

Redefining the Standards of Gas Pipeline Inspections

ART Scan™



Challenge

Gas pipeline inspections pose significant challenges, particularly with long-distance, multi-diameter pipelines, and those with varying wall thicknesses and complex internal features.

Traditional inspection methods use magnetic fields and struggle with depth sizing accuracy of metal loss features, specifically when dealing with higher speeds and higher wall thickness.

Ensuring the integrity and safety of these pipelines necessitates advanced inspection technologies that can deliver precise measurements and navigate the complex pipeline architecture.




Solution

ART Scan was developed using Acoustic Resonance Technology (ART) for the inline inspection (ILI) of gas pipelines, offering several advantages:

- **Accuracy** ART Scan provides direct wall thickness with a high accuracy of ± 0.4 mm (± 0.02 in), even at high wall thickness.
- **Flexibility** The technology can navigate complex pipeline features, such as wyes, tees, non-return valves, and varying diameters.
- **Long-Distance** Capable of long-distance runs, ART Scan has completed inspections exceeding 900 km (~600 miles) in a single run.
- **Medium Adaptability** ART operates effectively in gas or liquid environments, enabling Ultrasonic (UT) inspection of gas lines without a liquid batch.

ART Scan tools also address specific challenges like inspecting pipelines with internal paraffin deposits, maintaining constant speed across elevation changes, and ensuring minimal wear during inspections due to their centralizing wheel sets and controlled rotation.

 Axial Cracks

 Circumferential Cracks

 Metal Loss

 Geometry Ovalities

 Mapping



Results

The adoption of Acoustic Resonance Technology has transformed the inspection of gas pipelines, addressed critical challenges, and delivered enhanced accuracy, reliability, and efficiency.

The success of ART Scan in a wide range of applications demonstrates its value as a key technology for the inline inspection of gas and liquid pipelines, contributing significantly to the safety and integrity of pipeline operations worldwide.

The deployment in over 15,000 km (~10,000 miles) of gas and liquid pipelines globally has yielded impressive results:

- The precise measurement capabilities of ART Scan has enhanced the ability to detect and analyze complex corrosion features, dents, manufacturing features, laminations, buckles, and other defects, leading to improved pipeline safety and reliability.
- The operational envelope allows inline inspections of heavy wall gas pipelines at regular operating flows, avoiding production losses and significantly increasing the efficiency of pipeline inspections.
- ART has demonstrated the ability to detect and characterize mid-wall features like laminations, which are critical for assessing pipeline integrity, especially for emerging fuels.
- ART's adaptability to various pipeline conditions and media has made it a preferred choice for challenging pipeline inspections.



Acoustic Resonance Technology has transformed the inspection of gas pipelines



Pump trial setup including diameter change and wye passage.



ART Scan tool at receiver after 900 km (~600 miles) inspection.