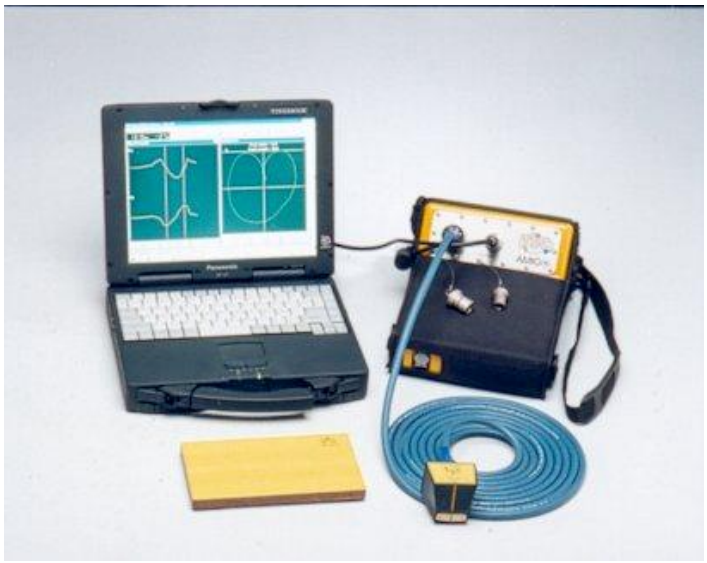
ACFM CRACK MICROGAUGE
AMIGO

TSC INSPECTION SYSTEMS

PRODUCT INFORMATION



The AMIGO represents a significant advance in ACFM topside inspection technology. The new instrument has all the advantages of ACFM inspection available on other TSC instruments, but in a smaller, lighter package, and with the added benefits of a longer battery life and support for simple array probes.

The system provides:

- Rapid scanning using a hand-held probe.
- Reliable crack detection and sizing (length and depth).
- Dual frequency option 5kHz (for optimum performance on ferritic steel).
  50kHz (for improved sensitivity on non-ferrous metals).
- Rugged site unit, IP54 rated.
- At least 5 hour operation on one fully-charged battery pack, and easy exchange of battery packs in the field.
- Reduced cleaning requirements with no need to clean to bare metal.
- Capable of inspection through thin metallic coatings, or through non-conducting coatings several millimetres thick.
- Windows software for ease of operation and compatibility with other Windows applications.
- Full data storage for back-up, off-line view and audit purposes.
- Access to a wide range of geometries using TSC's new range of active topside probes.
- Buttons for RUN / STOP and MARKERS on instrument and larger probes to allow one man operation in difficult access areas.
- Probes with embedded serial numbers to simplify operation.

BACKGROUND TO ACFM

Alternating Current Field Measurement (ACFM) is an electromagnetic inspection technique and relies on the fact that an alternating current flowing in a component will be disturbed by the presence of a crack. The ACFM probe introduces an electric current locally into the structure and measures the associated electromagnetic fields close to the surface. The presence of a defect disturbs the associated fields and the information is graphically presented to the system operator. The ends of a defect are easily identified to provide information on defect location and length. The significance of a defect, in terms of structural integrity, generally depends on the ***depth*** of the defect. Using mathematical models, the system also provides the depth of the defect, thus allowing an immediate evaluation of the significance of the indication.

This is a major advantage compared to other techniques that only give detection or at best, length information. ACFM systems have been used for a range of applications where rugged inspection systems are needed. The speed of scan provides a rapid and cost effective means of inspecting welded connections with reduced cleaning requirements compared to conventional techniques.

The probes have been developed to minimise signals from features that are not cracks, eg corrosion, undercut, HAZ, material property changes, etc, thus overcoming the problems often associated with other electromagnetic systems and minimising false calls.

The ACFM technique has been approved for weld inspection by major authorities around the world, including Lloyds, ABS, Bureau Veritas, DNV and OCB Germanischer Lloyd.

BACKGROUND TO COMPANY

Established in 1984, TSC are leaders in the application of ac field measurement techniques to industrial applications. The ACFM technology has been developed in-house from the successful ACPD technique to provide a system for crack detection ***and*** sizing without the need for any electrical contact. The crack sizing capability has resulted from theoretical studies at the Wolfson NDE Centre at University College London, which allows the prediction of crack depth from a knowledge of the surrounding ac electromagnetic fields. The hardware developments make use of state of the art low noise analogue electronics and the control system has been developed using the very latest Windows software techniques. The result is a system that provides reliable inspection of welded structures that has been developed by a Company specialising in structural inspection and structural integrity assessment. TSC are therefore in a unique position and able to provide customers with not only the inspection system, but also the back-up in terms of procedural development, customisation to suit specific applications and even an evaluation of the significance of any defects found.

SYSTEM SPECIFICATION

Unit Weight:	4.5kg
Unit Size:	206 x 292 x 127 mm
Probe Cable Length:	5 metres standard, up to 50m by special request.
Serial Communications Cable up to:	30 metres
Operating Temperature:	-20º + 40ºC
Environment Protection:	IP54 rated
Battery Life:	>5 hours continuous operation with array probe, >10 hours with a single probe
Recharge Time:	4 hours
Array Support:	16 channels (i.e. 8 sensor pairs) plus position encoder

SOFTWARE

The AMIGO operates with one of TSC's QFM suite of software thus providing a common operating environment with other ACFM products. This avoids the need for operator retraining.

The QFM Software contains the following features

- Operates in Windows 95, 98 or NT environment. Supporting simultaneous running of word processor/spreadsheet package etc, and interface to all common printers.
- Graphics display of processed data for crack detection.
- Automated clock markings to indicate position on scan.
- Variable speed time base to suit application.
- Multiple screen facility for comparing consecutive scans.
- Screen marker to identify special features.
- Replay facility to review data.
- Real time adjustment of trace position on screen.
- Moveable cursors for use during data review.
- ACFM crack depth calculation and crack size data shown on screen.
- Free format text input associated with each file.
- Multiple page facility in a single file.
- Automated back up of data onto diskette and hard disk.
- Full system status reports for checking hardware.
- Graphical print out of data screens.
- Data transfer into standard spreadsheets.
- Automated set-up of probe-dependent instrument settings.
- Allows off-line review and analysis of data as originally collected.

- Crack depth sizing over a wide range of coating thickness'.
- Operating procedures and software user manuals available in on-line Windows help files.

OPERATOR TRAINING

Lloyds/CSWIP Accredited Operator training courses are held at various centres in the United Kingdom. Details on request. The course duration is five working days.

AVAILABILITY

The AMIGO Portable ACFM Crack Microgauge is available from TSC worldwide through our network of agents and distributors. Details of these can be found on our website

ENQUIRIES

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