Managing corrosion and metal loss
Improving your asset’s safety, integrity, and profitability

The safety, integrity, and operating efficiency of your assets are at the core of what we do. Our unique portfolio of services helps you confidently manage the lifecycle of your pipeline—decreasing downtime and ensuring line startup, support day-to-day reliability, and enabling controlled decommissioning.

Corrosion and material loss are the most common threats to pipeline integrity, regulatory compliance, and security of supply. To minimize these risks—and the associated costs—for over 50 years, we’ve combined powerful engineering capabilities and experience with a strong service footprint to keep pace with the most complex challenges. We partner with you to deliver peace of mind, and expect the same level of excellence from our tools.

When you choose us, you get both: trade-off analysis and analytics, improved asset integrity, and higher profitability.

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Technology spotlight

**Heavily corroded and difficult-to-access pipelines**

VECTRA GEMINI HD, UltraScan™ WMP, and MagneScan™ SHRP are our highest-specification in-line inspection tools. They deliver the best possible information to address your most complex challenges—enabling more reliable decision-making, ultra-high confidence, and significantly fewer digs. VECTRA HD has twice as many sensors as other MFL tools. The result is a more accurate picture than ever before—one that enables early detection and pinpoint accuracy of even the smallest instance of metal loss and complex corrosion. MagneScan SHRP has 4-in-1 sensor technology that makes it possible to identify linkages between individual pits/pinholes and the formation of NAEC as well as circumferential slotting and grooving. UltraScan WMP has more than doubled the number of sensors, which enables detection of defects as small as 5mm in diameter. These three tools deliver extremely high accuracy for depth, length, and width—making them particularly well suited to lines with extensive complex corrosion, high failure consequences, or the likely presence of axial defects or pinholes. The end result is the high confidence needed to only dig and repair what is absolutely necessary—the savings here significantly outweigh the incremental cost of the higher-specification inspection.

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**Pilferage and illegal tapping**

When two illegal taps were discovered in a European refined-product pipeline (along with a tank holding 30,000 liters of stolen product), we quickly mobilized a MagneScan tool to assess the unknown risks. We compared the results to another MFL inspection we completed several years earlier. Within a week, we produced a highly practical Change Report that gave precise location details about new anomalies. We identified nine illegal taps along nearly 200 km of pipeline. Six months later, we ran the process again and found several new illegal taps. Not only has this helped the customer minimize its losses, but it’s raised industry awareness and vigilance around this critical financial and safety issue. We now offer the Change Report with our MagneScan SHRP and Vectra Gemini HD inspection services.

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**Pinhole corrosion**

Very small pinholes can cause major problems—leaks. Whether caused by external microbe-induced corrosion or internal pitting, pinholes are always extremely difficult to detect. Our highest-definition tools have the capability of detecting pinhole-sized features, and seeing the most minute areas of metal loss. VECTRA HD, for example, has industry-leading sensor resolution, and yields multiple data sets in a single run—resulting in a sharper view that more accurately locates, identifies, and sizes complex anomalies such as pinholes. On top of inspection tool capabilities, we’re constantly improving our algorithms and models so our analysts can more accurately quantify these difficult features. All in all, your advantages are reduced maintenance costs and less lost revenue, in exchange for increased uptime, fewer digs, and improved safety.

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Offshore heavy-wall pipelines

Offshore pipeline inspections can be much more complicated than onshore inspections, as multiple pipes are often clustered together on the platform and subsea. Their close proximity and adjacent pipe walls can confuse some inspection tools. But that’s not a problem for our Magnescan SHRP and UltraScan™ WMP technologies. For example, Magnescan identified a critical feature of around 80% wall thickness that was extremely difficult to analyze and verify because of its location at a transition between spools of different wall thicknesses, and directly behind the caisson wall. This resulted in lower than expected magnetic field levels for the known wall thickness. To be certain, we worked with the client to design highly specialized and rigorous pull-through tests to verify that the defect was indeed below the critical 85% wall thickness that would require shutdown. The tests confirmed the tool’s accuracy, and the client was able to keep operating the pipeline until a replacement line was constructed with substantial cost savings.

Baseline and routine inspection

Whether an operator is looking for reliable baseline surveys or routine inspections, our Magnescan HR & SHR and CPIG fleets continue to be the go-to solutions for most customers around the world. Both fleets provide accurate and reliable corrosion inspection, which enables the integrity management programs of most pipeline operators. Robust designs and extensive track records result in industry-leading field success rates, and they also have the capability to conduct inspections in challenging environments. Geometry and pipeline mapping can be added to a metal-loss inspection to simplify operations. Furthermore, the latest-generation Magnescan tools provide additional options to increase detection and sizing specifications, which are particularly valuable for pipelines with higher incidence or complexity of corrosion.

Difficult to inspect

CPIG is ideal for pipelines with low pressure, dual diameters, or otherwise complex geometries—running effectively in many pipelines previously considered unpiggable. Available for diameters of 4 in. to 42 in., CPIG can navigate multiple 1.5D back-to-back bends, and bore reductions up to 25%. In many cases, it eliminates the need for modifications to the pipeline, launcher, or receiver. As well as providing high levels of detection and accuracy, the tool greatly streamlines logistics and costs by combining metal-loss, caliper, and inertial data in one run, ideal for dual diameters across the fleet range.
CPIG

For complex or unpiggable geometries

MagneScan™ HR

High-resolution MFL inspection

New MagneScan™ SHR

Next-generation high-resolution MFL

VECTRA

High-accuracy MFL inspection

VECTRA HD

Superior accuracy to optimize dig programs

New MagneScan™ SHR & VECTRA GEMINI

High accuracy MFL inspection with caliper

New MagneScan™ SHR & VECTRA GEMINI HD

Superior accuracy to optimize dig programs

TranScan™ TFI

Detect axial flaws with confidence

UltraScan™ WM

High accuracy, direct wall-thickness measurement

UltraScan™ WMP

Higher resolution, higher accuracy direct wall measurement

Complete project management and execution

Our precommissioning and maintenance (P&M), and in-line inspection (ILI) teams regularly join forces to provide a single point of responsibility for complex projects.

One example of a successful combined effort was for a German operator with 22-day shutdown planned to inspect two oxygen lines. ILI in a water batch would be the easiest option, but with a high cost. We instead proposed a nitrogen batch, which was more complex but faster and less expensive. Bringing extensive nitrogen experience to the table, we worked closely with the customer and three suppliers to manage everything from pre-engineering to ILI and N₂ execution, infield troubleshooting, and fast-track reporting. The team worked like a well-oiled machine, and the inspection was a huge success with high accuracy from our MagneScan SHRP tool.

Girth weld cracking

Cracks in girth and spiral welds have been causing operators concerns for a number of years; but finding a reliable inspection solution has been challenging. Advancements in our MagneScan and VECTRA technologies have led to increased confidence levels in detection and sizing of these features with MRI technology. We’ve gathered a large database of actual pipeline defects, alongside manufactured defects, to develop a bespoke analysis process and associated report specifically for girth and spiral welds. This new process is a reliable solution for operators who know they have pipeline construction concerns, and needs to better focus their integrity and maintenance budgets.

Axially oriented seam corrosion

For over 20 years, our TranScan™ inspection fleet has been the industry go-to for detecting seam-weld defects, assial flaws, and third-party damage. TranScan’s transverse field inspection (TFI) technology ensures that assial flaws (cracks and elongated metal loss) present their largest dimension to the magnetic flow, creating a strong signal from flaws that are invisible to other magnetic tools. TranScan tools are very robust, and equally at home in gas or oil pipelines. They can inspect up to 4 m/s and have a high tolerance to dirt and wax. They have even been used to detect flaws in weld seams as narrow as 0.1 mm. TranScan has become the tool of choice among operators and regulators for the detection of hook cracks and lack-of-fusion in pre-1970 ERW gas pipe. Its sensitivity to dents, associated cracking, and metal loss also makes it ideal for the detection and classification of third-party damage.

Corrosion management and response planning

It’s industry standard to compare data from different inspections to determine corrosion growth rate, but the application of the resulting information is not well understood. By contrast, our RunCom™ product provides a range of corrosion-growth and integrity-assessment services that support response-planning decisions. By moving away from fixed corrosion rates to instead use joint-based and cluster rates, we leverage the real power of RunCom’s signal-level data analysis—this significantly increases the precision of growth-rate calculations, and improves decision-making about re-inspection intervals and repair initiatives. With excavation and repair costs typically $100,000, RunCom’s ability to avoid unnecessary digs has very clear value.