

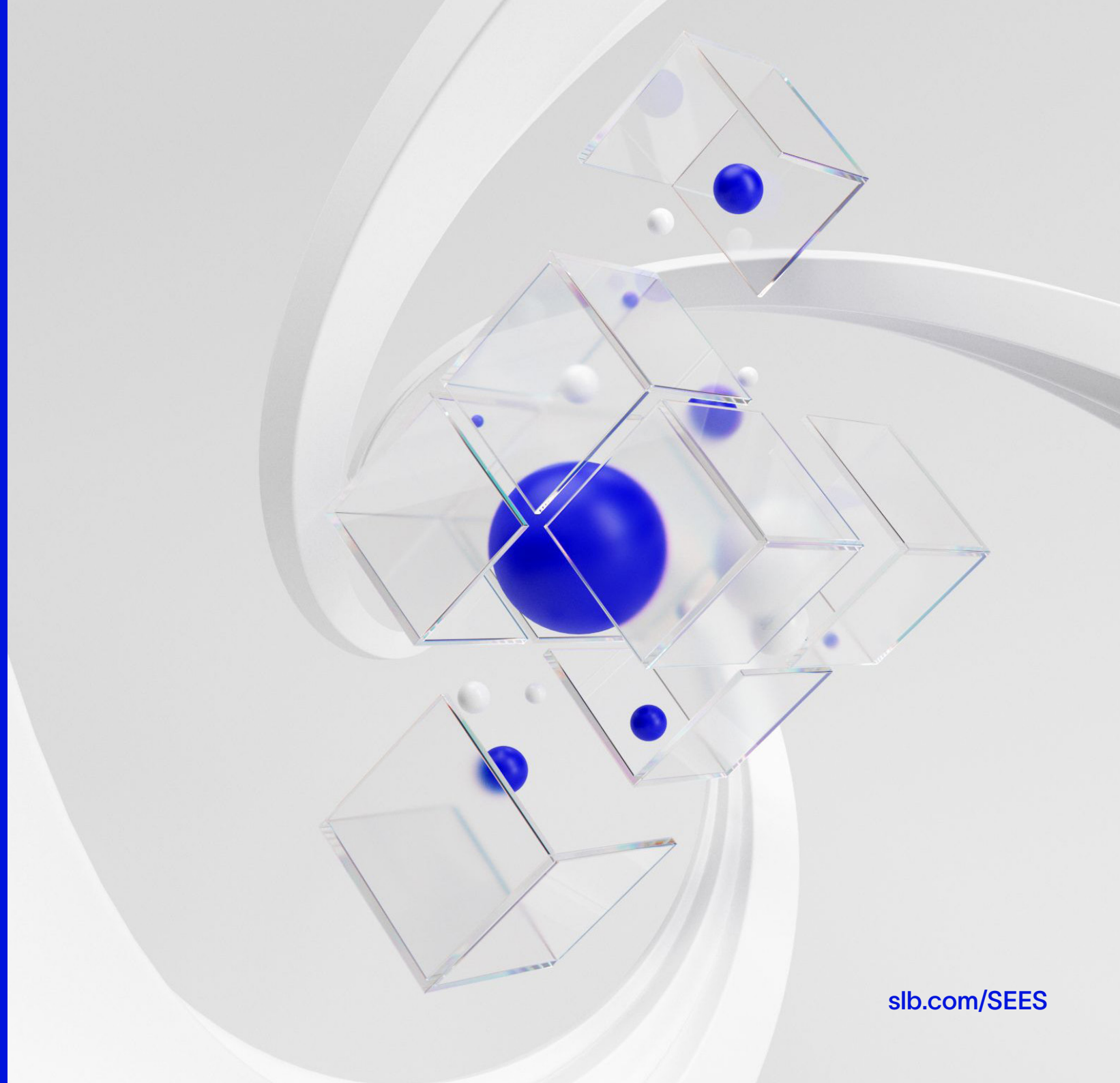


Methane. Start here.

Complete methane measurement

SLB End-to-end Emissions Solutions (SEES)

slb.com/SEES



We know methane.

How to detect it, locate it, measure it, interpret it. And act on it.

Measuring methane emissions is important. It helps identify leaks and is needed for transparent and compliant emissions reporting. Both are prerequisites to any reduction effort.

Many measurement technologies are available today, from handheld devices to satellites. The best measurement setup for your asset is the right combination of the right tools. Finding that combination is key. That's where we come in.

- We have a full suite of top-down, bottom-up and continuous methane measurement technologies. Constantly evolved and expertly designed; digitally enabled and ready to connect.
- Our instruments and technologies have been validated as best in class by controlled release testing. We do this in collaboration with university partners and publish our findings in peer-reviewed literature.
- Our tech lineup includes instruments developed in-house at SLB, by specialist start-ups, or in partnership with other players—ensuring you have access to the very latest in methane measurement.
- All our technologies are designed, selected, and combined to support Oil & Gas Methane Partnership (OGMP) 2.0 Framework Levels 4 and 5 required for OGMP 2.0 Gold Standard.

A comprehensive toolbox:

Bottom-up

Bottom-up measurement methods detect emissions at source level and can pinpoint leaks.

OGMP Level 4

Tools include optical gas imaging (OGI) cameras and handhelds

Complemented by advanced simulation tech

Top-down

Top-down methods detect emissions at site or facility level.

OGMP Level 5

Tools include sensors mounted on trucks, drones, planes, satellites

Quantitative measurement of emission rate

Continuous

Continuous monitors provide near real-time measurements of methane emissions.

OGMP Level 5 (in some cases)

Tools include point instruments and lidar cameras

Localizes emissions, quantifies emission rate



The perfect mix

We take the guesswork out of selecting the right methane measurement tools. With countless technologies available, it can be difficult to identify the best system for a particular asset.

No single measurement method is as powerful as the right combination of different technologies. That's why we combine a diverse array of complementary measurement technologies, creating packages that play to each tool's strength.

We integrate our tools and technologies in a custom way for individual assets. The result: an optimized, measurement-informed methane inventory for you.

The measurements can be used to prioritize upgrades or repairs that reduce methane emissions, to comply with methane reporting regulations, and to demonstrate methane intensity for differentiated gas certification.

Our measurement methods comply with OGMP 2.0 Framework and **include every source-level (OGMP Level 4) and site-level (OGMP Level 5) tool required for the Gold Standard.**

Our lineup includes cutting-edge, yet tried and tested, technologies. Turned into instruments that are ready to deploy, ready to scale, ready for more.



TECH HIGHLIGHTS



Methane lidar camera

Locates leaks and quantifies emissions in nearly all conditions.



Symmetry™ process simulation software

Determines methane emissions through thermodynamics.



Methane point instrument

Reports fully interpreted data on the time, source, and rate of emission.



Methane digital platform

Receives and makes sense of all your emission data.

Other technologies

Truck
Drone

Airplane
Satellite

slb.com/SEES

The Gold Standard, in practice

The OGMP 2.0 pathway takes you through five levels of measurement and reporting methane emissions. The Gold Standard requires both source-level and site-level measurements. SEES provides all the technologies needed.

OGMP Level 4

Source-level emissions are detected using bottom-up methods. Tools include OGI cameras, as well as sampling technology, to identify and quantify fugitive emissions.

Methane emissions from incomplete combustion in flares are quantified by imaging spectrometers for high-materiality flares and by indirect measurements for low-materiality flares.

Methane from incomplete combustion in stationary combustion devices and from intermittent venting sources are typically determined using engineering calculations and thermodynamic simulations, which are accepted by the OGMP for Level 4 reports. Simulations are performed using the Symmetry Fluid Engine module and can often capture time-varying emissions that would require long durations for direct measurement.

OGMP Level 5 (mobile)

Site-level emissions are detected using top-down methods. Tools include methane sensors mounted on trucks, drones, airplanes, or satellites.

Sensors include mobile point sensors that map out the flux plane, passive remote sensors that use reflected solar radiation, and lidar cameras that use sensitive lasers. All technologies provide quantitative measurement of the methane emission rate.

OGMP Level 5 (continuous)

Near real-time measurements of methane emissions are provided by continuous monitors and can be used for OGMP Level 5 reporting in some cases.

For facilities where methane emissions vary over time, the snapshots provided by discrete bottom-up and top-down measurements paint an incomplete picture of methane emissions.

Continuous monitors turn those snapshots into a movie, measuring how emissions change over time. Continuous measurement can be made with our [methane point instrument](#) designed for smaller facilities and our [methane lidar camera](#) designed for larger facilities.

Our continuous monitors localize the emissions and quantitatively report the emission rate.



Greenhouse Gas (GHG) measurements portfolio

OGMP Level 4

- Optical gas imaging
- Photoionization, flame ionization detectors
- High flow sampler
- Calibrated bag
- Quantitative optical gas imaging
- Thermal mass flowmeter
- Ultrasonic probe
- Gas analyzer, combustion analyzer
- Remote methane laser device
- Video imaging spectroradiometry
- Multispectral optical gas imaging
- Pipeline gas leak detection
- Methane point instrument
- Methane lidar camera

OGMP Level 5

- Satellite
- Airplane
- Drone
- Truck
- Methane point instrument
- Methane lidar camera

