

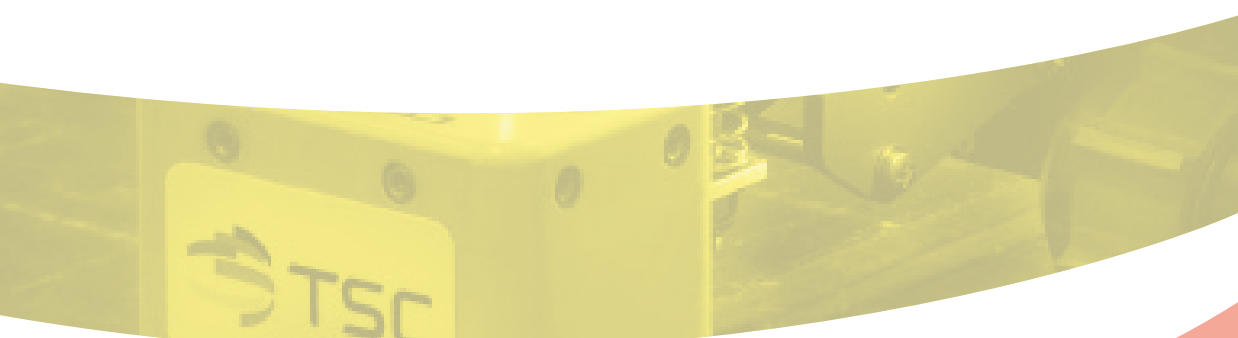
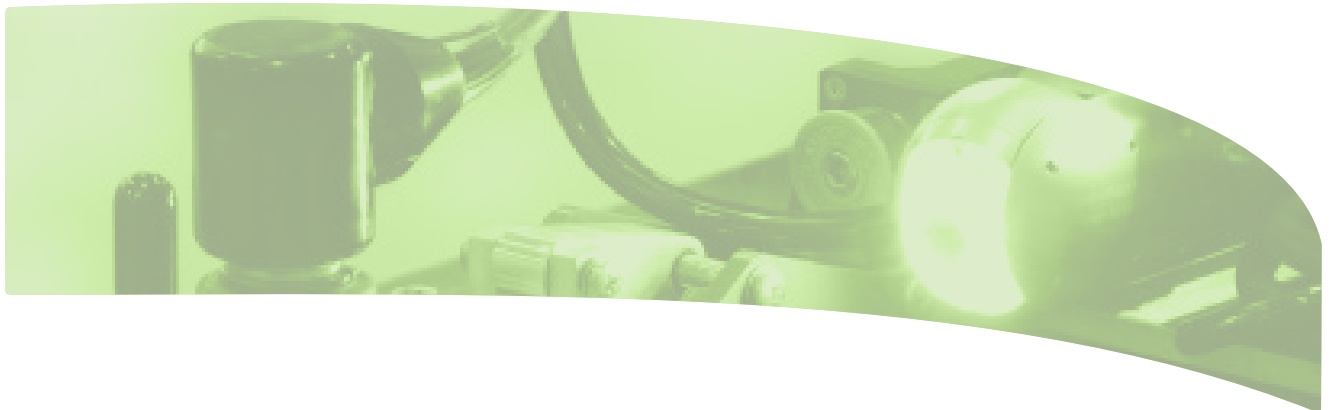


**TSC**

*Part of Eddyfi Technologies*

# MagCrawler™

ACFM® Remote Subsea Inspection



Leaders in Advanced Non-Destructive Testing



***Proven solutions for diverless ACFM® inspection of subsea welds, surfaces and complex geometries.***

** TSC Subsea Inspection Technology**

The ACFM® MagCrawler™ represents the latest in ACFM® subsea inspection technology. It has been developed specifically to enable the ROV deployment of TSC's ACFM® Array Probes to inspect subsea geometries such as circumferential welds in pipes/tubulars, fillet and full penetration welds in plates, all typically found in the oil and gas sectors.

The MagCrawler™ also provides a solution where access to areas are restricted or expensive to reach using divers, such as the splash zone and confined compartments.

The ACFM® MagCrawler™ can be deployed by ROV and is magnetically attached to the inspection surface, which needs to be cleaned to SA2 standard or similar. The ROV can then release the MagCrawler™,

avoiding the need for the ROV to hold station for long periods of time accurately.

Crawler traction is achieved by two rubber caterpillar tracks and are easily manoeuvrable to steer the crawler over the inspection surface.

Typical inspection speed is 30mm/s (1.18ins/s), with a multiple pass inspection being 15 mins/m.

** Common Applications**

- Caisson & Brace Support Structures.
- Ship & FPSO Hull Inspection
- Jack-Up unit Spud Can weld inspection
- Subsea Pipeline Weld Inspection
- Splash Zone & Restricted access areas.

## Probe Control/Deployment

The MagCrawler™ has motorised mechanisms which allow the probe to be deployed accurately over the weld to be inspected. A 360° rotational head allows flange welds to be inspected with full coverage of the weld and the heat affected zone.

The probe is held in contact with the inspection surface using passive compliance, so that the probe is aligned correctly with the inspection surface during operation. A closed loop feedback motor control allows accurate weld tracking and a uniform speed of scan. Positional adjustments can be made in both longitudinal and transverse directions, which allows full coverage of the area to be inspected.

High quality ACFM® data is captured with the fine motor controls of the crawler and on board cameras provide live visual feedback to verify that the stipulated ACFM® scan criteria are being met during the scan.

## Features

- Applications are weld inspection across a wide range of complex geometries.
- On-board 360° rotational head for targeted probe steering.
- Instant data capture for audit and comparison purposes.
- Can easily manoeuvre on diameters greater than 760mm (30 ins).
- Rated for water depths up to 150m (493ft).
- Dedicated control software to follow simple weld geometries.
- Can inspect through paint and other coatings.
- Tolerant of residual marine growth.

## Advantages of ACFM®

Feature	ACFM®	MPI	Conventional Eddy Current
Reduced dependence on operator competence <ul style="list-style-type: none"> <li>• Detection reliability and repeatability</li> <li>• Confidence in integrity data</li> </ul>	✓	✗	✗
Detection through coatings. <ul style="list-style-type: none"> <li>• Avoids cost and disruption of coating removal &amp; reinstatement</li> </ul>	✓	✗	✓
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"> <li>• Enables deep water or hazardous zone deployment</li> <li>• Reduced cost of dive support vessels and systems</li> </ul>	✓	✗	✗
Provides accurate and auditable inspection records. <ul style="list-style-type: none"> <li>• Enables effective integrity and risk management</li> <li>• Supports regulator verification and audits</li> </ul>	✓	✗	✗
Determines crack length and depth without calibration. <ul style="list-style-type: none"> <li>• Allows crack criticality assessment</li> </ul>	✓	✗	✗
High POD and low false call rate. <ul style="list-style-type: none"> <li>• Avoids cost of unnecessary repairs and rework</li> </ul>	✓	✗	✗

<b>ACFM® MagCrawler™ System Specifications</b>		
Unit Mass	9.0kg / 19.8lbs	Cameras & other tooling excluded
Unit Weight in Water	7.0kg / 15.4lbs	Adjustments to buoyancy can be made
Unit Length	450mm	Excludes probe/bracket
Unit Width	250mm	Excludes buoyancy
Unit Height	190mm	Excludes buoyancy
Depth Rating	150m/15bar	
Brace Diameter Range	30ins (760mm) to flat surfaces	Nodes with a wide diameter brace and legs can be accommodated. Scope of work specification is required.
Maximum Surface Travel Speed	58 mm/s	ACFM Scanning
Maximum ACFM Scan Speed	50 mm/s	
Power Requirement	24V DC 2A	
Communications	RS232 38400 Baud, 2 wire & screen RS485 38400 Baud, 2 wire & screen Ethernet 100 Mbps TCP-IP	SIT required to check ROV mux capability.
U31R™ Instrument	Array capable, 32 channels standard.	U31R™ is mounted on ROV
Operating Temperature	0 to 40°C / 32 to 100°F	
Storage temperature	-20 to 60°C / -4 to 150°F	



The U31R™ Underwater ACFM® Crack Microgauge Instrument, used alongside the MagCrawler™, has been specifically modified for remote subsea deployment using ROVs. The standard U31R™ enclosure is rated to 300m water depth and utilises a waisted cylindrical stainless steel bottle with stainless steel end caps. The deepwater enclosure is not waisted and is rated to 2000m.

#### 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™, ASSIST™ & ASSISTU™ are trademarks of Technical Software Consultants Ltd.