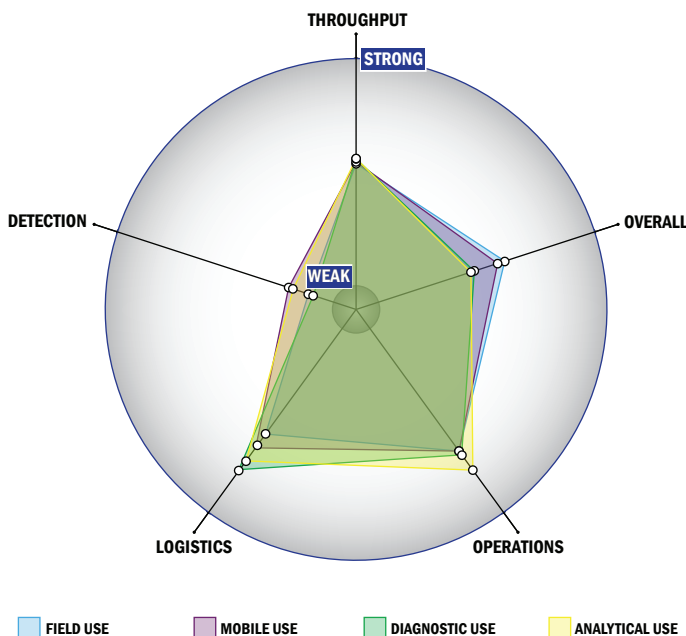

Evaluation Criteria

Throughput:
• Between 2 and 15 minutes for detection
• Multiple samples, multiple tests/sample per run
• Less than 32 samples every 2 hours
• The system or device is currently fully automated
• Device or system is intended for multiple detection assays
• 2 solutions, buffer, eluents, and/or reagents
• 3 components
• 5-10 minutes is required for setup
• 1-2 steps are required for detection

Logistics:
• Very brief (minutes-hours) training and minimal technical skills
• Between 5 and 25 kg
• Wireless and wired connections are available
• System or device uses batteries
• 4-8 hours battery life

MOST MATURE ← LEAST MATURE
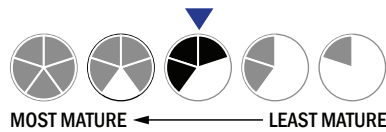
Operations:
• Components must be frozen (-20°C)
• Performance is not influenced by relative humidity
• Greater than 3 years shelf life
• 5-10 years expected life
• Results can be viewed in real-time
• The system or device is currently fully autonomous
• The system software is open and available for modification
• The system hardware is open but modification requires licensing

Detection:
• Not possible for the system to achieve 510K clearance
• Not possible for the system to achieve FDA approval
• Less than 10 μL
• 1-100 CFU per mL
• Spore lysis not necessary for detection by system