



ENERGY INSTITUTE
COLORADO STATE UNIVERSITY

Advancing Development of Emissions Detection

July 21th, 2023

Prime: CSU

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ADED Subawards:

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Leak Detection & Quantification Protocols

Continuous Monitoring Protocol
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Consensus protocols written by CSU and reviewed by a protocol development committee

- 75+ members
- 450+ comments across both protocols
- Implemented and currently being used for testing

Currently being revised in collaboration with Total Energies

- Will undergo consensus revision

METEC Controlled Test Protocol: Continuous Monitoring Emission Detection And Quantification

Revision 1.0

September 22, 2020

1 Purpose:

This testing will assess the performance of continuous monitoring (CM) systems which perform leak detection and quantification (LDAQ) under Single-Blind controlled release testing over a range of environmental conditions and emission rates. Testing will evaluate system-level performance measures including Probability of Detection and Detection Time. Additional metrics including accuracy and precision of localization and quantification estimates will be evaluated if applicable. Due to the

Survey Protocol
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METEC Controlled Test Protocol: Survey Emission Detection And Quantification

Revision 1.0

April 26, 2022

1 Purpose:

This testing will assess the performance of survey methods which perform leak detection and quantification (LDAQ) under single-blind controlled release testing over a range of environmental conditions and emission rates. Testing will evaluate system-level performance measures including Probability of Detection and Detection Time. Additional metrics including accuracy and precision of localization and quantification estimates will be evaluated if applicable.



Protocol Testing

Next-generation leak detection & quantification solutions deployed at METEC for single-blind protocol testing (survey and continuous monitors)

Continuous Monitors

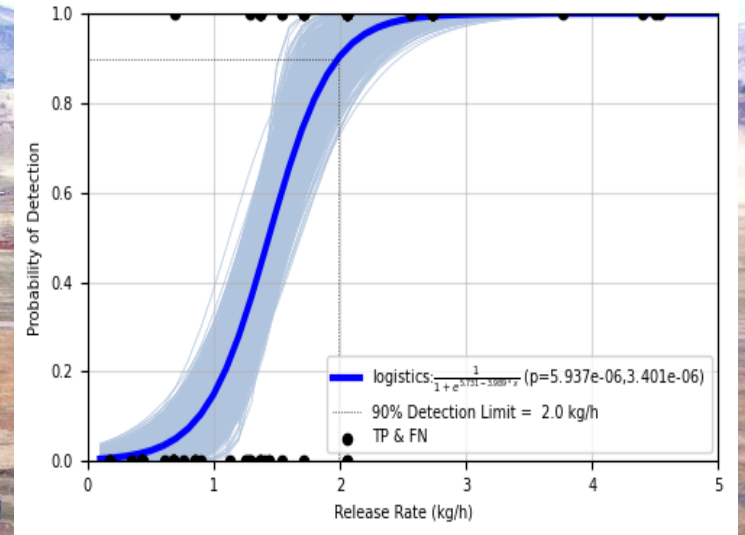
- 12-14 weeks, 500+ emission points, 0-200 SLPM methane

Survey

- 1 week, 80+ emission points, 0-100 SLPM methane

Performer reports generated at the end of the program to evaluate solution performance.

Protocol report metric: probability of detection



Solution sensors

Field Trials

Onsite field testing on operational sites with solutions deployed by operators and sensor companies

- Challenge testing using a portable release rig from representative locations and rates around the facility
- 11 total sites, 7 production and 4 midstream facilities
- Upper Green, Marcellus, and Permian Basins
- One more field deployment planned for Fall 2023

