

Simplifying Offshore Inspection Through Deck-Launched Robotics



1 CHALLENGE

Diverless UWILD inspection for crack detection and sizing at 70 structural locations across three MOPU legs while minimising offshore logistics.

2 SOLUTION

Deck-launched deployment using a compact ROV and robotic MagCrawler equipped with ACFM® array probes.

3 RESULTS

Delivered high-confidence integrity data to support life extension, without divers or a dedicated inspection vessel.



Mobile Offshore Production Unit (MOPU)

As part of a Life Extension Baseline Survey and Underwater Inspection in Lieu of Drydocking (UWILD) programme, an operator of a Mobile Offshore Production Unit (MOPU) offshore Malaysia required subsea inspection of selected structural welds and pinhole support locations to detect and size potential surface-breaking cracks.

The inspection formed part of the asset's long-term integrity management programme and supported ongoing life extension activities.

1. THE CHALLENGE

The inspection scope comprised 70 locations across all three MOPU legs, including leg-to-casting welds, casting-to-tank welds, circumferential seams and pinhole support locations. The inspection locations spanned water depths from approximately 10 to 70 metres and included a variety of structural geometries, requiring reliable inspection data to support a life extension survey.

The client wanted to minimise offshore logistics by completing the campaign using equipment launched directly from the MOPU. The objective was to deliver the inspection safely and efficiently, without divers or a dedicated inspection vessel.



Deck-launched deployment of MagCrawler

2. THE SOLUTION

Partnering with EM&I, TSC Subsea delivered the inspection programme using a compact, deck-launched deployment model. The complete inspection spread was launched directly from the MOPU using EM&I's compact deck-launched observation and light intervention class ROV (IMCA Class IIb), removing the need to mobilise a dedicated inspection vessel.

Launching the complete inspection spread directly from the MOPU significantly simplified offshore mobilisation by eliminating the dedicated inspection vessel typically required for diver or work-class ROV inspection campaigns.

Before deploying the MagCrawler™, the compact ROV carried out localised marine growth removal at each inspection location to expose the inspection area. Once prepared, the ROV deployed the MagCrawler™ onto the structure to perform the Alternating Current Field Measurement (ACFM®) inspection.



MagCrawler performing ACFM inspection

Equipped with proprietary ACFM array probes, the MagCrawler attached magnetically to the structure and traversed each inspection location, maintaining controlled probe contact to acquire high-quality inspection data.

A range of MagCrawler probe attachments was utilised to accommodate the different weld geometries encountered, providing efficient access to structural welds, circumferential seams and pinhole locations across the MOPU.

Drawing on decades of subsea ACFM experience, TSC Subsea provided the inspection personnel, procedures and robotic deployment methodology required to deliver consistent, high-quality inspection data throughout the campaign.

3. THE RESULT

The campaign successfully completed the planned inspection programme, with 70 locations inspected.

High-quality ACFM data was acquired across all planned inspection locations, providing the operator with the information needed to assess the condition of critical structural welds and support ongoing asset integrity management.

The project demonstrated how deck-launched robotics can transform offshore structural inspections by eliminating the need for a dedicated inspection vessel while maintaining the inspection quality required for UWILD and life extension programmes.



ACFM inspection of a pinhole support location

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