

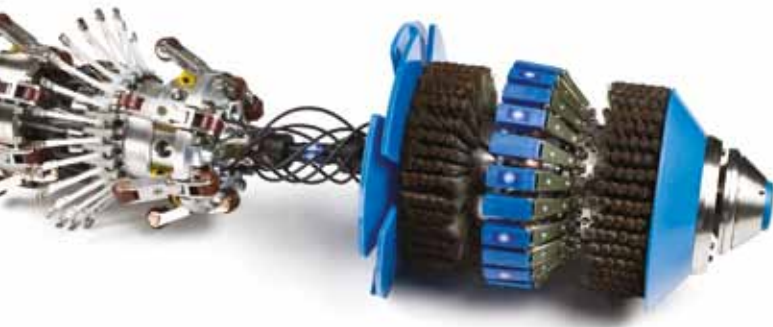
PII Pipeline Solutions
a GE Oil & Gas and Al Shaheen joint venture

The smarter way to pipeline integrity

MagneScan™ takes in-line inspection data to its highest level yet



Maximum data accuracy for peace of mind

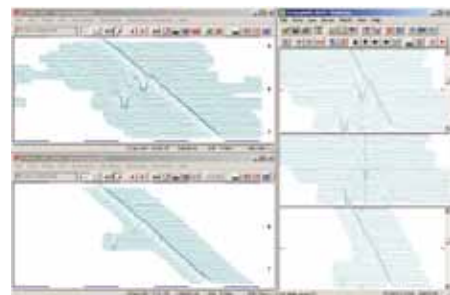


2014 report card

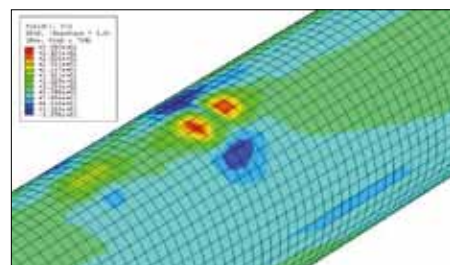
- Serving customers in: Australia, Austria, Belgium, Canada, China, Croatia, Czech Republic, Denmark, France, Germany, Holland, Indonesia, Ireland, Italy, Luxembourg, Mexico, New Zealand, Norway, Qatar, Saudi Arabia, South Africa, Spain, Switzerland, UK, USA
- Total inspections: 900+
- Pipeline diameters: 6, 8, 10, 12, 14, 16, 17, 18, 24, 30, 32, 34, 36
- Total distance inspected: 40,000+ km (25,000+ miles)
- Longest run: 412 km (258 miles)
- Pipe: onshore & offshore, seam welded, spiral welded, seamless
- Media: condensate, CO₂, crude oil, diesel, jet fuel, natural gas, naphtha, nitrogen, water
- First run success: 95%
- Dig verification: 150+ digs, 1,000+ features, 90%+ in tolerance

Final report contents

- Actionable integrity report including FFP
- Prioritized list of all reported features
- Fully aligned metal loss, caliper, & mapping data
- Complete metal loss evaluation trap-to-trap
- Selectable metal loss specification: High Res, Super High Res, and now Super High Res Plus for pinholes
- LAPA assessments of defect severity
- Pressure sentenced plots (B31.G/NG18/bespoke)
- Histograms of defect distributions
- RUNCOM for re-inspections
- Dent severity assessment (PIDA)
- Repair and re-inspection recommendations
- Dig sheets as required
- Named contact to discuss report findings



Our RUNCOM™ software determines corrosion growth with greater confidence and higher accuracy by utilizing raw source data



MagneScan's integrated caliper sensors deliver high-resolution geometry data for advanced PIDA Strain analysis



A new age of in-line inspection and a new level of service to match

PII Pipeline Solutions, a GE Oil & Gas and Al Shaheen joint venture, invented high resolution Magnetic Flux Leakage technology for pipeline inspection in the 1970s. Now, we've re-invented it – combining our newest and most advanced MagneScan inspection tools with expert post-inspection assessment to deliver accurate and detailed reporting with:

- Seamless transition from raw inspection data to an actionable integrity report
- More advanced assessment of metal loss and mechanical damage
- Highest confidence decision-making
- Fewer false digs
- Less operational disruption from ILI activity

Improved magnetizer design

Our flexible, speed-stable magnetizer design uses brushes to maintain constant contact with the pipe wall. This avoids data degradation in tight bends or in weld-affected areas due to sensor shock. Our aim is 100% inspection from trap to trap.

This optimized design also reduces signal noise and improves data resolution, particularly for small defects, allowing maximum accuracy levels to be maintained at inspection speeds up to 5 m/s. In larger diameter tools, our enhanced variable gas bypass system allows product speeds to be maintained at up to 16 m/s (typically 10 m/s) while controlling MagneScan's speed to < 5 m/s.

4-in-1 sensor technology

Class-leading metal loss detection (POD), identification (POI), and sizing accuracy are achieved through a sensor head that contains three main Hall Effect corrosion sensors oriented in axial, radial and transverse vectors, combined with an ID/OD sensor for internal/external discrimination. Using the 6" tool as an example, the new sensor design includes 216 low-noise Hall Effect sensors

in 72 tracks. This increases to 1,224 sensors in 408 tracks for the 36" system. Readings are taken on all three vectors every 2 mm along the pipe for optimized feature sizing accuracy for depth, length and width.

In addition to outstanding detection and sizing for general/pitting corrosion and axial/circumferential grooves, the system has demonstrated the capability to detect 2 mm diameter pinholes, axial slots as narrow as 1 mm, and circumferential slots including girth weld cracks open by as little as 0.25 mm.

Multi-mission capability

In addition to state-of-the-art metal loss detection capabilities, the MagneScan system includes a fully integrated high-resolution caliper array (1 sensor/circumferential inch) to detect and profile the smallest dents for accurate assessment of severity (PIDA) and FEA analysis. There is also the option of incorporating an integrated inertial measurement unit (IMU) for 3D centerline mapping and identification of curvature/strain. This combination of technologies makes MagneScan an outstanding tool for advanced integrity assessment and a superior solution for mechanical damage assessment in particular.

Higher overall efficiency

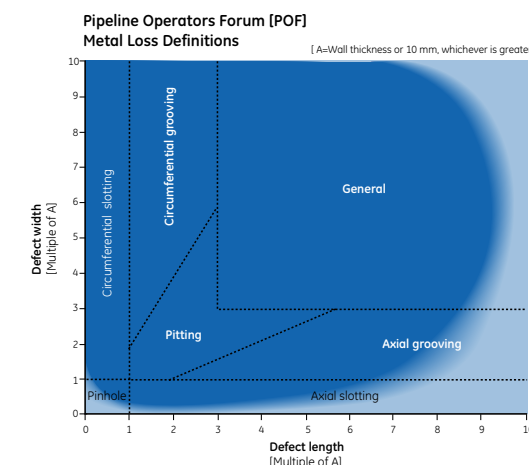
MagneScan provides multi-mission capability in a tool that is short (6" tool is just 1.3 m long), lightweight and easy to manage. It can also navigate 1.5D back-to-back bends and is easy to launch and receive without the need for expensive pipeline modifications. The enhanced variable gas bypass system allows product speeds to be maintained in larger diameter gas pipelines - thereby avoiding loss of production.

The new tools get better data faster, but that is just the beginning. The true value of the MagneScan data rests in what our highly trained and experienced analysts and integrity engineering specialists are able to do with it.

Latest generation software allows our analysts to visualize

all high resolution data sets simultaneously for improved feature characterization, enabling enhanced threat and pipeline integrity assessment.

A flexible reporting package means that this wealth of information is now delivered in a seamless service package significantly reducing the uncertainty about the future health of your pipeline.



Micropack electronics* enable enormous data processing and recording capacity in a component smaller than a cola can



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