Monitoring Technology Compatibility Assessment

SeekOps

March 2024

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.

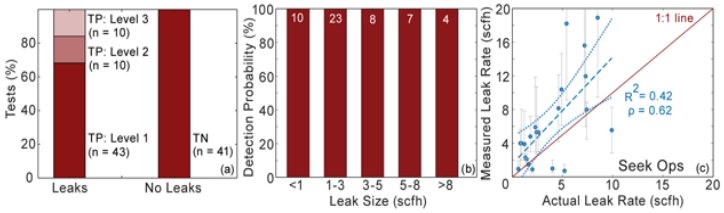
CRITERIA	STANDARD REFERENCE	DESCRIPTION
GENERAL INFORMATION		
Name		SeekOps
MiQ Application	Section 3.2.1	Facility Scale and Source Level Inspection
Deployment Method	Section 4.1 – *Table 3 Detection Technology Specification (Bullet 2)*	Aerial Surveys – Drone Based
Sensor	Section 4.1 – *Table 3 Detection Technology Specification (Bullet 1)*	The SeekOps SeekIR Laser Spectrometer uses a Tunable Diode Laser Absorption Spectroscopy (TDLAS) sensor operating in a "sniffer" configuration around the predetermined waypoints to detect and quantify methane emissions.
PERFORMANCE SPECIFICATIONS		
Emission Source Coverage	Section 3.2.1- *Item 1*	SeekIR measures emissions greater than 1 SCFH/0.02 kg/hr from elevated sources and underground sources (buried pipelines) once methane reaches the atmosphere. SeekOps surveys are conducted around the perimeter of equipment groups and not over.
Measurement Frequency	Section 3.2.1- *Item 1*	Periodic
Attribution Level	Section 3.2.1- *Item 4*	Equipment level.
Published Test Protocol	Section 4.1 – *Table 3 Detection Technology Specification (Bullet 4)*	2018 Stanford/EDF Mobile Monitoring Challenge at METEC : Single Blind results from the Stanford Monitoring Challenge
MDL @ 90% PoD (Min MiQ MDL requirement is 25kg/hr)	Section 3.2.1- *Item 3*	0.02 kg/hr. See Equivalency Determination below for additional detail.
PoD Curve	Section 3.2.1- *Item 3*	
TECHNOLOGY LIMITATIONS		
Operational Limitations	Section 4.1 – *Table 3 Detection Technology Specification (Bullet 3)*	N/A
Environmental Limitations	Section 4.1 – *Table 3 Detection Technology Specification (Bullet 3)*	Temperature conditions below -4 deg F and wind speed outside of 3-30mph range influence the detection sensitivity of SeekIR laser. Surveys are limited during heavy precipitation and snowfall.
EQUIVALENCY DETERMINATION		
Applicability	Section 3.2.3	SeekOps 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 SeekOps for MiQ Certification may be able to implement a deployment frequency that differs

Figure 1. ***Performance results of Seek Ops Inc. in the Stanford/EDF Mobile Monitoring Challenge***

		from the pre-defined strategies by completing an equivalency determination. Please refer to the MiQ Equivalency Table for additional Facility Scale Inspection information or contact MiQ for information regarding Source Level compatibility.
RECONCILIATION CONDISERATIONS		
Reconciliation	MI Section 3.3 – *Item 4*	SeekOps can attribute individual emission plumes to a single area or equipment group. A Producer/Operator utilizing this technology must follow up with a ground inspection to attribute emissions accurately to an equipment or component level. This technology quantifies emission rate using an analytical algorithm which takes into consideration plume geometry, SeekIR sensor measurement and meteorological measurements made on site during time of survey. 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		
2022 Automated unmanned systems perform emissions quantification in Permian		https://onepetro.org/SPEATCE/proceedings-abstract/22ATCE/3-22ATCE/D031S047R003/509169
2022 Aerial Field Trial of CH4 Technologies		https://chemrxiv.org/engage/chemrxiv/article-details/625f27d2742e9f9470644f24

Document Status

Table: Version History

Version	Date	Summary of Change
1.0	2023-08 2024-03	First Publication 1st Paragraph of Applicability section revised to remove ambiguity.