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ABB MEASUREMENT & ANALYTICS

# ABB Ability™ natural gas leak detection

Solutions for distribution pipelines  
and gas storage sites



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## **Measurement made easy**

**ABB's comprehensive solutions find more leaks faster to keep people and property safe.**

**Fast, accurate, and cost effective: designed for surveying and continuous monitoring of high-risk assets.**

# Solve your gas leak problem

## Find the leak fast, no matter where it is

The world's first comprehensive solution for pinpointing natural gas leaks from pipelines in cities and gas storage sites.

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01 Gas leaks from underground pipelines can remain hidden from insensitive technology and create dangerous conditions under a city street.

Pipelines efficiently transport natural gas to consumers in municipalities and industrial facilities. Over time, the pipeline infrastructure degrades and can get damaged during construction, weather events, regular thermal cycles and other seasonal effects that create potentially serious gas leaks.

Leaks in natural gas pipelines may cause explosions and fires, resulting in casualties, environmental damage, and material loss. Thus, utilities as well as local, state and federal regulators often require, regular/routine gas leak detection surveys to ensure community safety and reduce environmental risk.

In short, the natural gas industry and utilities face increasing challenges with pipeline monitoring and compliance due to:

- Aging infrastructure (pipelines in some cities are over 50 years old or made of cast iron)
- Regulatory pressure to improve system integrity
- Desire to reduce greenhouse gas emissions
- Reliance on time consuming, error-prone, paper-based monitoring systems
- Pressure to reduce cost
- Need for data transparency

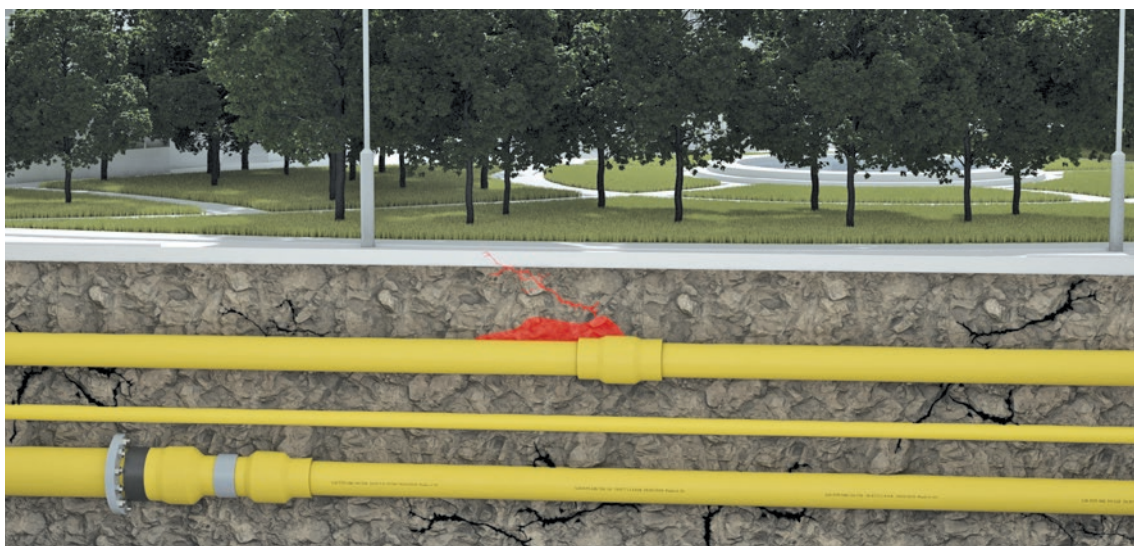
Unfortunately, current technologies for gas leak detection are outdated, unreliable, slow and insufficiently sensitive. Basically, traditional leak detection processes do not meet today's demands for fast, accurate and transparent data.

ABB's novel solutions solve these gas leak detection challenges by enabling surveyors to quickly detect, locate, and quantify leaks anywhere.

ABB's natural gas leak detection solutions directly address these common challenges:

- Local distribution system
- Survey mains and services
- Odor investigation
- Construction verification
- Post disaster evaluation
- Frost line evaluation

ABB's comprehensive gas leak detection solution, comprised of MobileGuard™ and MicroGuard™, combines leading edge, cyber secure measurement technology and advanced data analytics to detect, quantify and ultimately help fix hazardous gas leaks virtually anywhere, keeping people safe and minimizing environmental impact.





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01 MobileGuard™ ready to perform natural gas survey with a technician pinpointing gas leak with MicroGuard™.

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Did you know? ABB's natural gas leak detection solutions must pass rigorous and thorough cybersecurity tests so that customers can use these products with confidence in their mission-critical applications.

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## Fast, accurate, cost effective. The better natural gas leak survey solution for city gas distribution networks.

ABB's technology quickly detects, maps and pinpoints natural gas leaks to significantly reduce risks across the natural gas infrastructure serving city utilities.

The ABB Ability™ mobile gas leak detection system uses ABB's patented, laser-based technique, which is more than 1000 times more sensitive than older, less sensitive, legacy methods. This enables unambiguous identification of leaks several hundred feet from the source.

The ABB Ability™ gas leak detection solution consists of a combination of the MobileGuard™ system that makes it faster and easier to detect and map leaks from a vehicle, while MicroGuard™ allows walking surveyors to pinpoint those leaks far faster than ever before.

MobileGuard™ comprises ABB's LGR-ICOS™ methane/ethane analyzer, a GNNS system, a sonic anemometer and proprietary leak detection software that presents geospatial maps of all measured parameters, including the likely location and size of leaks in real-time.

This reduces the time required to pinpoint and prioritize a leak, increasing safety and lowering emissions. Readings are stored in the device and can be transmitted in real-time to the cloud for centralized monitoring.

MicroGuard™, which employs the same patented, ultrasensitive technology used in MobileGuard™, enables walking surveyors to pinpoint leak locations within minutes. Building on ABB's successful product line of gas analyzers employed by scientists and researchers worldwide, MicroGuard™ includes proprietary software that generates detailed digital reports that can be shared immediately after each survey.

The software's sophisticated leak detection algorithm combines the system's measurements of multiple gas concentrations (CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>), local coordinates (GNNS) and local wind velocity (sonic anemometer).

### Advantages

- Measures both methane and ethane to eliminate false positives
- Begins finding leaks within 2 minutes after power on (competitive laser methods require 45 minutes to warm up and/or are far less sensitive)
- Far less maintenance than other laser methods
- Lower operating cost, higher reliability, ruggedness and ease of service
- Unique system combines the same sensing technology for both vehicle- and walking-based surveys integrating the data seamlessly when required
- Meets stringent cyber security requirements
- Customer owns and controls the instrument and maintains full custody and ownership of all data always
- Data available immediately through cloud-based sharing and reporting

# Designed to operate autonomously or combined to find leaks fast

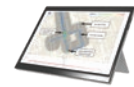
The ABB solution increases the efficiency and effectiveness of surveying and mapping large urban and rural areas through more precise identification, quantification, improved quality assurance, while reducing the impact of weather and resource constraints to identify and remove more risks from a gas utility's infrastructure.

MobileGuard™ and MicroGuard™ were designed to operate autonomously as standalone units but they have also been combined as a very efficient gas leak detection tandem employed successfully by utilities worldwide to find leaks while driving and precisely pinpoint leak locations while walking.

**MobileGuard™ operates onboard vehicles to detect leaks while driving**



MobileGuard™



Computing Tablet and leak detection software

**ABB Ability™ leak detection and mapping software solution**



Off-axis ICOS analyzer  
Methane/Ethane



GNSS antenna  
Location



Sonic anemometer  
Wind velocity



Custom air inlet  
Sample air

**MicroGuard™ operates while walking to pinpoint leak emission sources**



MicroGuard™



Off-axis ICOS analyzer  
Gas concentrations



Backpack



Sample wand  
Air inlet and UI mount



**Ruggedized phablet with Android app**  
UI, GNSS, Leak detection and mapping software

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# ABB Ability™ platform for natural gas leak detection

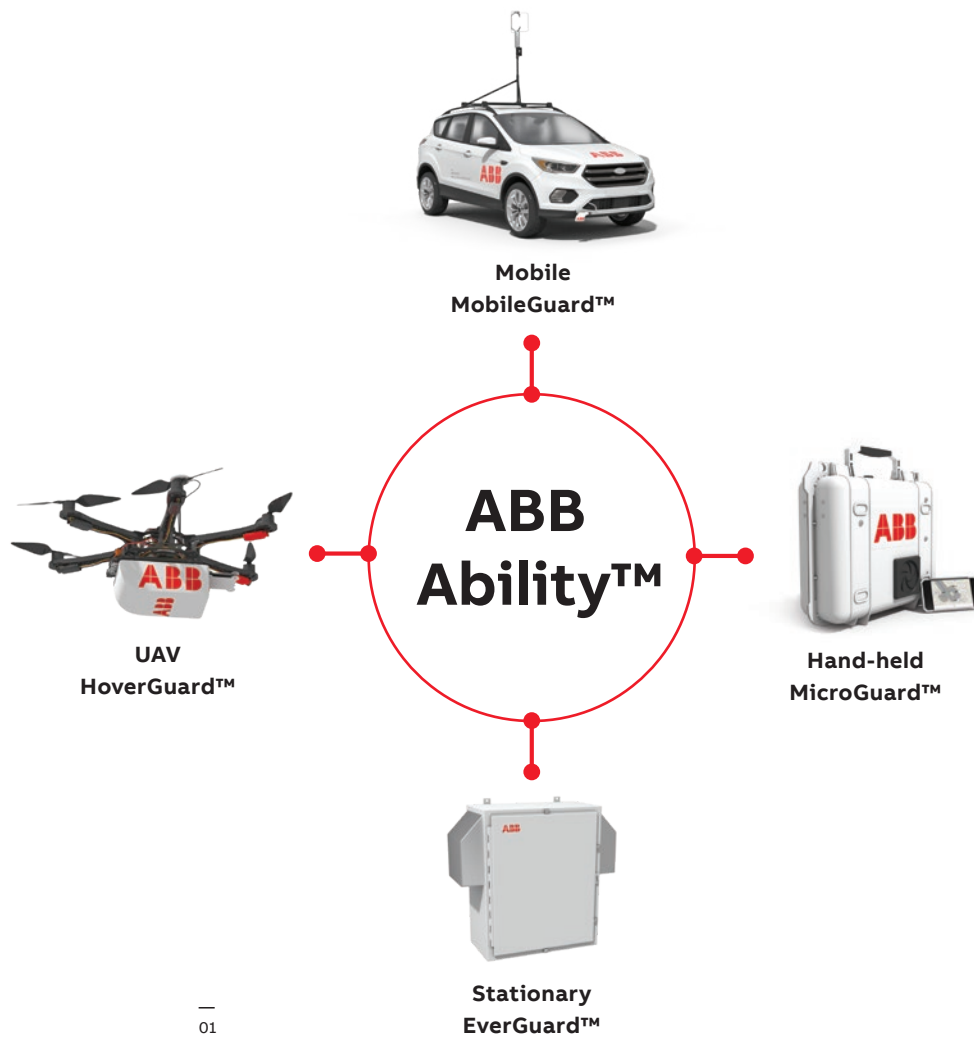
Our complete natural gas leak detection solutions allow you to reduce risk, increase safety and save money.

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01 ABB's natural gas leak  
detection platform

ABB provides leading-edge, innovative, natural gas leak detection solutions based on our patented technology and proprietary software analytics platform to increase the safety of the entire natural gas infrastructure and reduce waste.

**The ABB Ability™ leak detection platform is based on a common laser-based technology (patented OA-ICOS) and composed of:**

- **MobileGuard™**: operation onboard vehicles to detect leaks while driving
- **HoverGuard™**: operation onboard UAV to detect leaks while flying
- **MicroGuard™**: operation while walking to pinpoint leak emission sources
- **EverGuard™**: operation at a stationary location for continuously monitoring high-risk areas





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**ABB Inc.**

**Measurement & Analytics**

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