

## ACFM - Alternating Current Field Measurement

### GENERAL DESCRIPTION

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.

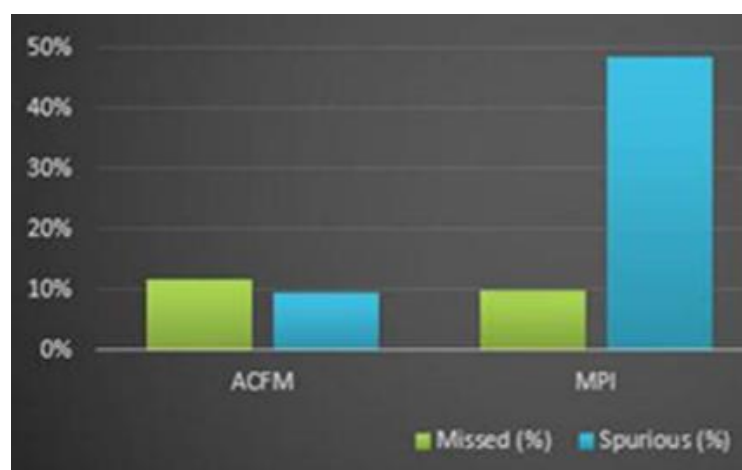
The presence of a defect disturbs the associated fields and the information is graphically presented to the system operator. The ends of a defect are easily identified to provide information on defect location and length.

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 clearing 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.



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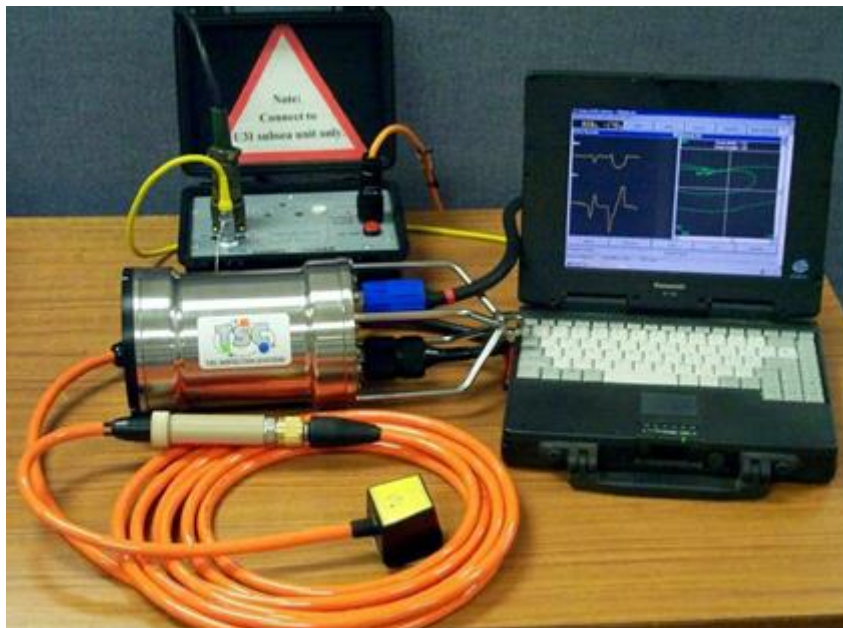
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## ACFM PERFORMANCES

- Rapid scanning using a hand-held probe
- Reliable crack detection and sizing
- Dual frequency option 5kHz (for optimum performance on ferritic steel) 50kHz (for improved sensitivity on non-ferrous metals)
- Immediate defect sizing (length and depth) and recording is a major benefit compared to alternative NDT methods
- ACFM matches the performance of MPI for inspecting underwater structural welds
- The level of missed and spurious signals (false calls) is lower compared to MPI
- 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.

## U31D System Specifications

Subsea Unit weight:	7.6 kg in air
Subsea Unit size:	142 mm diameter x 260 mm
Probe cable length:	up to 50 m
Serial Communications cable:	up to 30 m
Max Operating depth :	300 m



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