

Methane point instrument



Continuously detect, locate, and quantify methane leaks at wellsites and facilities, 24/7 in real time



Sensitivity:

Leaks as small as 1 kg/h



Emission localization:

Accuracy of within 19.7 ft [6 m]



Accuracy:

Estimates leak rate within a \pm factor of two, 68% confidence

Applications

- Oil and gas production and processing facilities, onshore
- Remote facilities almost anywhere worldwide

How it is unique

- Built-in calibration system is highly reliable and prevents sensor drift. Plume dispersion interpretation is calibrated in one of the world's largest wind tunnels to locate and quantify emissions with exceptional accuracy.
- Streams data instantaneously once deployed and requires minimum customer interaction.
- Long battery life, even under harsh conditions, is enabled by low-power electronics.
- Cyber security measures and state-of-the-art IoT infrastructure provide secure data transmission.
- Performance is continuously validated and improved via ongoing testing at the Methane Emissions Technology Evaluation Center (METEC) at Colorado State University and at a dedicated facility at Texas Tech University.

How it reduces emissions

Many oilfield methane emissions come from sources that leak intermittently during normal operations. Continuous monitors can measure these emissions more accurately than is possible with mobile sensors mounted on satellites, airplanes, or drones.

The methane point instrument is designed for continuous monitoring at sites such as well pads, compressor stations, storage locations, and oil and gas processing facilities. It is built based on a network of fully calibrated point sensors, which measure methane concentration accurately under all conditions relevant to the oil field, using an inversion algorithm optimized in one of the world's largest wind tunnels.

The methane point instrument is deployed as an IoT device with long battery life resulting from low-power electronics. The data can be securely streamed to the [methane digital platform](#) from SEES. As a system, the instrument precisely detects, locates, and quantifies methane emissions from onshore production and processing facilities in real time, 24/7. It can function even at remote facilities located almost anywhere in the world. Easy installation and lack of moving parts reduces maintenance and intervention time, to deliver a cost-effective solution.

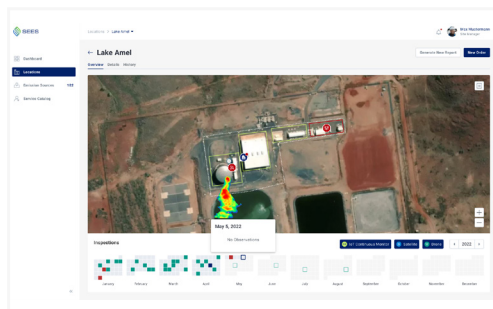
How it works

Using IoT-enabled sensors placed at the perimeter of the facility, the instrument's multisensor system detects methane, accurately triangulates the leak location, and quantifies the emission rate. A reliable probabilistic interpretation algorithm provides actionable observations with quantified leak rates and component-level localization, with near-zero false positives.

The methane point instrument system is installed and commissioned in less than 8 hours, without requiring onsite ground preparation. User-friendly pole installation employs ground anchors; no excavator or concrete is required, reducing environmental impact. The precommissioned, fit-for-purpose system requires minimal intervention at the field location and no intervention once installed; lack of moving parts minimizes maintenance. Hardware and software precommissioning and an optional industrial-grade solar power feature provide simplicity, ease of maintenance, and cost efficiency at the wellsite.

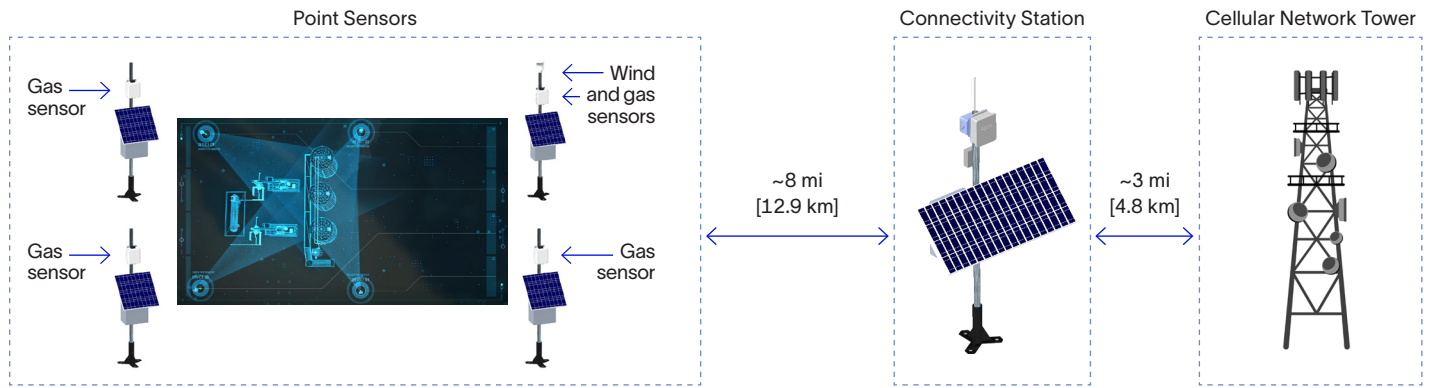
The instrument is fully autonomous and can integrate with existing SLB IoT sensors in your infrastructure, if required. An included connectivity station can service up to 200 sensors located within an 8-mi [12.9-km] radius and can be positioned up to 3 mi [4.8 km] from a cellular network tower. Under favorable conditions, the sensors can detect leaks as small as 1 kg/h. Data are transmitted to the cloud via a state-of-the-art IoT transmission network to provide continuous, secure, real-time data acquisition.

Data can be hosted and displayed within our methane digital platform to seamlessly access and manage monitoring services, data, and analytics. Data can also easily integrate into existing digital systems (e.g., for operational or accounting purposes).



Data can be securely streamed to the methane digital platform by SLB End-to-end Emissions Solutions (SEES). This enables easy access and integration with other methane data and services.

Methane point instrument



The methane point instrument delivers a continuous methane emissions monitoring system consisting of connectivity stations positioned up to 3 mi [4.8 km] from the nearest cellular network tower. These stations can communicate with as many as 200 sensors or locations within an 8-mi [12.9-km] radius.

Methane Point Instrument Specifications

Instrument performance	Limit of detection: 1 kg/h (typical well pad deployment at a 164-ft [50-m] distance)	Recalibration	Remote monitoring of sensors for drift and significant deviations; if detected, automatic correction occurs	
	Estimates leak rate within a \pm factor of two, 68% confidence		Power source	Industrial-grade solar panels and battery
	Emission localization accuracy within 19.7 ft [6 m]			Battery life: five days without exposure to sunlight, from full charge
Sensors	Methane gas concentration (threshold of 1 ppm)	Electronics	Optional connection to grid power	
	Atmospheric temperature, humidity, and pressure		Passive-exposure methane sensor (no fan or moving parts)	
	Wind speed and direction		Ultrasonic wind sensor (no moving parts)	
	Solar radiation		Sensor data reporting to cloud with 1-minute frequency	
	Acceleration (tilt detection)		Dust-protected methane sensor	
	GPS location and time synchronization		Certification	UL certified
Algorithm optimization	Onboard sensor compensation for environmental factors at the edge	CE certified		
	Multiple automated data quality checks, including for reliable atmospheric conditions	NEMA 4X- and IP 65-rated sensor enclosure		
	Preconditioning through dynamic meteorological observations and knowledge of the facility	NEMA 3R-rated battery enclosure		
	Probabilistic inversion identifies potential uncertainties in quantification and localization due to meteorological conditions	Environmental	Storage temperature, unpowered: -55 to 70 degC [-67 to 158 degF]	
Continuous system health monitoring	Survival temperature rating: -40 to 60 degC [-40 to 140 degF]			
Cloud interface	24/7 with real-time display of emissions		Operational temperature rating: -20 to 60 degC [-4 to 140 degF]	
	Real-time alerts	Tested for harsh field conditions and the highest SLB environmental standards:		
	If required, multimodal measurements and additional services can be provided by the Methane Digital Platform	0%–100% humidity		
Coverage	Ranges within an 8-mi radius in ideal conditions, via a LoRaWAN® gateway	Up to 3-ft [91-cm] drop per ASTM D3332 Standard		
	Support for up to 200 sensors per connectivity kit (for each LoRaWAN gateway)	Withstands up to 60 mi/h winds (finite element analysis performed on pole mechanical loading)		
	Global SIM card for international cellular connectivity			
	Low-power connectivity is enabled by an AgoraGateway™ ruggedized edge computing device			

All specifications are subject to change without notice.