TSC INSPECTION SYSTEMS

WELD INSPECTION USING ACFM ARRAYS DEPLOYED BY WORKCLASS ROV

TSC's ACFM crack detection and sizing technology is now available for subsea node inspection using workclass and small workclass ROV's.

By using ACFM array technology, welds can be inspected in a series of pick and place operations thereby avoiding the need for sophisticated weld tracking. The system can be deployed by virtually any workclass ROV fitted with a good quality manipulator. The system has been successfully used for jacket inspection in the North Sea and is capable of detecting and sizing cracks at the welded node connections.

Integration of the ACFM system to the ROV can be achieved in approximately 3 hours. Mains Power (110V ac) and a twisted pair (RS485) are the only electrical interface requirements. The probe is fitted with a compliant coupling between probe and manipulator and is held in the manipulators grip. Close up and general area camera views are required to ensure correct probe deployment. A typical configuration is shown overleaf, with the system fitted onto a Pioneer ROV. ACFM arrays have also been deployed using a smaller RACAL Seal. Both have been used in the North Sea for Jacket Inspection.

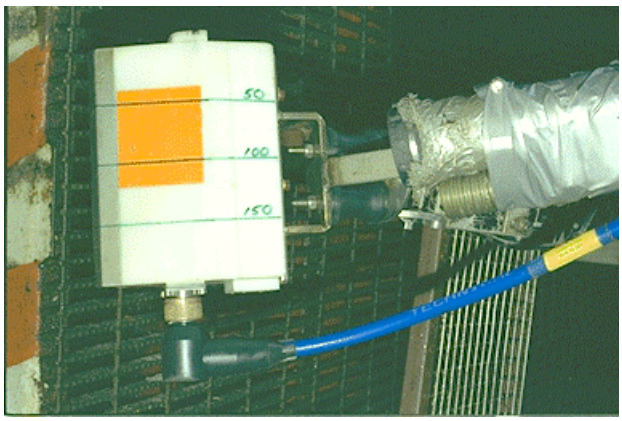
The cleaning requirements are significantly less than for MPI but hard marine growth must be removed prior to inspection.

A full circumferential inspection is carried out as a series of overlapping probe placements. At each placement, the ACFM probe is placed in contact with the weld, the centre of the probe wedge nose being placed over the appropriate weld toe. The probe contains a large number of magnetic sensors which are scanned electronically. Data collection takes between 5 and 10 seconds, during which time the probe needs to be held steady. The data is transferred to a topside PC where the results can be interpreted in real time. This procedure is repeated until the whole of the weld has been inspected.

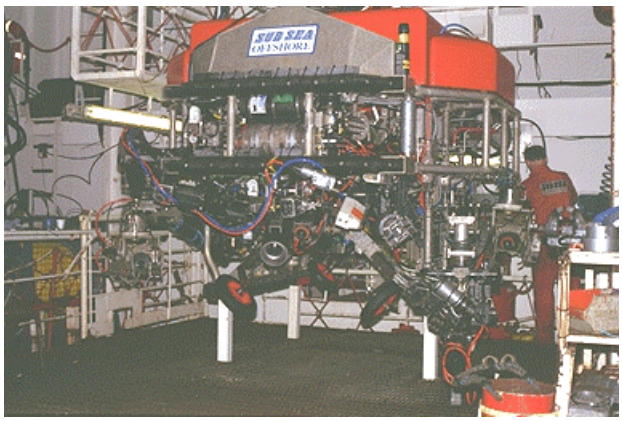
The target minimum detectable defect for the system is 20mm long, 2mm deep, although in laboratory conditions defects significantly smaller than this have been easily detected.

TSC's ACFM arrays can access most geometric configurations encountered subsea. It is obviously important to ensure that the chosen ROV / manipulator can deliver the probes to the chosen areas. TSC have in-house computer programs capable of assessing the access and reach of most common ROV / manipulator combinations and thus can provide valuable task planning information on any ROV / manipulator limitations for any particular part of the structure.

ACFM array technology can be adapted for surface crack detection and sizing on virtually any geometry of component.



ACFM Array



ACFM Array on Pioneer ROV

For further details of this, or other ACFM applications, please contact.

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