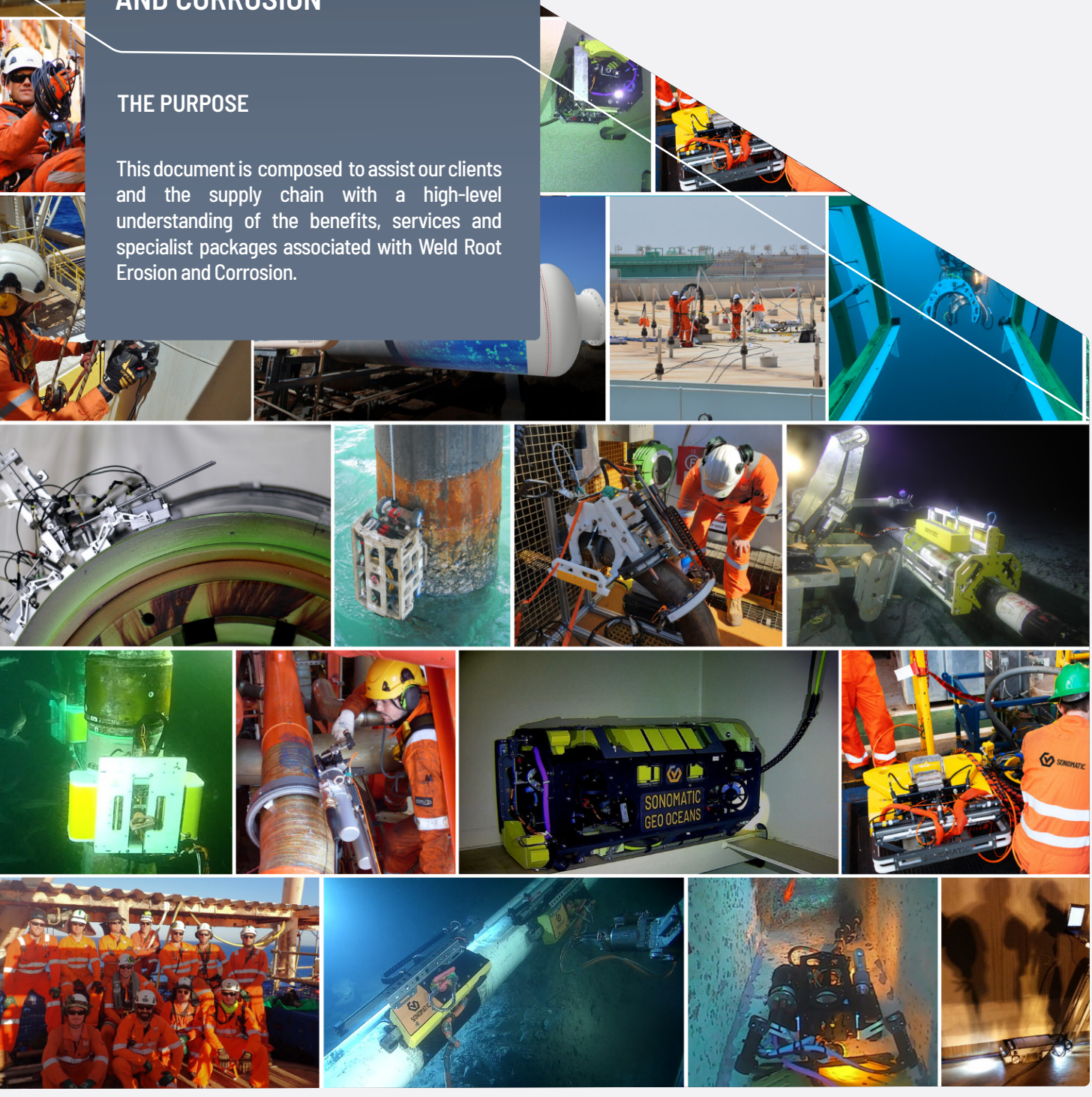
DATA SHEET

AN INTEGRATED APPROACH TO WELD ROOT EROSION AND CORROSION

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 Weld Root Erosion and Corrosion.



WELD ROOT EROSION & CORROSION

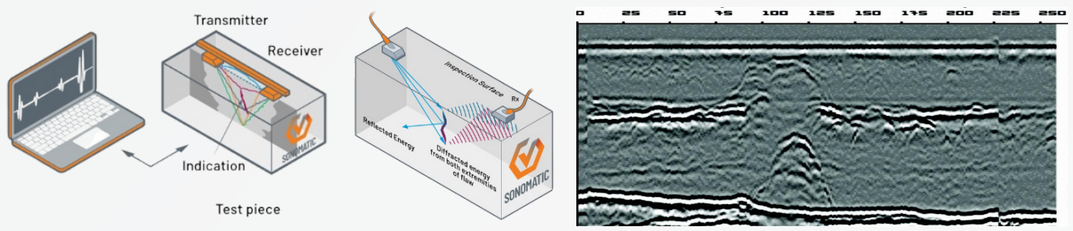
TOFD is an ultrasonic technique originally developed for crack detection. Unlike conventional Pulse Echo, the transmitter receiver in arrangement in TOFD floods the region between the probes with ultrasound. Crack tips are identified by diffraction but it is also very effective for the detection and sizing of Weld Root Erosion or Corrosion (WRE or WRC).

The nature of the reflection of the ultrasound from eroded/corroded areas in the TOFD pitch-catch arrangement makes it ideal for the detection of Weld Root Erosion/Corrosion. This approach has a proven track record as an accurate method for the detection and monitoring of corrosion and erosion damage in the weld and heat affected zones.

As illustrated in Figure 1 the digital images generated can be used for accurate interpretation and visual representation of the data which can be interpreted by the client with minimal training. Conventional UT techniques have been identified as unreliable in depending on manual interpretation of individual a-scans and a single transmit-receive transducer.

Unlike conventional approaches the beam spread of the TOFD probes covers and images both the weld body and heat affected zone.

Standard Set Up **General Example** **Figure 1**



OUR APPROACH TO WRE INSPECTIONS

Sonomatic are the leaders in the deployment and advancement of the TOFD technique for WRE. With more than 20 years experience in the Oil and Gas and other industries, Sonomatic professionally develop and adapt techniques for highly accurate inspections. The WRE inspection package includes:

- TOFD inspection of the welds including offset scans where applicable.
- 0o B-Scan digital images of the parent material adjacent to the welds.
- Taper inspections of flanges.
- Final engineering assessments of the welds with material loss.
- Inspection programme management
- Data management.
- Remote Access deployment.

APPLICATIONS

- Pipe to Pipe
- Plate
- T Sections
- Flanges
- Pipes 4"- any diameter
- Thicknesses 8mm and thicker

The technology provides an advanced detection and monitoring tool aimed at generating data that allows reliable engineering assessments. Sonomatic can assist with assessment of WRE data as follows.

- Interpretation of inspection results for defect characterisation. A good understanding of the nature of the defect and its dimensions is essential to reliable fitness for service assessments. Our involvement in inspection services means we have firsthand experience in the interpretation and application of data from a range of inspection types.
- Fitness for service assessments in accordance with API 579, BS7910 and B31G. These codes cover the majority of in-service defect types likely to be encountered in pipework in the Oil & Gas and process industries.
- Corrosion engineering assessments to validate the type of degradation and provide estimates of potential future degradation rates. This, coupled with an understanding of defect criticality, forms the basis for defining inspection intervals in management of pipework with WRE.
- Fatigue assessments to estimate remnant life of pipework under cyclic stresses.
- Statistical analysis of WRE data to demonstrate that the required level of assurance is achieved by an inspection. This approach is applicable in cases when an inspection having limited coverage has been carried out.
- Definition of future inspection requirements to ensure ongoing integrity. A good understanding of the current condition of equipment, the likely changes in condition over time in service and the critical defect sizes allows a robust inspection strategy to be defined. This is further enhanced through specification of inspection techniques that are most effective in monitoring the type of degradation under consideration.

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 |

KEY CONTACTS

EUROPE AND AFRICA

Graham Marshall
Subsea Project Manager
T: +44 (0) 1224 823 960
E: Graham.Marshall@sonomatic.com

Stuart Ley
Topside Project Manager
T: +44 (0) 1224 823 960
E: Stuart.Ley@sonomatic.com

Danielle Gunns
Project Delivery Manager (Warrington)
T: +44 (0) 1925 414 000
E: Danielle.Gunns@sonomatic.com

Charles Loader
General Manager - Europe & Africa
T: +44 (0) 1925 414 000 | M: +44 (0) 7376 714 765
E: Charles.Loader@sonomatic.com

MIDDLE EAST

Clayton Webb
Regional Manager
T: +971 26 580 708
E: Clayton.Webb@sonomatic.com

AUSTRALASIA

Jonathan Millen
Operations Manager - Australia
T: +61 477 030 058
E: Jon.Millen@sonomatic.com.au

Alex Cesan
General Manager - Australia & NZ
T: +61 498 442 666
E: Alex.Cesan@sonomatic.com.au

Zach McCann
Region Manager - South East Asia
T: +60 361 581 185 /1180
M: +60 12 555 1569 / +61 404 797 670
E: Zach.Mccann@sonomatic.com.my

AMERICAS

Esteban Cesan
President
T: +1 832 977 0303
E: Esteban.Cesan@sonomatic.com

Agata Surowiec
Vice President - Business Development
T: +1 832 316 9925
E: Agata.Surowiec@sonomatic.com

SONOMATIC

www.sonomatic.com