AXISS™: In-line inspection axial strain measurement service

Proactive condition assessment and monitoring to ensure pipeline safety

In-line inspection (ILI) based axial strain measurement is the solution needed to mitigate more severe axial strains before they develop, causing pipeline failure. Proactive, cost-effective axial strain measurement means you can detect small changes in strain conditions, which can be crucial to the life and safety of the pipeline.

Baker Hughes, Process & Pipeline Services' AXISS™ service is the only way to measure axial strain with an ILI tool — providing a complete understanding of the entire pipeline without needing costly intervention.

Maximum insight with minimal disruption

Previously, axial strain could only be estimated using strain gauges or by making cut-outs from the section under investigation. While strain gauges measure axial strain starting from the time of installation on the pipeline, AXISS specifically detects and monitors areas of increased axial strain through the life of the pipeline, including those left during manufacturing.

When combined with the bending strain data provided by an inertial measurement unit (IMU), you can

be confident in the integrity of your pipeline with a more complete picture of the total strain condition.

While dedicated axial strain inspections can be performed, the AXISS measurement system is retrofitted to our suite of Magnetic Flux Leakage (MFL) tools (VECTRA™, VECTRA™ GEMINI and New MagneScan™) for operationally efficient and cost-effective inspections conducted during scheduled corrosion inspection surveys.

### The science of best in class axial strain detection

Axial strain detection and measurement are achieved through an electromagnetic sensor technology that measures the strain in a thin surface layer of the pipe material. Absolute strain is delivered when using a calibration factor which is based on a representative pipeline sample of the inspected section or predicted by a Baker Hughes proprietary analytical calibration model.

Features and benefits

- Delivers absolute axial strain to support fit for service decisions
- Deployed on standard MFL tools to efficiently collect strain data during standard scheduled MFL inspections
- Detect strain following external events to support geohazard management programs and identify new threat locations
- Understand total strain history from construction and monitor condition throughout pipeline service life
- Validate strain levels following strain relief activities
- Provides a more comprehensive view of pipeline strain than standard IMU bending strain surveys

Additional solutions:

- Total longitudinal strain integrity engineering report
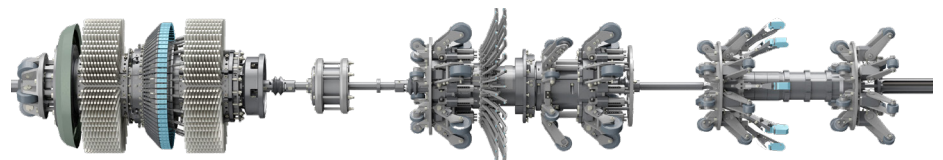
AXISS configurations and tool sizes:

Number of probes	MFL Platform	Tool size range
8	MagneScan™	12" to 36"
	New MagneScan™	
	VECTRA™	12", 16", 20"
	VECTRA™ GEMINI	20", 30", 36"
4	VECTRA™	24" to 42"
	VECTRA™ GEMINI	24" to 42"

AXISS specifications:

Axial strain	MicroStrain	Percent
Axial strain at POD = 90%	200με	0.02%
Standard axial strain accuracy at 80% certainty when samples are provided	±100με	±0.01%
Axial strain accuracy at 80% certainty when using analytical calibration model	± (100με + 15% of reported strain)	± (0.01% + 15% of reported strain)

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