

# CO<sub>2</sub> gathering network services

## Supporting energy transition

As the globe targets significant reductions in carbon emissions, the energy industry is adapting at an ever-increasing pace. And, as more operators turn to processes such as sequestration and tertiary recovery to meet energy transition goals, concerns around the pipelines transporting CO<sub>2</sub> have increased.

Because CO<sub>2</sub> is heavier than air, as well as colorless and odorless, a leak could go undetected, allowing the CO<sub>2</sub> to spread low along the ground or in confined spaces, displacing oxygen and creating numerous health and safety risks.

Pipeline threats exist everywhere, and they are ever present. Whether it's an external threat like nearby excavation, or an internal threat like the very product the pipeline carries, or coating on the pipeline itself, maintaining pipelines and the ability to predict potential problems with pipeline stability has never been more important than it is now.

### Repurposing decommissioned lines

Operators are now faced with the need to recommission previously decommissioned pipelines, which raises concerns around understanding the condition and worthiness of these dormant lines.

To meet approaching environmental requirement deadlines, Baker Hughes, Process & Pipeline Services (PPS) is prepared to partner with operators

to reduce concerns around the safe operation of those pipelines with our **fitness for service** solutions.

### One source; complete solutions for years to come

Our Carbon Capture Services leverage the MagneScan super high resolution MFL4 tool, along side strain-based integrity assessment, to provide the right solution for your business.

Baker Hughes' MagneScan MFL4 tool sets the standard for reliable metal loss inspection results. Designed to withstand harsh operating conditions, it has proven its versatility in a wide range of applications in every type of pipeline – dry or liquid, overland or subsea.

Super high resolution detection/sizing of smallest defects (pinholes) improves accuracy of sizing, drawing on Baker Hughes' unparalleled inspection experience to bring the highest levels of accuracy to data analysis and interpretation. MagneScan detects:

- internal and external pitting
- general corrosion
- hard spots in the pipe wall
- metal loss associated with dents and under casings
- repair shells
- metal object
- girth weld anomalies

Our magnet brush design results in a higher magnetic field introduced into the pipe wall, and an increased magnetic response from defects. Furthermore, the tri-axial sensors on all

### Features and benefits

- Corrosion management and response planning
- Our highest-definition tools have the capability to detect pinhole-sized features, seeing the most minute areas of metal loss
- Detect and assess girth weld cracking, assisted by our extensive database of actual and known manufactured defects
- Detect bending strain and axial strain following external events to support geohazard management programs and identify new threat locations
- Revalidate pipeline integrity
- Cleaning to prepare for CO<sub>2</sub>
- Inert system prior to commissioning
- Clean new or existing compressors

### Additional services

- Flooding, cleaning, gauging and testing (FCGT)
- Pigging and gauging
- Dewatering and drying
- Pipeline conditioning
- ThreatScan – real time impact detection



of our MFL4 tools:

- Discriminate axial features compared to single axis MFL
- Generate distinguishable signals for pin-holes on a reliable and repeatable basis
- Allow the overlay of data streams to ensure complexity is understood and accounted for in sizing methodology
- Eliminate the need for supplementary Transverse or 45-degree inspection data for metal loss features
- Provide sizing methodologies based on 100,000's of defect morphologies
- Has confirmed specification based on 150,000 plus dig results, of which 50,000 plus LaserScan signals have been correlated to the inspection signals

Baker Hughes' AXISS™ technology measures axial strain in pipelines. It is the solution needed to mitigate axial strains prior to developing into injurious values that may cause pipeline failures. AXISS offers a number of key advantages for axial strain monitoring:

- Enables cost-effective and continuous measurement of axial strain along the entire pipeline's length;
- Measures small changes in strain conditions over the lifetime of the pipeline;
- Provides proactive risk management by detecting critical strain conditions due to areas of known and unknown geohazards or other causes of pipeline axial loading.

Previously, this type of detection required localized strain monitoring at known high-risk sites. AXISS can be run

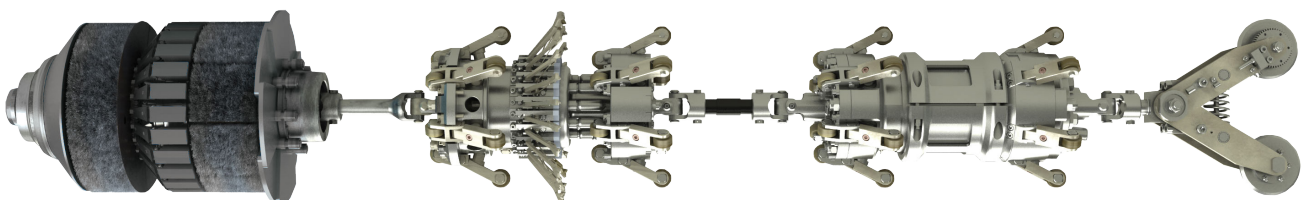
simultaneously with our MagneScan MFL4 tool, enabling cost-effective and continuous measurement of axial strain along the entire length of the pipeline. Together these two technologies deliver the the detailed data and high confidence levels essential for a productive integrity management program.

Using industry leading technology like RunCom™, the PPS suite of run-comparison software, we can analyze data from multiple in-line inspections, performing a direct and quantitative comparison to help operators understand and mitigate threats, providing your decision makers with actionable information.

PPS has a long history of providing accurate and reliable data on pipeline conditions and complete pipeline integrity solutions. That means you have one source providing information on the current condition of a pipeline, reducing risk and minimizing costs by avoiding unnecessary repairs to achieve regulatory compliance.

ILI data (along with other data points) not only gives you a clear picture of current conditions of a pipeline, it can also be used to predict the future condition. This process can take into account the pipeline remaining in its current mode of operation, or changes to its future operation – age, weather conditions, pipeline coating, or the product within.

Contact a PPS team member and let us customize a solution to meet your particular needs.



MagneScan SHR+ (super high resolution) tool