

# Leveling Up: Axial Crack Evaluation with High-Resolution Acoustic Imaging

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This paper presents findings from test loop data to indicate the strong performance of high-resolution acoustic imaging in an ILI application to evaluate axial cracks. High-resolution acoustic imaging ILI technology represents a significant change in the way ultrasound-based ILI is conducted, and results are interpreted for pipeline inspections. This direct imaging-based approach is grounded in core ultrasound principles, such as time of flight, and speed of sound in fluid and steel, however, it overcomes traditional amplitude based inferred sizing practices for crack flaws based on known calibration manufactured flaws.

The study utilizes high-resolution acoustic imaging to present direct spatial measurements of axial discontinuities in various locations, such as Heat Affected Zones (HAZ) and welds. A full-scale 16-inch test flow loop was manufactured to validate the ILI tool's performance at line speed with EDM notches, manufactured cracks, and actual field-removed cracks. The results, aligned with API 1163 standards, cover discontinuities on the interior diameter (ID), exterior diameter (OD), and mid-wall, including defects such as lack of fusion (LOF), weld flaws, and stress corrosion cracking.

**#263 is an abstract only. No paper.**

