



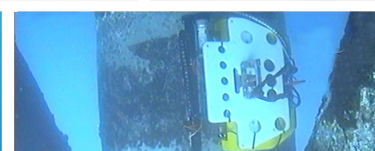
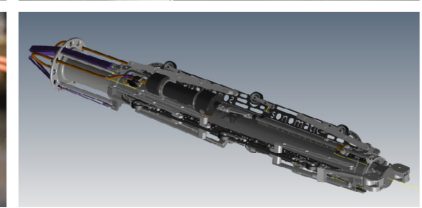
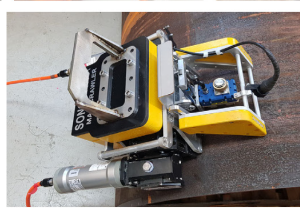
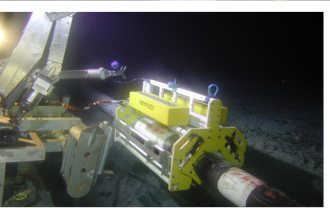
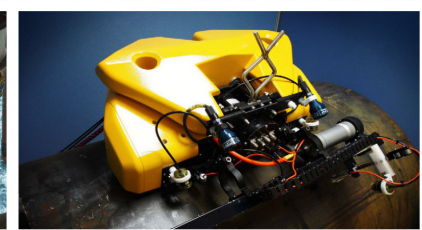
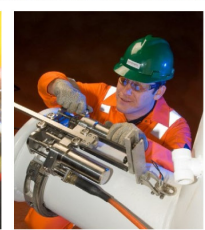
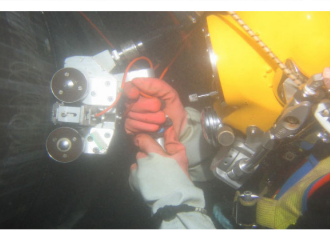
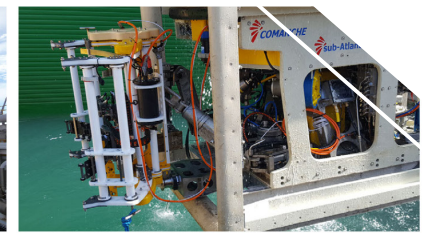
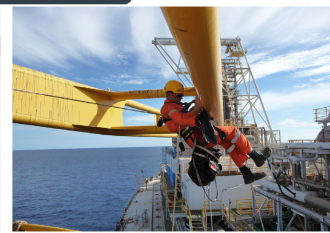
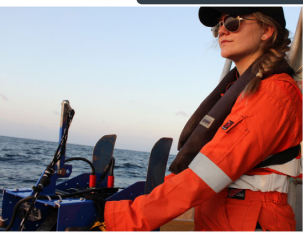
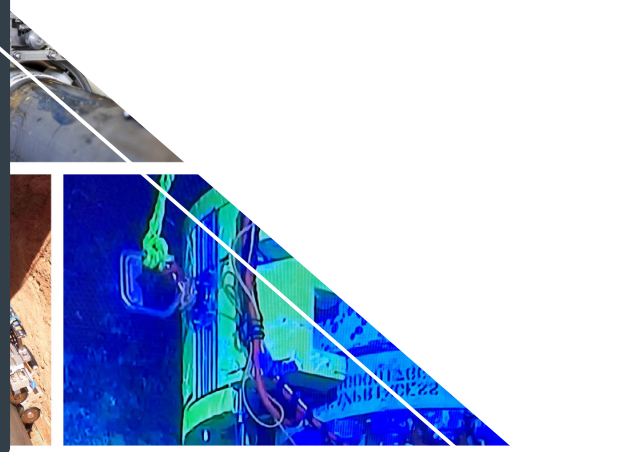
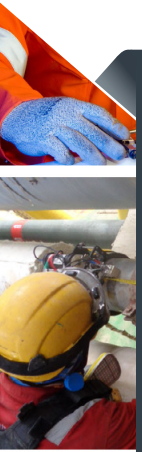
SONOMATIC

DATA SHEET

SMALL DIAMETER PHASED ARRAY

THE PURPOSE

This document is composed to assist our clients and the supply chain with a high-level understanding of the benefits and services associated with Small Diameter Phased Array.



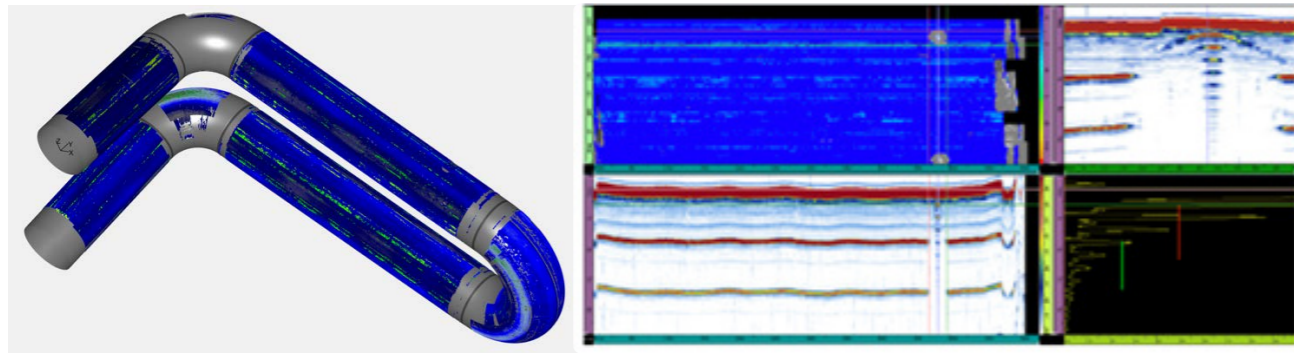
SMALL DIAMETER PHASED ARRAY

With an increasing demand for the inspection of smaller diameter pipework inspection using ultrasonic based solutions, Sonomatic have developed in-house Phased Array solutions for the effective inspection of pipework from 1 inch in diameter and upwards. Utilising a combination of commercially available, and in-house developed flexible 64 element Phased Array technology, Sonomatics in-house R&D and technical support group have developed an inspection package that is capable of delivering effective pipework inspections from 1 inch diameter up to flat, utilising a suite of probes and scanning aids.

MAIN CHALLENGE

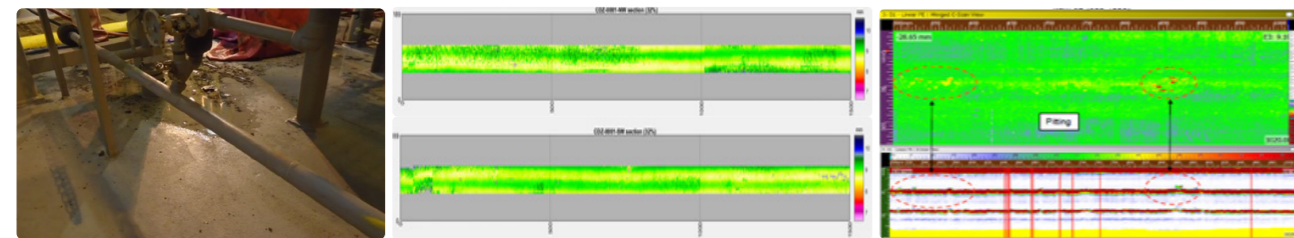
Smaller diameter pipework is typically inspected using radiographic techniques. This not only poses health and safety and SIMOPS implications, but it also interferes with nucleonic sensors located on the asset.

By utilising the flexible phased array technology and using specially developed wedges and scanners, we are able to conform to most diameters of pipe without the restrictions associated with other commercially available systems. This allows unimpeded access adjacent to weld toes, and aids negotiation of most geometries of pipe configuration.



PROJECT EXAMPLE

A two inch diameter pipe associated with a Test Separator required detailed inspection. Phased Array corrosion mapping was conducted in lieu of radiographic testing, which was completed in a fraction of the time it would have taken using computerised radiography techniques. An added benefit is that the safety and operational implications were also negated.



CONCLUSION

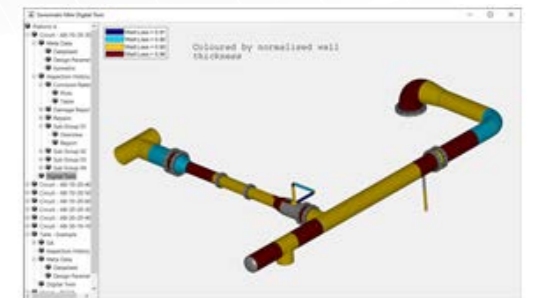
In developing an effective ultrasonic solution for the inspection of smaller diameter pipework, Sonomatic has addressed significant limitations associated with off-the-shelf technology. This supports the provision of a more comprehensive package that supports the delivery of an ultrasonic inspection package capable of covering the majority of in-service pipework requirements.

MINI DIGITAL TWIN AND SONOMATIC MANAGEMENT SOFTWARE (SIMS)

Sonomatic has developed a mini digital twin which is used to host, manage and analyse data. It is designed for ease of access to the raw and processed data to enable users to extract maximum value from the data. SIMS can utilize data collected by off the shelf hardware as well as Sonomatic proprietary data collection units.

Sonomatic can create complex interactive geometry in minutes, and inspection data can be uploaded on this model. The Mini Twin allows for repeat inspection data to be viewed side by side for comparison to understand any change in condition. Areas of interest/corrosion can be exported to interactive 3D PDF's to display the condition inside the pipe in real detail, aiding in presenting and explaining the condition to stakeholders.

- 3D Geometry to visualize the inspection results
- Integrated data analysis platform
- Hosts all data for a component
 - o Thickness and waveform
 - o Statistical analysis
 - o Export to FFS for level 3 assessment
- Visual summary of inspection history on multiple components
- For repeat inspections, previous inspections are available
- Export to report/PDF's



This provides a single source for all inspection data and is an incredibly powerful and powerful tool for all stakeholders.

QA AND HS&E

Sonomatic operate under an integrated QHSE management system and are committed to the highest quality and safety of service provision | ISO 9001: 2015: 00007140 | ISO 14001:2015:00037371 | ISO 45001:2018:00037372 | ISO 17020: 2012: 4276 | Achilles FPAL Verified: 076712 | SEQual 1988 | British Safety Council Member: S0388440 |



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