DATA SHEET

MULTISKIP INSPECTION

SONOMATIC

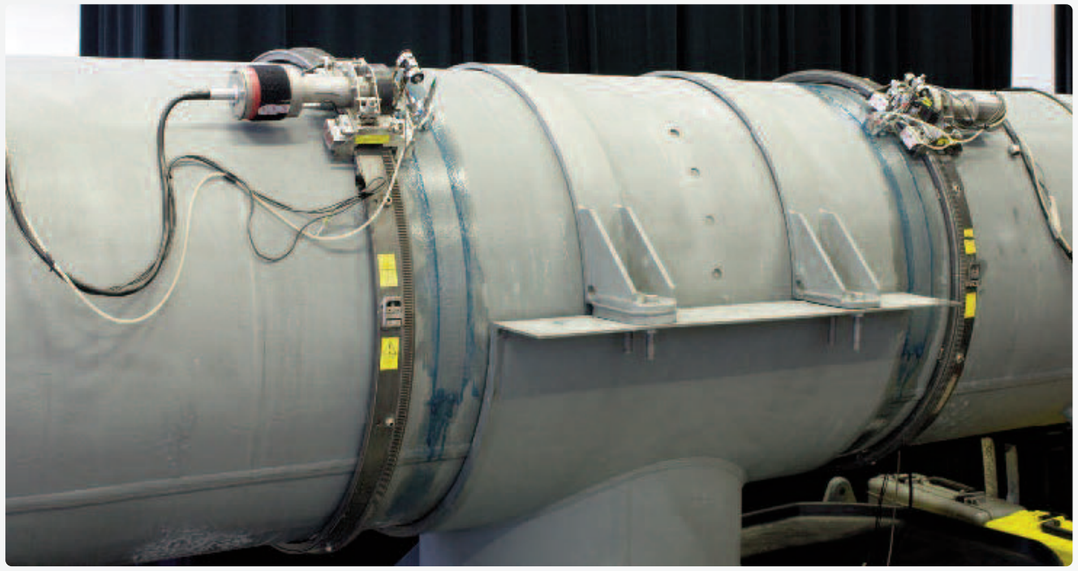
THE PURPOSE

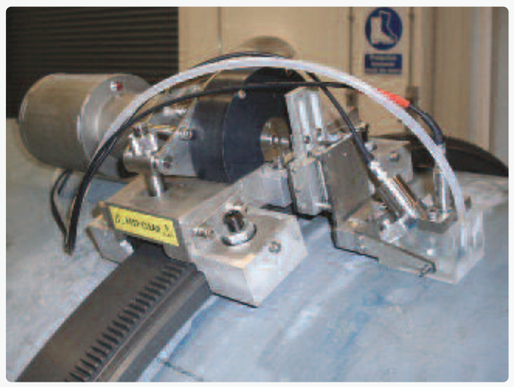
This document is composed to assist our clients and the supply chain with a high-level understanding of the benefits, services and specialist packages associated with our Multiskip Inspection capabilities.

MULTISKIP INSPECTION

There are many situations in which in-service degradation can affect areas that are not readily accessible for direct inspection. Examples include pipe and vessel supports where external corrosion is often a threat. Lifting pressure equipment from supports is costly and potentially hazardous, hence there is a growing need for inspection techniques that provide information on the condition of material in inaccessible areas. The Multiskip technique has been developed to address this need. It provides a high probability of detection for both ID and OD corrosion type damage, such as found under pipe and vessels supports and also allows estimation of the depth of corrosion.

In addition, Multiskip can be used as a rapid screening technique for detection of ID corrosion in both topside and subsea pipelines. Relevant anomalies noted in the rapid screening would usually be followed up in a focused corrosion mapping evaluation of the affected area.



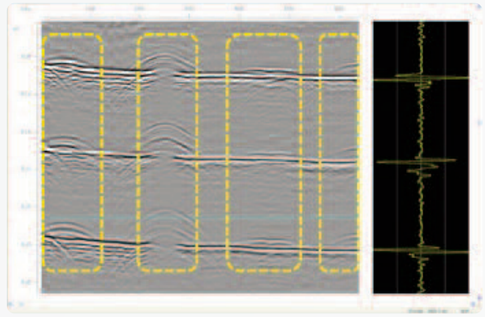


The Multiskip technique uses angled shear waves with two transducers in a pitch-catch mode. The transmitter and receiver can be separated by up to 2 m with full investigation of the material condition between the probes. The data can be collected while scanning at reasonably high speeds, allowing for rapid coverage of large areas.

The transmitting ultrasonic probe injects ultrasound into the material. This sound then 'skips' through the material to be received by the second ultrasonic probe. The arrival time for each of the skips depends on the distance between the ultrasonic probes and the thickness of the material.

Any degradation present along the beam path affects the arrival times for the signals. The characteristics of the data are readily visible in the b-scans generated as the data is collected. Review of the b-scans allows clear identification of the presence of degradation.

The figure below shows the responses over a test pipe containing a number of regions of localised wall loss (these are highlighted in the yellow boxes). The technique is also capable of identifying areas of more general wall loss.



In the case of localised degradation the data is analysed to estimate the depth of flaws. In the case of general degradation the data is analysed to estimate the average remaining wall thickness.

A number of independent trials to assess the Probability of Detection (POD) of the technique have been performed (CRIS, GSP 235 and HOIS). These consistently show a high POD for the technique applied to corrosion related degradation. This makes the technique particularly suited for compliance type inspections where the requirement is to validate that there is no degradation of any concern present.

The technique can be employed with either an axial beam (circumferential scanning) or a circumferential beam (axial scanning). The axial beam inspection requires an automated scanner while circumferential beam inspection can be accomplished with a simple manually deployed scanner.

THIS TECHNIQUE OFFERS THE FOLLOWING:

- Large area, single pass corrosion detection
- Depth sizing capability for corrosion
- Probe separation up to 2 m
- 100% coverage of material between the Probes
- Suitable for steel pipes and plate
- Sensitive to both internal and external surface degradation
- Ability to inspect material thickness between 3mm and 100 mm
- Can be both deployed in both manual and automated inspection set-ups
- Rapid screening inspection of both topside and subsea pipelines

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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