

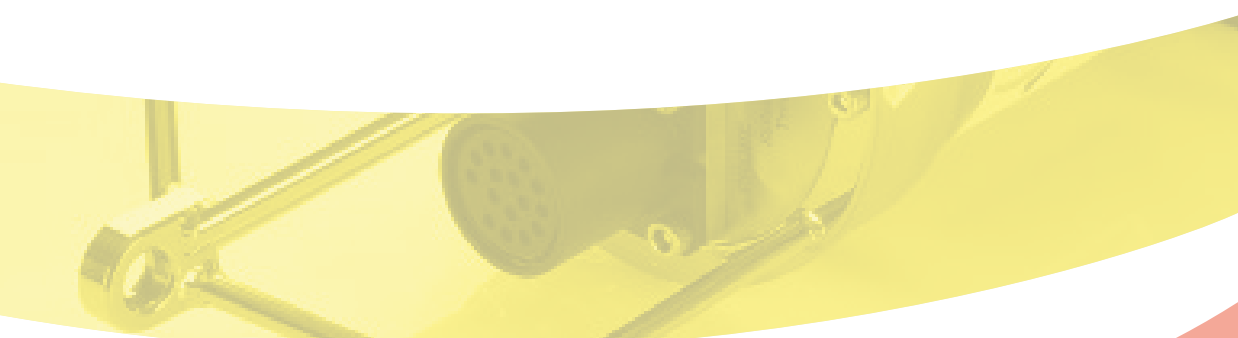


TSC

Part of Eddyfi Technologies

U31D™

Subsea ACFM® Inspection Technology



Leaders in Advanced Non-Destructive Testing



Subsea ACFM[®] Inspection Technology

TSC has pioneered the deployment of both diver and diverless underwater ACFM[®], so whether you need to deliver inspections using ROVs, mini ROV, crawlers or divers, we have the solution.

TSC's U31[™] range of underwater instruments has been developed to provide reliable ACFM[®] inspection in harsh subsea environments. With a range of standard products covering depths to 3,000m, we have the technology and equipment needed to conduct NDT surface crack detection underwater.

The U31D[™] instrument offers all the advantages of ACFM[®] inspection in a small, light package designed specifically for ease of diver deployment.

Capable of inspecting up to 300m depth, the U31D is ideal for inspection of jackets, pipelines and subsea structures.

Features

- Rapid scanning using a hand-held probe.
- Reliable crack detection with accurate sizing (length and depth).
- Capable of operating up to depths of 300m.
- Reduced cleaning requirements, no need to clean to bare metal.
- Capable of inspecting corroded surfaces, or through non-conducting coatings several millimetres thick.
- Full data storage for back-up, off-line view and audit purposes.
- Access to a wide range of geometries using TSC's range of active subsea probes.
- Probes with embedded serial numbers to simplify operation, reduce the likelihood of operator error.
- ASSISTu[™] software (Microsoft Windows[®]) for ease of operation and compatibility with other Windows[®] applications.



Probes

- ACFM® is routinely used for underwater inspection and there are a variety of probes for shallow and deep water applications.
- Subsea probes are available in several common body styles to allow access to a variety of standard geometries and components.
- Underwater Weld Probes are designed primarily for scanning along weld toes but can also be used to inspect for defects in general components.
- Pencil Probes are used in places that the weld probes cannot gain access and are particularly useful at plate edges where their smaller induction fields produce less of a geometry effect.
- Micro and Mini Pencil Probes are also available where greater sensitivity is needed.
- Umbilical cables are supplied at 150m, as standard, different lengths are available upon request.



ASSISTu™ Software

The U31D™ is supplied with ASSISTu™ software, TSC's comprehensive instrument control, data collection and analysis package features include:

- Enables the creation of professional client reports of inspection data and results.
- Real-time output of graphic based results enables instant defect recognition.
- Immediate defect identification and sizing.
- Reliability, time-saving and auditing capability enhanced by automated data-saving.
- Powerful graphical views including butterfly, surface contours, zooming, panning etc.
- Recording of inspection notes and identified regions of other areas of interest.
- Data analysis possible on or off-site.
- Full range of ACFM® probes supported.
- Simple clock-marking capability during scan.
- Mouse/Pen controlled defect marking and sizing.



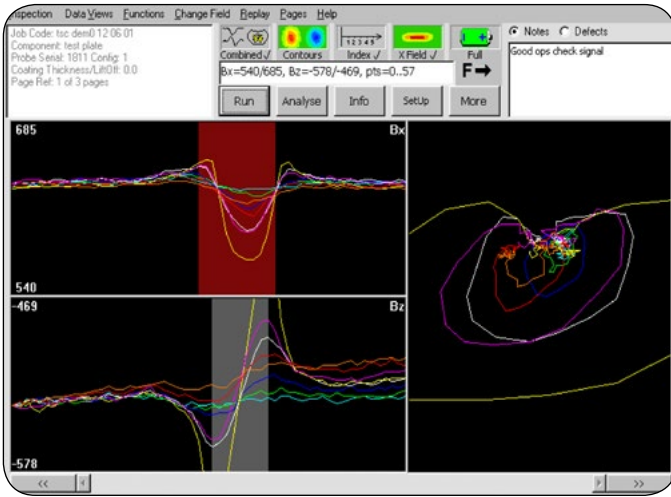
Common Applications

- ✓ Subsea Weld Inspection
- ✓ Splash Zone Inspections
- ✓ Jackets & Subsea Structures
- ✓ Damage Assessment
- ✓ Pipelines
- ✓ Through Coating NDT

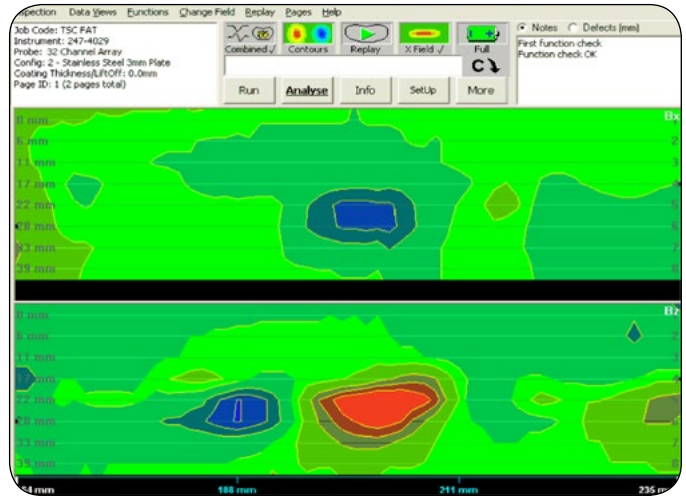


Advantages of ACFM®

Feature	ACFM®	MPI	Conventional Eddy Current
Reduced dependence on operator competence <ul style="list-style-type: none"> • Detection reliability and repeatability • Confidence in integrity data 	✓	✗	Current
Detection through coatings. <ul style="list-style-type: none"> • Avoids cost and disruption of coating removal 	✓	✗	✓
Detection in normal ambient light. No pollutants used	✓	✗	✓
Detection in Duplex and non-magnetic materials	✓	✗	✓
Can be remotely deployed. <ul style="list-style-type: none"> • Enables deep water or hazardous zone deployment • Reduced cost of dive support vessels and systems 	✓	✗	✗
Provides accurate and auditable inspection records. <ul style="list-style-type: none"> • Enables effective integrity and risk management • Supports regulator verification and audits 	✓	✗	✗
Determines crack length and depth without calibration. <ul style="list-style-type: none"> • Allows crack criticality assessment 	✓	✗	✗



Typical signal of a longitudinal defect detected with an array probe, showing Bx and Bz traces on the left and the Butterfly plot on the right.



Typical signal of a transverse defect detected with an array probe, shown as a contour plot. Bx and Bz signals are depicted above and below.

U31D™ System Specifications

Unit Weight	7.6kg in air / 4.3kg in water
Unit Size	142mm diameter x 260mm
Probe Cable Length (topside)	5 metres (standard).
Umbilical Cable	150 metres (as standard)
Serial Communications Cable	5 metres as standard up to 30 metres if required.
Operating Temperature	-20°C to 40°C
Environment Protection (topside)	IP54 rated
Maximum Operating Depth	300m as standard. >10 hours with a single probe
Power Requirements	110v AC. 200mA
ROV use	The U31D™ can be upgraded for ROV deployment, where the ROV provides power and communications. Systems are available for operation in water depths up to 3000m.

Head Office

TSC Inspection Systems,
Davy Avenue,
Knowlhill,
Milton Keynes,
MK5 8PB,
United Kingdom.

T: +44 (0)1908 317444
F: +44 (0)1908 220959
E: info@tscis.com

Aberdeen Office

TSC Inspection Systems
Unit 17, Wellheads Crescent,
Wellheads Industrial Est,
Dyce, Aberdeen,
AB21 7GA
United Kingdom.

T:+44 (0)1224 725136
E: rentals@tscis.com

Singapore Office

TSC Inspection Systems Pte Ltd.,
Loyang Offshore Supply Base,
23F Loyang Crescent,
Box 5188,
Blk 602, Tops Avenue 6
SINGAPORE 509022.

T: +65 6543 9728

© Copyright 2016. All rights reserved. Information contained herein is not intended as an infallible guide. All steps have been taken to ensure that the information is correct as the time of publication but we reserve the right to make amendments at any time in line with technical advancements.

TSC Inspection Systems is a trading name of Technical Software Consultants Ltd.
Registered Office: Davy Avenue, Knowlhill, Milton Keynes, MK5 8PB, United Kingdom. Company Registered in England no. 1787682.
ACFM™ is a registered trademark of Technical Software Consultants Ltd.
AMIGO™, U31™, StressProbe™, ATI™, ASSISTu™ & ASSISTu™ are trademarks of Technical Software Consultants Ltd.