

Pigging Industry News

the newsletter of the Pigging Products & Services Association

THE PRESIDENT'S LETTER

By Neil McKnight, T.D. Williamson, UK

Happy New Year to all our members, I hope 2026 brings you good health, happiness and success! Busy times always seem to bookend the year at the PPSA. We have two very different flavoured events closing out 2025 to report on since the last newsletter. Starting with a visit to Rio de Janeiro to run the Introduction to Pigging Course where we were joined by 50 attendees learning the fundamentals of our industry under the warm tropical sun. This was held again at the CTDUT Pipeline Technology Center test loop, further strengthening our partnership with YPP Brazil and the regional pigging community. The next day PPSA attended the Rio Pipeline Conference and visited the exhibition taking the opportunity to meet up with PPSA members there.

Shifting Hemispheres, we hosted the PPSA Seminar at Ardoe House in Scotland. Just as in Rio, the event opened with a learning and development focus and a tutorial on inspecting unpiggable pipelines. We were very pleased to see the return of the PEP talks where five emerging professionals took the opportunity to kick start their careers with some presentation coaching and delivered some engaging, humorous and personal talks.

At the main Seminar, a sold out room of 150 delegates enjoyed ten papers on a range of topics. In a repeat of last year, right on cue, snow began to fall giving a seasonal backdrop to the proceedings. We listened to some complex project case studies and had papers highlighting emerging challenges and opportunities including AI and CCUS conversion. The papers are now on the website at <https://pps-online.com/papers.php>.

The exhibition room was packed out with members showcasing their technologies

and pigging solutions and we concluded with a very well attended ceilidh with some enthusiastic first attempts at traditional Scottish dancing.

We paused to celebrate earlier this year that PPSA turned 35 years old, a major milestone which validates our founders' original vision. It is critical however that we look forward to the future as well as back to the past if we are to ensure the PPSA continues to grow and thrive. It was a priority therefore that we should reach out to our members to understand what your priorities and needs are.

One outcome from that feedback is that for the first time in many years, the annual seminar in 2026 will change location and will be held in Amsterdam. As communicated by our members, it's clear that the energy industry is changing and our own network is more globalised than ever. We will trial a change of venue this year which boasts direct international flights in a region at the forefront of infrastructure development in the energy transition. We hope to see you all there

NEW Members

Full
Royal Poly Products,
Australia

PT Gana Sinergi,
Indonesia

Associate
Vector Inspection, UK

Individual
Ugochukwu Onuohag,
Nigeria

and thank you again for making the PPSA a cornerstone of the pipeline technology sector.

It has been a great honour to serve as President of the PPSA, to be part of the legacy of the organisation and to see it continue to grow and thrive. None of which would be possible of course, without the ongoing stewardship and commitment of Diane Cordell. I will handover to the incoming President Neil Mackay and have no doubt he will drive us forward with the same energy and passion he has demonstrated as Vice President.



Invitation to PPSA's Annual General Meeting

3pm, Tuesday
20th January 2026

Room 346,
3rd floor,
Hilton Americas
Houston, USA



PPSA Pigging Seminar, November 2025

Pigging a challenging pipeline system

Scope

Pigtek Ltd were contracted to carry out a dewatering and swabbing operation on 2 x 500m pipelines that were partly filled with water during construction. The client explained that these pipeline section had been installed by a previous contractor and the details on these sections were lacking technical detail from an as-built perspective. The pipeline features were understood to consist of several 90-degree short radius bends and 2 valves with reduced bore creating a 40mm chamfered bore restriction in the line. The planned approach was to use a variety of coated and non-coated foam pigs with an internal cavity to house a transmitter allowing Pigtek to track the pigs. These pigs would be used to clear any existing water from the line and then foam swabs would be utilised to swab the internal pipe wall. These would all be propelled using compressed air and any existing water would be filtered into a tank.



Reduced bore valve

Dewatering operations (1st visit)

Upon arrival at site an inspection was carried out before dewatering operations commenced and it was visible that the valve reductions in the line looked to be 80-100mm opposed to 40mm, as well as being stepped and not chamfered. It also came to Pigtek attention that several equal unbarred tees were present and that each line had 4 reduced bore valves.

During the first few foam pig runs and it was clear the pipeline was > 90% full of water / mud / sediment. The bore reduction in each valve also led to the pigs becoming compressed to the point that the back plate for the transmitter housing was left deformed allowing compressed air into the cavity and damaging the nose of the pigs leaving them unable to be reused. This resulted in using all the allocated pigs on the first pipeline section.



Foam pig with transmitter cavity



Damaged foam pig

Dewatering & swabbing operations (2nd visit)

Based on the findings from the 1st visit to site a revised plan was developed for the next visit which consisted of using variety of brush foam, coated foam and bare foam pigs all with no transmitter cavities.

Pigtek also planned to introduce fresh water ahead and behind the foam brush pigs to wash the internal pipe wall and to aggressively remove the mud and sediment from the pipe section. Using this method a lot more debris was extracted from the line, this was repeated until the water exiting the receiver was clear.

With the foam pigs having a solid core they were now being received undamaged which allowed Pigtek to reuse them so they could be used multiple times. Following this a series of bare foam pigs were used to swab the line until all free water was removed. This procedure was then repeated on the second line to the client's satisfaction.



Undamaged pig post run (2nd visit)

Lesson learnt

A few lessons were learned from this project:

- Insist on a site visit ahead of operations taking place to evaluate site conditions and pertinent pipeline features, even if the client deems it not necessary. This is particularly important when a client cannot provide sufficient detail on the pipeline system.
- Plan for the worst-case scenario to ensure that the objectives of the pigging operation can be met.

The lessons above are not new, but it always good to reiterate these points to ensure that successful pigging operations are completed.

CDI Introduces PigStick: Everyday Pig tracking made simple and wireless

CDI (Broken Arrow, Oklahoma, USA) is pleased to announce PigStick, a new pig tracking device built for routine pigging operations. PigStick detects 22Hz transmitters from any manufacturer, MFL inspection tools, cleaning pigs, and trip magnets. Built-in GPS provides precise time and position for accurate passage timing. Acoustic analysis measures pig speed, and users can listen to live audio while simultaneously watching magnetic waveforms.

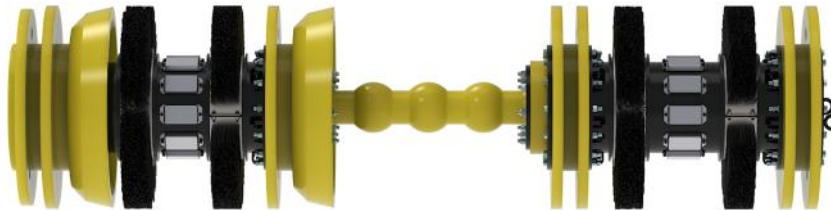
PigStick is completely wireless and software-free. Connect from any smartphone, tablet, or laptop using a web browser over WiFi. No apps, no programs, no cables. Up to four users can connect simultaneously to view live status, review passages, and export data. Over-the-air firmware updates keep devices current automatically.

Deployment is simple: stab it in the ground and go. Recharges via USB-C and runs for days on a single charge. CDI has been designing and manufacturing pig tracking equipment since 1993.



CDI's Pigstick

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Advancing geohazard management through use of direct stress measurement inline inspection

Introduction

Geohazards such as landslides, flooding, erosion, and subsidence pose major threats to pipeline integrity, often introducing loads beyond original design assumptions – especially for aging infrastructure lacking modern welding practices and advanced understanding of geohazards. Climate change has amplified these risks through more frequent extreme weather events, highlighting the need for proactive, data-driven geohazard management. Axial strain, a key loading mechanism from ground movement and operational conditions, can lead to buckling or tensile girth weld failure when strain capacity limits are exceeded. Historically difficult to measure directly, axial strain has relied on indirect methods combining structural analysis and inertial measurement unit (IMU) data. Emerging in-line inspection technologies, such as **ROSEN's** micromagnetic hysteresis technology (MHT), enable direct stress measurement and yield strength determination, advancing geohazard monitoring and integrity management. This has the potential to enhance pipeline safety and support informed integrity decisions.

Causes of Axial Loading in Pipelines

Axial loading in pipelines can arise from construction, operational conditions, and external forces. During installation, loads are typically minimal, but methods like horizontal directional drilling (HDD) can induce complex stress regimes involving tensile, bending, and external pressure loads, sometimes in areas of the pipeline that were not predicted by standard approaches [i & ii]. Conventional excavation may cause bending strains from uneven trenching or horizontal misalignment, while thermal stresses from solar heating or temperature fluctuations can induce further strain. External loads from geohazards, such as landslides, riverbank erosion, seismic activity, subsidence, frost heave, and buoyancy in organic soils, can impose significant axial strain without noticeable deflection detectable by IMU tools (Figure 1).

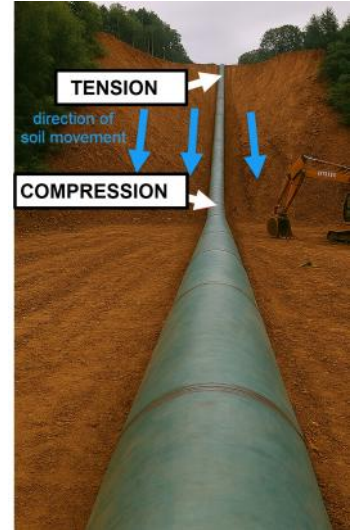



Figure 1: Axial loading from ground movement parallel to the pipeline with minimal bending.

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Anthropogenic activities, including mining subsidence (Figure 2), civil works, and engineered slope failures, can also contribute to axial loading. These mechanisms highlight the complexity of predicting strain and the need for advanced monitoring to manage integrity risks effectively.

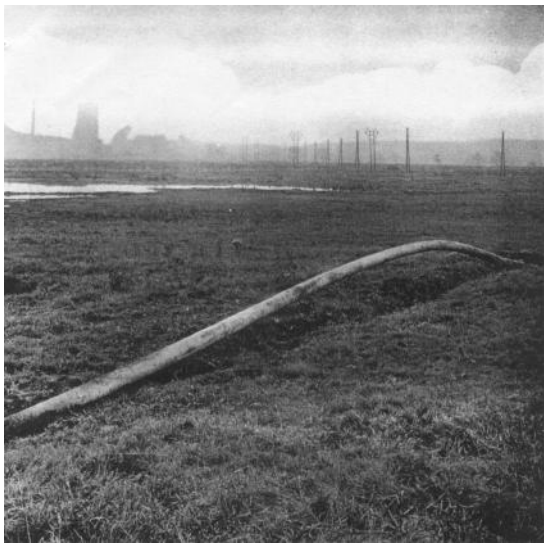


Figure 2: Upheaval buckling from mining subsidence

Geohazard Management Plans

Management of geohazards affecting pipelines has long lacked practical guidance, with most standards acknowledging threats but offering few actionable methods. ISO 20074 [iii] marked a major shift by introducing a lifecycle framework for geohazard identification, risk assessment, and mitigation, requiring operators to maintain geohazard management plans throughout a pipeline's life. Regulatory focus has intensified: CER issued advisories after girth weld failures at strains as low as 0.4% [iv], and API RP 1187 [v] further advances landslide-specific guidance, reflecting a trend toward prescriptive approaches. Despite these developments, direct axial strain measurement remains challenging; IMU data only captures bending strain, leaving axial forces undetected. Current methods include strain gauges for localized measurement and residual stress techniques,

or predictive modeling via finite element analysis (FEA) integrating IMU with ground models based on remote sensing and geotechnical data. While structural analysis is widely used, uncertainties persist, underscoring the need for improved direct axial strain measurement to support robust, data-driven geohazard management.

MHT In-line Inspection – Axial Stress & Strain Determination

Recent ILI advancements include axial stress and strain tools, enabling direct measurement of pipeline stress/strain subjected to external loads. Despite being available for over a decade, industry adoption remains limited compared to traditional calculated fitness-for-service methods.

Micromagnetic hysteresis technology (MHT) is a novel ILI tool designed to measure uniform longitudinal stress in pipelines, including geohazard-induced loads, while also determining material properties (Figure 3).

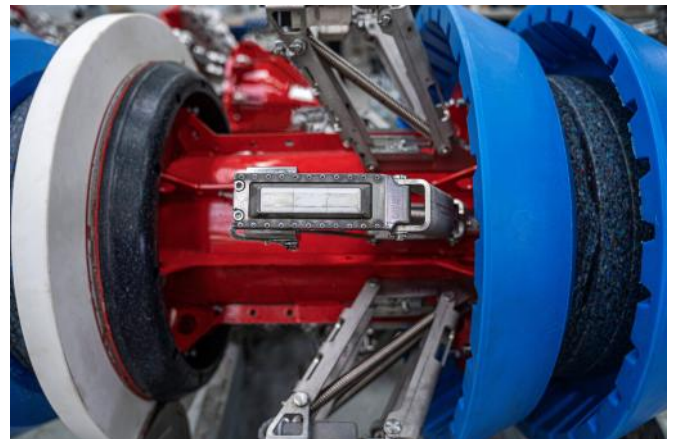


Figure 3 ROSEN's Micromagnetic Hysteresis Technology ILI Tool

MHT uses a magnetic yoke with excitation and receiving coils to generate hysteresis curves (Figure 4), encoding stress history and mechanical properties.

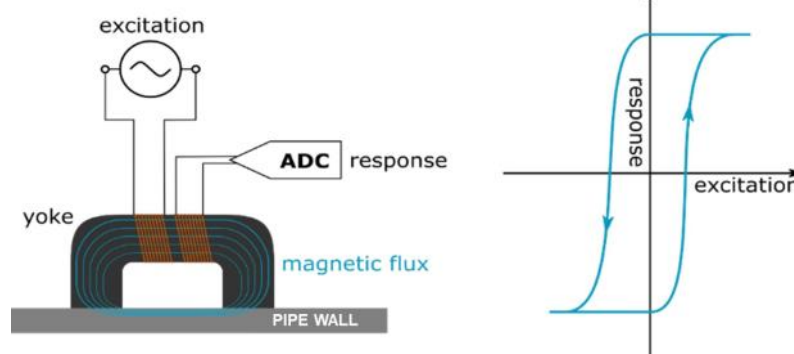


Figure 4 Schematic of micromagnetic sensor (left) and an example hysteresis loop in the specimen, measured as a sensor response

The MHT sensor is sensitive to stress applied to the pipeline material and the signal response is monotonically dependent on that applied stress, demonstrated by the differing hysteresis curve shapes when a zero-stressed specimen is subjected to tensile loading of up to 8 N/mm², shown in Figure 4. Elastic stresses can be quantified via the modulus of elasticity of steel, and it has been identified that the sensor has potential to quantify strains that exceed the elastic limit.

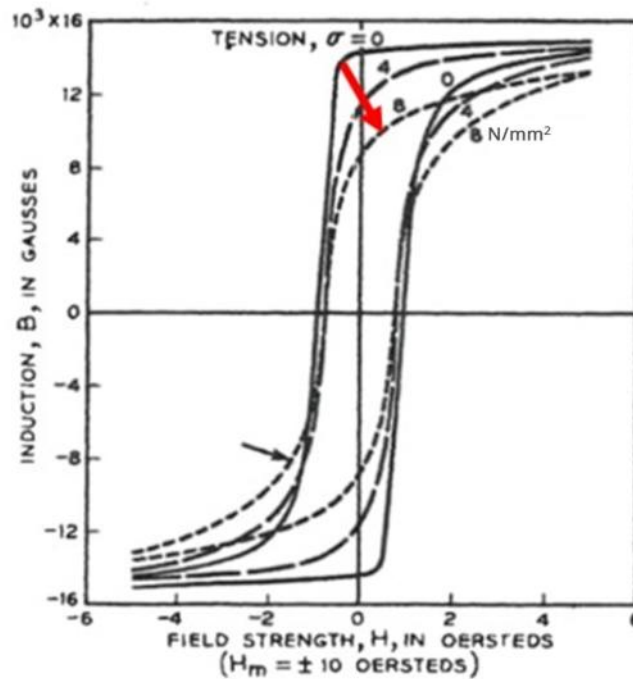


Figure 5 Change in hysteresis curve when tensile load applied to ferromagnetic material

Additionally, the MHT sensor can determine yield strength, necessary for a range of fitness for service assessments and a requirement of CFR §192.607 [vi]. The coercivity of a material – defined as the magnitude of the applied magnetic field required to reduce its magnetization to zero following saturation – is one of the most prominent characteristic values derived from the magnetic hysteresis curve and is commonly used for material characterization. Coercivity is influenced by microstructural features such as grain size, inclusion content, and dislocation density, which also govern mechanical properties like strength and hardness. Consequently, empirical correlations between coercivity and specific material properties are observed.

Combination of MHT with Conventional ILI Technologies

Axial forces can cause, and adversely affect, pipeline anomalies. The presence of an anomaly within regions of longitudinal strain can significantly reduce the compressive strain capacity (CSC) and tensile strain capacity (TSC) of a pipeline, increasing susceptibility to failure. Metal loss lowers both CSC and TSC, while circumferential anomalies reduce TSC and axial anomalies

reduce CSC. Geometric anomalies – such as dents, wrinkles, and ovalities – can initiate local buckling (Figure 6) and often indicate geohazard loading.

Combining MHT with caliper tools enables detection of subtle deformations within high-strain zones, supporting proactive integrity management. Integrated with other ILI technologies (MFL, EMAT, UT), MHT data enhances susceptibility models for girth weld defects and circumferential stress corrosion cracking (CSCC). Coupling IMU bending strain with longitudinal stress improves CSCC risk assessment, aiding early identification and failure prevention.

Integration of MHT into Geohazard Management Programs

Integrating MHT into geohazard management enhances threat identification, evaluation, and monitoring. Unlike IMU, MHT detects axial loads that may occur without significant displacement or below typical bending strain thresholds, enabling earlier identification of geohazard threats. For threat evaluation, MHT provides direct stress measurements, eliminating reliance on predictive modeling and reducing uncertainty in integrity



Figure 6 Buckling caused by ground movement aligned along pipe axis

assessments. This empirical data establishes accurate baselines for forecasting future loading and informs mitigation strategies. For monitoring, MHT complements existing methods such as strain gauges and IMU by offering continuous, high-resolution stress data, improving characterization of load accumulation over time. Incorporating MHT into geohazard programs aligns with ISO 20074 and API RP 1187 guidance, supporting proactive, data-driven integrity management.

Discussion

Axial strain from geohazards, construction, and operational loads presents complex integrity challenges, amplified by climate-driven extreme events. Conventional methods like IMU and strain gauges provide partial insights but fail to capture total longitudinal strain, leaving uncertainty in fitness for service evaluations. ROSEN's MHT addresses this gap by directly measuring axial and bending components, and determining yield strength, meeting regulatory requirements and improving assessment accuracy. Combined with conventional ILI tools, MHT enhances threat identification, evaluation, and monitoring, enabling proactive,

data-driven geohazard management and advancing the industry toward predictive integrity strategies.

References

- i. PRCI. Installation of pipelines by horizontal directional drilling, an engineering design guide. CNST-1-3. Catalog no. PR-277-144507-E01. September 23, 2015.
- ii. Faghil, A., et al. Stress analysis of steep pipe installation in horizontal directional drilling based on strain monitoring. *Tunnelling and Underground Space Technology* (105673), Volume 147, May 2024.
- iii. ISO 20074. Petroleum and natural gas industry - Pipeline transportation systems – Geological hazard risk management for onshore pipelines. Geneva: International Organisation for Standardisation. 2019.
- iv. Canada Energy Regulator. Safety Advisory SA2020-01 – Girth Weld Area Strain-Induced Failures: Pipeline Design, Construction, and Operation Considerations. 12 February 2020.
- v. API RP 1187. Pipeline Integrity Management of Landslide Hazards. American Petroleum Institute (API) Recommended Practice, First Edition, Washington, DC, 2024.



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PROTECT PEOPLE AND PLANET

Pigging Powerhouse: Why Waterous CM/CMU pumps dominate the cleaning grind

By Stephen Washington Waterous International Sales Manager

A Critical Tool for Industrial Cleaning Contractors

For professional pigging and decoking service companies, equipment reliability is not just a preference—it's the core differentiator between a profitable contract and a costly failure. When it comes to the high-stakes, abrasive world of pipeline cleaning, the **Waterous CM/CMU series pump** stands out as the industry standard for delivering the hydraulic force required to run cleaning pigs. Its "cleaning qualities" are defined not by scrubbing, but by unmatched endurance and operational resilience under the worst possible conditions.

The Contractor's Edge: Mitigating Abrasive Wear

Pigging, especially decoking in refineries, involves injecting water at pressures up to 600 PSI to propel a pig that shears off rock-hard coke and other mineral scale. This dirty, abrasive slurry is then passed directly through the pump. Most centrifugal pumps would quickly fail; the CM/CMU is engineered for it.

Flame-Plated Impellers:

Contractor benefit: Superior wear resistance against hard, abrasive coke particles and debris in the water supply. Impact on Job efficiency: Maximizes run time: Prevents rapid loss of head pressure due to impeller erosion.

Two-Piece, Horizontally-Split Casing:

Contractor benefit: Allows for quick, in-field access to inspect and service internal components without removing the pump's main piping or mounting. Impact on job efficiency: Minimizes downtime: Cuts hours, or even days, off maintenance schedules between demanding cleaning runs.

Ball-Type Transfer Valve

Contractor benefit: Patented design allows small particulates (like sand/fines) to be flushed away, preventing valve jamming. Impact on Job efficiency: Ensures reliability: Guarantees smooth switching between volume and pressure modes without operational hiccups.

The Bottom Line: Performance and Longevity

For cleaning companies, the pump's specifications translate directly into competitive advantage:

1. **Guaranteed Pressure Head:** The CM/CMU is the only centrifugal pump in the industry specifically recognized and marketed for decoking/descaling applications. Its design ensures that the required 600

PSI (41 bar) max pressure is maintained, even when running the pump for extended periods through abrasive media, which is critical for pushing pigs through heavily fouled lines.

2. **Versatility in Service:** Derived from its origin as a two-stage fire pump, the CM/CMU offers the ability to shift between pressure and volume modes (series/parallel). This is invaluable for pigging companies that may need to initially use high volume to fill a line or flush lighter debris, then switch to high pressure to launch and propel a dense, heavy-duty cleaning pig.

Simplified maintenance: Cleaning jobs are often remote and subject to tight turnaround windows. The separable impeller shaft and horizontally-split body streamline field repair, reducing labour costs and getting the rig back on the road faster.

In the demanding arena of pipeline cleaning, the Waterous CM/CMU is not merely a component; it is a strategic asset. It provides the cleaning contractor with the hydraulic muscle and the maintenance-friendly design necessary to tackle the industry's toughest, most abrasive jobs with confidence and minimal risk of unplanned downtime.



Waterous ball type transfer valve



Waterous easy maintenance and 2 piece design



Waterous flame plated impeller

IP Pipeline Technology masters non-standard pipeline inspection with custom approach

By: Rita Gu

On September 19, 2025, **IP Pipeline Technology** (hereinafter referred to as "IP") announced that the in-line inspection project for crude oil transmission pipelines in Daqing Oilfield, which kicked off on September 12, had successfully completed all inspection tasks in accordance with the preset technical standards after 8 days of standardized operations. Both the integrity of inspection data and the accuracy of defect identification have met the project requirements.

This inspection covered two crude oil transmission pipelines in Daqing Oilfield, with diameters of 529mm and 630mm, and pipeline lengths of 28 km and 30 km respectively. These two pipelines have been in long-term service: the 529mm pipeline was commissioned in 1971 and has been in continuous operation for 54 years; the 630mm pipeline was put into use in 1991, with a service life of 34 years. Prolonged transportation of crude oil and the impact of natural environment have increased potential risks such as pipeline geometric deformation and corrosion defects. Conducting a comprehensive in-line inspection is a necessary prerequisite for evaluating pipeline structural integrity and formulating maintenance strategies.

During the project execution, the IP team faced two core technical challenges. First was the problem of inspection tool adaptability. Both 529mm and 630mm are non-standard pipeline diameters, meaning the company's existing inspection tool could not be directly put into use. Second was the structural hidden danger of the pig receiver. The tee structure of this part lacks standard retaining strips. The client told IP that during their cleaning pigging operations, the cleaning pigs were frequently sucked into the tee, resulting in damage. If the in-line inspection tool encounters the same problem, it will lead to tool damage and loss of inspection data, directly affecting the project schedule and data validity.

To address the challenge of non-standard pipeline diameters, the IP technical team carried out targeted tool modification work. By analyzing pipeline inner diameter parameters, medium flow rate and operating pressure, the technical personnel redesigned and calibrated the mechanical support structures and sensor probe spacing of the caliper and MFL. We also completed pull through test to verify the operational stability and inspection accuracy of the modified

equipment in the same situation pipelines, ensuring that the modified tool fully meets the inspection requirements.



Modified 529 Caliper



Modified 630 Caliper



Modified 529 MFL



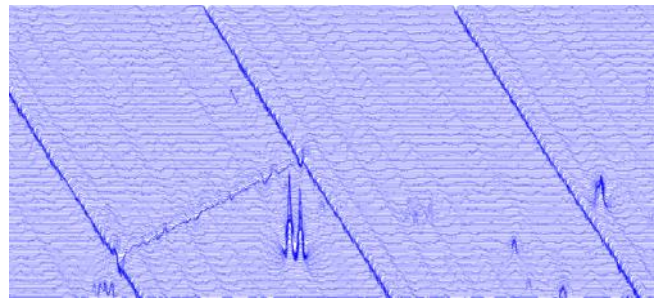
Modified 630 MFL

To address the structural risks associated with the tee of the pig receiver, the IP team adopted a dual-protection technical solution. At the hardware level, customized dedicated pig trap cage were fabricated based on the dimensions of the pig receiver and its tee, and installed at key internal positions of the pig receiver to form a physical barrier, preventing the detectors from being drawn into the tee during the pig receiving. At the detector operation level, leveraging the stable flow rate of crude oil transportation, the team accurately calculated the detector's running speed to predict the exact time point of its arrival at the pig receiver in real time. When the detectors were about to reach the pig receiver, the team promptly notified the client to reduce pipeline flow rate and pressure, and shut down the pig-receiving process the instant the equipment entered the pig receiver, thus eliminating the risk of detector damage caused by prolonged absorption.

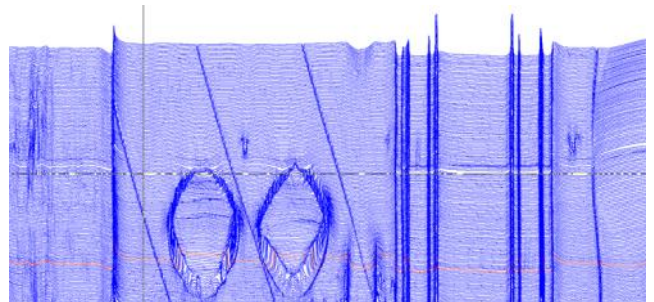


Pig trap cage

Under this dual-protection mechanism, the IP team successfully completed the in-line inspection operations using both the caliper and the MFL. Upon completion of the inspection, the technical personnel immediately conducted a comprehensive functional and mechanical check of all detectors, confirming that all detectors were intact and undamaged. Subsequently, the collected inspection data underwent meticulous verification. The results indicated that the data integrity rate reached 100%, with clear and accurate defect identification. This has provided high-quality data support for pipeline corrosion level assessment, structural integrity analysis, and the formulation of subsequent maintenance plans.



Clear metal loss and spiral weld



Clear tee, spiral weld, flange and valve

IP Pipeline Technology has been diligently researching and refining in-line inspection technologies, overcoming various technical challenges in in-line inspection, and accumulating extensive experience in in-line inspection projects. Looking ahead, IP will continue to focus on the R&D and application of in-line inspection technologies for oil and gas pipelines, provide professional and reliable inspection services to global oil and gas pipeline operators, and contribute to the safe and efficient operation of global oil and gas operation networks.

Celeros Flow Technology brings Bandlock™2 manufacturing to the U.S.

Celeros Flow Technology is proud to announce that its industry-leading GD Bandlock™2 Quick Opening Closures are now being manufactured in the United States. This strategic move reinforces the company's commitment to providing local support on a global scale, ensuring customers benefit from proven safe and reliable pressure vessel access solutions, faster delivery, localized expertise, and enhanced service availability.

"Expanding Bandlock™2 manufacturing to the U.S. is great news for oil and gas facilities, pipeline operators, and tank storage farms across the Americas and beyond," said Luis Echevarria, Sales Director - Americas, Celeros Flow Technology. "It means faster delivery, better access to engineering experts, and full lifecycle support—all backed by the same uncompromising safety and reliability that define our brand. We're proud to bring global innovation closer to home."

Uncompromising safety and reliability

GD Bandlock™2 closures are designed to provide secure, quick access to pressure vessels and pipelines without sacrificing operational integrity. Featuring the benchmark unique locking band mechanism originally designed by GD Engineering, these closures cannot be opened if residual pressure remains, protecting personnel and equipment under all operating conditions. Available in a broad range of diameters, from 6" to 100", GD Bandlock™2 closures support "one man one minute" operation without the need for special tools, which greatly reduces operational costs.



Industry-leading GD Bandlock™2 Quick Opening Closures are now being manufactured in the United States.

Customers can also access comprehensive servicing and lifecycle support, including seal refurbishment, replacement, and expert technical guidance. This ensures continued safe operation and extends the longevity of these critical pipeline safety systems.

Global innovation, local expertise

By expanding production and service capabilities in the U.S., Celeros Flow Technology strengthens its ability to meet customer needs wherever they operate—delivering innovative solutions backed by trusted local support. ●

Celeros FT appoints Director of Sales to head up its U.S. GD Bandlock™ Closures operations

Celeros Flow Technology is delighted to announce that Luis Echevarria has been appointed as Director of Sales for its GD Engineering operations in the Americas. Luis takes specific responsibility for growing the market for GD Bandlock™2 Quick Opening Closures in the territory and expanding the network of channel partners who will provide full lifecycle support to customers of GD Engineering's pipeline access solutions.

The strategic appointment follows investment in a dedicated U.S. manufacturing base for closures at Celeros Flow Technology's existing site in Houston, Texas. It reflects the huge growth opportunity for GD Bandlock™ closures in the Americas, leveraging their original British design and globally recognized reputation for quality and reliability. Key applications for Bandlock™2 closures include industrial filtration systems as well as midstream pig launchers and receivers in oil and gas operations.

Luis brings more than a decade of experience to his new role as Director of Sales (Americas). He graduated with a Bachelor's in Business Administration and Marketing in 2011, and has since worked in sales positions of increasing responsibility with pipeline equipment companies including T. D. Williamson, Pipeline Equipment Inc., CIRCOR, and Inline Services. Commenting on his appointment, Luis said: "GD Engineering and Bandlock™ are already world-recognized brands. My vision is to make Bandlock™2 the go-to closure solution across the Americas by combining world-class engineering with local responsiveness. We're committed to delivering faster lead times, U.S.-manufactured quality products, and a robust aftermarket network that keeps our customers' operations running smoothly." ●

Inline Inspection using a tethered UTWM Crawler in an 8-inch flowline— Pipecare Group

Introduction: Inline Inspection Using a Tethered UTWM Crawler in an 8-Inch Flowline

Inline inspection (ILI) using a tethered Ultrasonic Thickness Wall Thickness (UTWM) crawler is a highly specialized process that requires comprehensive planning before tool deployment.

The success of the inspection begins with collecting maximum information about the pipeline's design parameters. Key details such as pipeline length, wall thickness, minimum bend radius, entry and exit locations, and elevation profile directly influence tool configuration and operational strategy.

Understanding the product to be used during inspection, the client's expectations, and the scope of work is equally essential in defining inspection feasibility and performance criteria.

Crawler Design and Configuration,

In parallel, the crawler tool must be carefully designed to meet the operational demands of the specific pipeline.

This includes a clear understanding of the modules to be integrated—sensor carriers, electronics housings, drive units, configuration, and tracking components. Each component's weight, dimensions, and functionality contribute to calculating the required pulling and dragging forces. Proper sizing of the crawler motor ensures the tool can navigate bends, overcome frictional forces, and maintain consistent movement to capture high-quality ultrasonic data.

Case Study: UTWM Crawler Run in an 8-Inch, 200-Meter Flowline

A crawler-based UTWM inspection was conducted in a 200-meter-long, 8-inch flowline with moderate elevation changes.

Prior to the run, the line was filled with Liquid to allow ultrasonic coupling; however, slight variations in elevation resulted in persistent air pockets remaining inside the pipeline.

It was noticed that the presence of trapped air can disturb the ultrasonic transmission, which can lead to echo loss and, consequently, poor or unacceptable data quality.

During the inspection, extended zones exhibited echo loss due to these air pockets, demonstrating that even minor

elevation differences can affect ultrasonic performance. Addressing this challenge required both design improvements and operational adjustments.

Crawler design for Improved Air Displacement

The crawler was modified to enhance its ability to push and displace air ahead of the tool.

Tool Performance Demonstration in a Test Pipe

Prior to the actual run, the tool was tested in a controlled pipe setup to validate the new design.

This confirmed that the updated configuration could effectively move trapped air pockets during forward movement.

BI-DI Tool Run Before UTWM Inspection

A bi-directional swabbing tool run was conducted ahead of the UTWM crawler.

This preparatory run helped sweep out remaining air pockets and stabilized internal fluid conditions, significantly improving the UT coupling environment.

Conclusion

There is no universal solution

Every pipeline is unique and requires a tailored inspection strategy. The more detailed the information collected regarding the pipeline's design, geometry, and operating conditions, the higher the likelihood of achieving a successful ILI run.

Thorough pre-engineering, proper crawler configuration, and proactive mitigation of fluid-related risks—such as air pockets—are essential to ensuring accurate, reliable, and high-quality ultrasonic data.



Pipecare Group Inline inspection using a tethered UTWM Crawler

STATS Group complete world-first high pressure hydrogen pipeline isolation

Pipeline technology specialist, **STATS Group (STATS)**, has played a leading role in SGN's LTS Futures world-first project where a live 18" high pressure hydrogen pipeline was safely isolated.

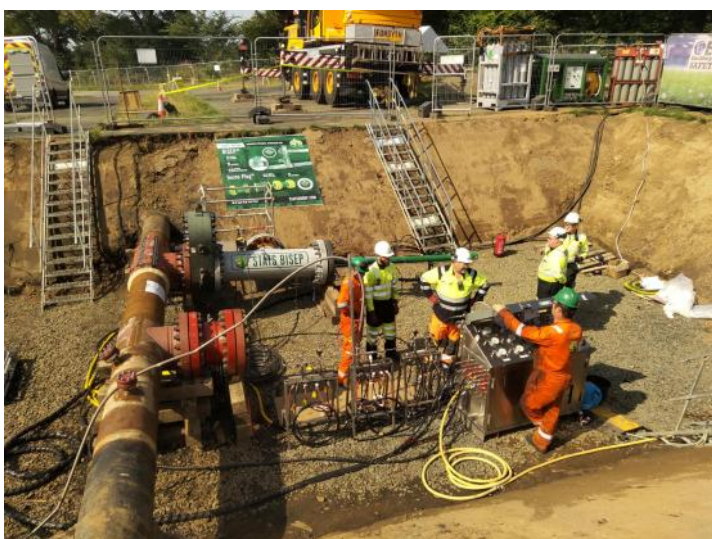
STATS patented BISEP® tool - which is widely deployed on global oil and gas assets - was successfully deployed and has been proven as a leak-tight line stopping technology which is safe to use on high pressure hydrogen pipelines.

Meeting UK Net Zero targets will be one of the toughest modern-day challenges. The SGN LTS Futures project investigated the potential of repurposing the Local Transmission System (LTS) from natural gas to hydrogen to drive forward this target.

The success of the trial is a significant development in the drive to meet net-zero emission targets and could lead to the repurposing of SGN's 11,600km UK gas network from transporting hydrocarbons to hydrogen.

The project was part of SGN's successful LTS Futures trial carried out on a representative 30km stretch of pipeline which runs from Grangemouth to Granton in Edinburgh.

SGN were delighted with the outcome and said the lessons learned on LTS Futures would "create a blueprint" for repurposing the entire LTS to hydrogen and provide a "resilient backbone" for a net zero energy system.



STATS Group BISEP, LTS Futures Hydrogen

The scope of work included the installation of a DNV proprietary Grouted Tee, to provide access for STATS to perform hot tapping, line stopping, swarf (drill cuttings) dispersal, and completion plug installation. As part of the Live Trial, the STATS BISEP line stopping tool, delivered a fail-safe, 100 percent leak-tight double block and bleed isolation.

The BISEP had to be validated to operate safely and leak-tight in high pressure hydrogen, which presented unique operational parameters. Unlike traditional line stopping technology, BISEP guarantees zero-leakage isolation, significantly increasing safety and reducing environmental risks.

STATS worked closely with DNV who provided a Grouted Tee to provide a branch offtake and suitable for use with hydrogen - which provides an alternative to live welding.

Neil Mackay, Senior Business Development Manager said: "Through close collaboration, SGN and STATS have proven the BISEP tool as the world's only double block and bleed isolation technology for high pressure hydrogen pipelines.

"For the first time, hot tapping and leak-tight line stopping operations have been successfully executed on a UK hydrogen pipeline, overcoming challenges of horizontal deployment, swarf dispersal, and hydrogen's unique properties. This required not just process adaptation but also the development of new procedures, tooling, and assurance processes."

The safe isolation and modification of pipelines like the one used in the LTS Futures trial is essential to the entire hydrogen transition. Until now, no proven hot tapping or line stopping method existed which could ensure that repair, maintenance or modifications can take place safely and efficiently. Not least the reduced emissions from the use of BISEP technology whether in use for hydrocarbon gas or hydrogen.

Neil Mackay added: "SGN provided leadership within the LTS Futures programme, while STATS contributed world-class line stopping services, working alongside DNV to remove a fundamental barrier to hydrogen deployment.

"This innovation will support every UK network operator, benefit millions of customers, and accelerate decarbonisation. It is a world-first, delivered through collaboration, innovation and ambition, resulting in a body of evidence and operational knowledge that is transferable across the UK gas networks and beyond."

Earlier, SGN's chief strategy and regulation officer, Tony Green, said: "This landmark project is a major milestone for SGN and the wider energy sector, showing that the UK's gas infrastructure can be repur-

posed for a net zero future. It demonstrates both infrastructure and workforce readiness for hydrogen, with our skilled engineers gaining vital experience through the live trial. Collaboration has been crucial, and working closely with INEOS and other partners has turned a complex concept into a success.”



STATS Group BISEP, LTS Futures Hydrogen

Nitrogen pump manufacturer Prior Power Solutions breaks into South American oil and gas market

Nitrogen pump manufacturer **Prior Power Solutions** has broken into the fast-growing South American oil and gas market. The Great Yarmouth, Norfolk-based company, which was over formed four decades ago, has exported one of its highly acclaimed 180k nitrogen pumps to Rio de Janeiro in Brazil.

The pump is the latest product to be included in Prior Power Solutions’ rental fleet, a division of the business set up in 2024, and Global Sales Manager Adrian Sharman expects it to be the first of many supplied to the strategically important region.

“Brazil has been on our radar for some time,” said Adrian. “It is an area experiencing significant growth with regards to oil and gas. Production is projected to increase by over 30 percent by 2030, and we are seeing a lot of demand for our products – not just nitrogen pumps – in the region.”

Following a £2 million investment over the past two years, Prior Power has been steadily increasing its fleet of nitrogen pumps for medium- and long-term rental. “Our nitrogen pumps have always been highly regarded in the oil and gas industry, but now we are expanding our customer base and international penetration, with enquiries coming in weekly from

new customers and new regions,” Adrian added.

Already this year the company has exported units to Australia, North America, Asia, Africa and Europe.

“Taking an agile approach and offering brand new products on a rental basis has opened up many opportunities for us with customers where capital expenditure is restricted or unavailable,” Adrian explained. “We’re also able to offer rental customers the latest in clean-energy technology, with the Brazil-bound nitrogen pump featuring a Volvo Penta engine which meets the strict Stage V emissions standard.”



Adrian Sharman Prior Power Solutions

High performance composite repair solution for pipe reinforcement, Africa

Overview

In May 2025, a critical 8" crude oil offshore (FPSO) washing line presented multiple defects, including five corroded areas and four leaks. The pipeline operated at a temperature of 60°C with a pressure of 16 bar. Immediate reinforcement using **3X Engineering** high-performance composite solution REINFORCEKiT® 4D (R4D) was essential to avoid operational downtime and environmental risks.

Scope of work

In accordance with ASME PCC-2 standard, the repair procedure specified the application of 4 layers of R4D (Kevlar® tape impregnated with a bi-component epoxy resin) for areas affected by metal loss due to corrosion and 10 layers of R4D for locations presenting through-wall defects.

To ensure optimal adhesion of the composite material, the pipe surface was prepared using Bristle Blaster® machine, achieving a cleanliness level equivalent to St3/SA 2.5 and a surface roughness greater than 60 µm (Rz), verified with a calibrated roughness tester.

Following confirmation of appropriate hygrometric conditions, the surface was degreased with acetone prior to the composite application. The composite reinforcement was completed following below stages:

1/ LEAK SEALING ==> FIXOKiT® (specific device made of steel plate and high-performance filler) was installed over the through-wall defects to seal active leaks. This step is not needed for non-leaking corroded areas.

2/ SURFACE RECONSTRUCTION ==> F3X8 filler was applied to rebuild the original geometry of the pipe and smooth the surface.

3/ RESIN APPLICATION ==> A first layer of 3X high-temperature resin was applied to provide strong adhesion between the substrate and the composite material.

4/ COMPOSITE WRAPPING ==> Four layers of R4D were wrapped around corroded areas and 10 layers in case of leaking defect.

5/ FINALISATION ==> Final resin layer was applied over the repaired areas and ID plate was installed to ensure traceability. For long-term protection, UV-resistant coating was recommended to the client.

Results

REINFORCEKiT® 4D intervention fully restored the mechanical integrity of the pipeline, extending its service life and preventing costly shutdowns. This line was part of a series of eight repairs completed on the FPSO. All reinforcements were completed successfully and all assets are now fully operational. ●

Pipeline Technology Conference 2026 opens registration with finalized technical program

The 21st Pipeline Technology Conference (ptc 2026) will take place 27–30 April 2026 at the Estrel Congress Center, Berlin, bringing together the international pipeline community for four days of technical exchange, innovation, and collaboration. Recognized as “The Global Pipeline Event”, ptc returns to Berlin with a broad program of training courses, panel discussions, technical sessions, operator roundtables, awards, and networking formats.

Following a strong international response to the call for papers, the ptc 2026 technical program is now published after an in-depth quality review by the members of the ptc Advisory Committee, whose guidance is central to keeping the conference content cutting-edge and relevant. The program features 140+ presentations across 42 technical sessions. Key themes for 2026 include advancing pipeline safety through improved design, rigorous standards, and advanced monitoring technologies; strengthening the security and resilience of critical infrastructure; reducing emissions across the value chain; scaling hydrogen transport alongside CO₂ pipelines; and assessing how rising power demand such as from AI data centers will shape energy networks. The program will also address ongoing challenges in the pipeline industry, exploring how lessons, new technologies, and industry collaboration can accelerate progress toward zero incidents and ensure pipelines remain the safest and most efficient way to transport energy.

The event week begins with ptc Training Courses on Monday, 27 April 2026, followed by the ptc Conference and Exhibition from 28–30 April 2026. Registration is now open. The current status of the conference program is available at <https://www.pipeline-conference.com/program>. ●