



Case Study

Project: Inspection for crack like flaws in critical subsea welds on an offshore platform structure

Requirement: A number of subsea welds on an offshore platform structure were identified by the client as potentially susceptible to fatigue crack initiation and growth. A high reliability inspection was necessary to confirm there were no crack like flaws above a specified size in these welds.

Solution: The inspection requirement was to achieve more than 90% probability of detection (POD) for flaws with a depth of 3 mm and extent of 15 mm. The approach developed was based on automated angle shear wave inspection with the probes deployed using Sonomatic's MAG-Rover subsea ROV deployed inspection tool. The set ups were assessed and optimised by analysis using CIVA inspection modelling software. This was used to evaluate the POD for each geometry inspected and to consider the effects of practical variations, e.g. defect tilt and skew, on likely inspection performance. The capability of the proposed inspection was then validated on test pieces with artificial flaws. The inspection was successfully performed offshore without the need for divers and the results provided assurance that the platform could continue to be safely operated.

Benefits: The approach developed by Sonomatic resulted in a highly effective inspection with qualified performance. This capability was successfully delivered subsea by the MAG-Rover ROV deployed tool. The inspection was not reliant on divers, leading to a substantial cost saving for the client and reducing the safety risks associated with the work.

The inspection data was analysed in detail and did not show any evidence of crack like flaws approaching the detection size. This, together with the qualified performance of the approach, allowed a review and upwards revision of the remaining life of the platform. The ability to reliably detect small flaws was central to justifying continued operation over an extended period, thereby leading to considerable savings in through life inspection costs.

