

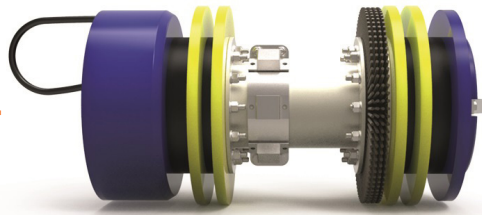


SGS **SMART PIGGING** SOLUTIONS

ADVANCED IN-LINE MONITORING FOR PIPELINES



MAKING SIMPLE SMART



INSPECT WHILE YOU CLEAN

Pipelines are vital for providing a safe and efficient method for conveying high value commodities like oil and gas, but they have vulnerabilities. Corrosion and deposits can reduce flow rates and in the worst case cause direct failures that are expensive to rectify. Large sections of the pipeline also have complex geometries which are situated in difficult to reach environments. It is imperative owners take a proactive approach to ensuring pipeline integrity. Currently, that means two different procedures: firstly cleaning pigs remove deposits and ensure flow rates, then Intelligent In-Line Inspection (ILI) pigs inspect the internal condition of pipelines.

TIME FOR A SMART CHANGE

The high costs and operational disruption caused by traditional inspection techniques means that inspection frequencies are counted in years and not months and subsequently conventional ILI technologies are not suitable for monitoring defect growth on a regular basis. This infrequent inspection strategy leaves the pipeline operator exposed to failures in the long periods between inspections.

The risk to life, damage to the environment, the negative impact to production and the high cost of a pipeline failure means operators are

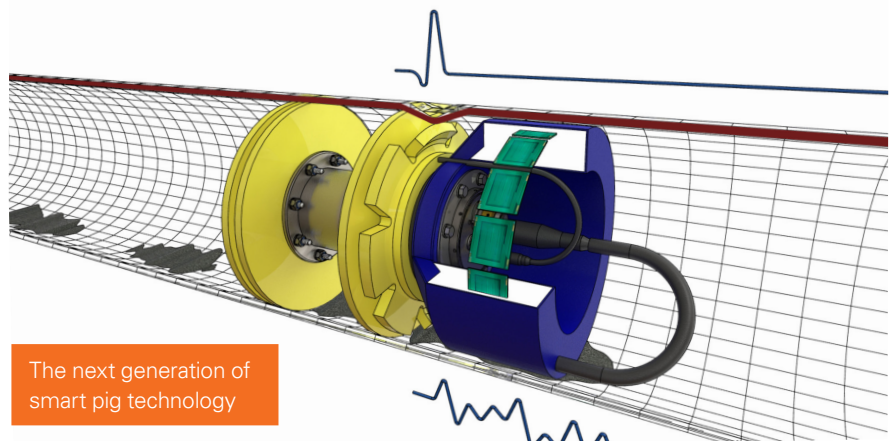
reliant more than ever on ILI pigging as a tool for integrity assessment, even with its drawbacks. The technology gap within the industry has caused pipeline operators to push for a new technology solution that combines the practicality, ease of use and non disruptive deployment of the cleaning pig with some of the advanced inspection capability of a typical intelligent ILI pig.

It is imperative pipeline owners take a proactive approach to ensuring pipeline integrity

INTRODUCING SGS SMART PIGGING SOLUTIONS

SIMPLIFIED PIPELINE INSPECTION USING NEW SENSOR TECHNOLOGY AND BIG DATA ANALYTICS TO ENHANCE INTEGRITY MANAGEMENT

Powered by i2i Pipelines technology, SGS has developed smart pigging solutions – the next generation of smart pig technology for the oil and gas industry. Combining the simple design of cleaning pigs with some of the advanced functionality of ILI pigs, SGS has created a new and innovative smart pigging solution that provides a whole new approach to ILI operations that brings together the best sensor technology and simple operational



The next generation of smart pig technology

design to ensure the long term integrity of a pipeline.

The smart pig incorporates an array of electromagnetic, contactless sensors within a flexible polyurethane or foam body. They are designed to be mobilised and deployed by onsite personnel, freeing pipeline owners from the need to bring specialist technicians onsite.

Unlike traditional ILI technology, these simple but smart pigs can negotiate complex geometry pipelines with ease

and inspecting historically 'unpiggable' pipelines. During operations, the internal sensor arrays will scan the pipeline for internal corrosion and cracking, and will accurately profile pressure, temperature and velocity along the length of the pipeline.

By incorporating some of the functionalities of the ILI pig into the simplicity of the cleaning pig, the smart pig overcomes many of the drawbacks of traditional inspection equipment.



WHY USE SMART PIGGING SOLUTIONS?

Smart pigs are the low risk, low cost but high value solution for optimising pipeline operations while contributing to pipeline integrity.

- Minimise operational disruption by combining cleaning and inspecting in one operation
- Simplify operations – they run like a cleaning pig with little disruption
- Require no prior cleaning
- Provide rapid data analysis and inspection results

- Use commoditised tools that can be stored onsite for frequent reuse
- Utilise non-contact sensors, suitable for low flow pipelines and inspecting through liners
- Significantly reduce the risk of a stuck inspection pig
- Deliver increased functionality with easily replaced sensors
- Can be deployed by local, non-specialist technicians
- Are suitable for all production mediums and complex geometry pipelines

INCORPORATING SGS SMART PIGGING SOLUTIONS INTO YOUR PIPELINE MAINTENANCE PROGRAMME

Smart Pigging Solutions combine the leading-edge pig technology of i2i Pipelines with the global reputation and operational reach of SGS, to create a simplified total pigging package for oil and gas pipelines.

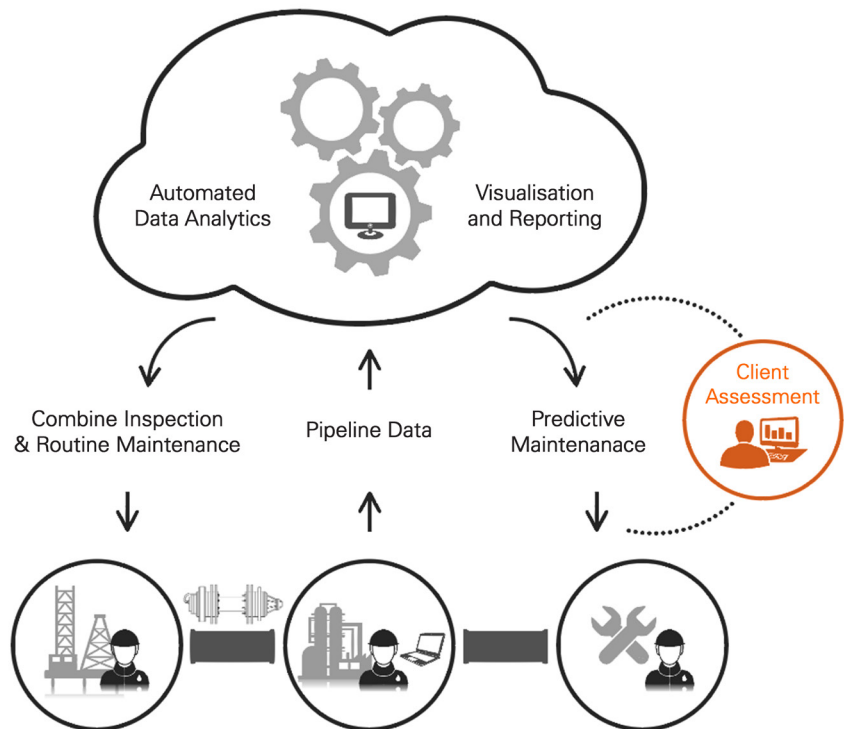
Owners will find Smart Pigging Solutions enable them to:

- Move from inspection to monitoring: data is collected frequently and at low cost, enabling reliable decisions on maintenance planning to be made during standard operations
- Simplify the inspection process: smart tools are simple to manufacture and use, represent a low operational risk, require smaller teams to operate, and ultimately reduce operational costs
- Focus on problem solving: bespoke tools can be tailor-made from standard components to cover specific applications. This reduces delivery times and costs
- Minimise the risk of leaks and failures between traditional ILI pig runs

Smart Pigging Solutions are the low risk, low cost, high application solution for pipeline management around the world.

i2i PIPELINES

Based in Manchester, UK, i2i Pipelines combines smart sensors with simple in-line tools to create low risk, low cost, regular inspection and monitoring tools for the oil and gas industry. Operating all over the world, i2i is using technology to create a smarter, safer, more efficient and connected global pipeline network.



WHY SGS?

SGS is the world's leading inspection, verification, testing and certification company. Recognised as the global benchmark for quality and integrity, we employ over 97,000 people and operate a network of more than 2,600 offices and laboratories around the world. We are constantly looking beyond customers' and society's expectations in order to deliver market leading services wherever they are needed.

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WHEN YOU NEED TO BE SURE

