

Monitoring Technology Compatibility Assessment

Aeromon October 2024



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Purpose

The MiQ Foundation, as the Standard holder, has developed this monitoring technology compatibility assessment to streamline market research conducted by Operators and other stakeholders to assess the compatibility of methane monitoring technologies against the requirements in the Monitoring Technology Deployment pillar of the MiQ Standard.

This document does not endorse or reflect the personal views of the MiQ Foundation and is not intended to be exhaustive. The sole aim of this document is to provide stakeholders with an impartial summary mapping the characteristics of methane monitoring technologies and methods to MiQ requirements. This document does not guarantee that a monitoring technology or method will be compliant for a specific deployment of that technology or method. MiQ Auditors may reference the information in this document while conducting MiQ Audits, but still must assess each deployment individually. MiQ encourages Operators to carry out additional independent assessments of technologies and methods for their specific deployments.

MiQ has conducted the following assessment based on best available data, vendor-provided documentation, and published studies at the time of preparation. MiQ reserves the right to make updates to the documentation on a periodic basis to conform with new MiQ Standard updates and updated vendor documentation.

MiQ is not liable for any information provided or technology capabilities guaranteed by the technology provider.



CRITERIA	STANDARD REFERENCE	DESCRIPTION		
GENERAL INFORMATION				
Name		Aeromon – BH-12 Modular Emissions Measuring Device		
MiQ Application	Section 3.2.1	Facility Scale Inspection and Source Level Inspection		
Deployment Method	Section 4.1 – Table 3 Detection Technology Specification (Bullet 2)	Sensor can be mounted on mobile platforms such as drone- based operations or used as handheld		
Sensor	Section 4.1 – Table 3 Detection Technology Specification (Bullet 1)	Aeromon's BH-12 is a modular multi-gas analyzer (CH4, VOC's, CO, CO2, H2S etc.) that can be attached to a UAV or carried as a handheld device to monitor and quantify emissions. The device maps out the entire plume from the target source area by measuring horizontal measurement lines at different predetermined altitudes downwind of the source.		
		The collected geo tagged emissions data is transferred to Aeromon cloud service where it's used to calculate the mass flow rate via Reverse Dispersion Modelling (RDM) in accordance with EN17628:2022 standard or Mass Balance (MB)		
	PERFOR	MANCE SPECIFICATIONS		
Emission Source Coverage	Section 3.2.1- Item 1	BH-12 measures methane concentrations at the location of the device by measuring horizontal measurement lines downwind from the source. The device can measure emissions from elevated sources and underground sources (buried pipelines) once methane reaches the atmosphere		
Measurement Frequency	Section 3.2.1- Item 1	Periodic – Aeromon scans target areas at the frequency specified by the Operator.		
Attribution Level	Section 3.2.1- Item 4	Equipment Level		
Published Test Protocol	Section 4.1 – Table 3 Detection Technology Specification (Bullet 4)	GERG 2A (Drone 1): https://amt.copernicus.org/articles/17/1633/2024/amt-17-1633- 2024.pdf		
MDL @ 90% PoD				
(Min MiQ MDL requirement is 25kg/hr)	Section 3.2.1- Item 3	0.1 kg/hr		





Figure 1. Aeromon area mapping PoD curve for all the controlled mass release tests for methane to date. This result requires the following conditions to be met: continuous wind speed 1-10 m/s, 10 minutes at minimum reserved for data collection. Aeromon mass flow rate quantification has been tested for flow rates between 0.01 - 50 kg/h.

TECHNOLOGY LIMITATIONS				
Operational Limitations	Section 4.1 – Table 3 Detection Technology Specification (Bullet 3)	Parameters such as measurement distance from the emissions source and wind speed can affect detection sensitivity.		
Environmental Limitations	Section 4.1 – Table 3 Detection Technology Specification (Bullet 3)	Presence of ground wind (>10 m/s), precipitation and snow influence detection sensitivity.		
Applicability	Section 3.2.3	Aeromon's MDL at 90% PoD and spatial resolution meets the requirements for both Facility Scale and Source Level Inspections therefore can be utilized to comply with the pre- defined MTD strategies for either inspection identified in the MiQ Standard.		
		A Producer/Operator utilizing Aeromon for MiQ Certification may be able to implement a deployment frequency that differs from the pre-defined strategies through equivalency determination.		
		Please refer to the MiQ Equivalency Table for additional information or contact MiQ.		
RECONCILIATION CONDISERATIONS				
Reconciliation	MI Section 3.3 - Item 4	BH-12 can attribute individual emission plumes to the equipment-level, allowing operators to attribute emissions to a specific source. Due to the spatial resolution of the technology, a follow-up ground inspection may be required to attribute emissions accurately depending on the nature of the detected emission and the resulting data deliverables.		
		This technology quantifies emission rate via mass flow analysis through RDM or MB method post detection. The RDM methodology takes into consideration the plume concentration		

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profile at known distance from a located source and is utilized for cases where a plume from individual source can be separated from the background and there's no turbulent dilution between the source and the measurement point. The MB method is based on direct measurement of local wind speed and target gas (e.g. methane) concentration. It is suitable for any type of combination of sources and dilution processes.

Due to the nature of periodic screening technologies, Producers/Operators will need to conduct a Causal Examination using operational and maintenance data to understand the origin, cause, and duration of a detected event.

ADDITIONAL DOCUMENTS

Aeromon News and Resources

https://amt.copernicus.org/preprints/amt-2023-97/



Document Status

Table: Version History

Version	Date	Summary of Change
1.0	2024-10	First Publication

