



Case Study

October 2007

Project: Civa modelling for assessment of capability of automated shear wave inspection applied to a subsea hot tap weld.

Problem: A 12 inch pipe was to be welded in-situ onto a 30 inch pipe (Figure 1), the weld was to be inspected using automated ultrasonics prior to it being put into service. Sonomatic were employed in order to carry out inspection modelling to determine the capability of the proposed inspection method to detect defects within the weld as defined by the DNV Offshore Standard DNV-OS-F101. The qualification process followed the guidelines set out by ENIQ (European Network for Inspection Qualification).

Solution: In order to assess whether the proposed ultrasonic inspection of the hot tap weld met the requirements of DNV-OS-F101, several cross sections based on the pipework (Figure 1) were created in the Civa modelling software (an example is shown in Figure 2) based on inspection of the weld from both the 12 inch and 30 inch pipes.

Flaws with different orientations were created within the weld and results were simulated using shear wave inspection (Figure 3).

The results from the various flaws inspected from both the 12 inch and 30 inch pipes were analysed in order to determine if the proposed inspection would be compliant with DNV-OS-F101.

Benefits: The Civa modelling was an important element in the qualification following the ENIQ guidelines. The benefits of completing Civa analysis of a problem with Sonomatic are:

- **Accurate representation of the specific geometry under consideration;**
- **Assessment of a proposed inspection with regards to a specific standard;**
- **More cost effective qualification through reduced number of physical test samples for complex geometries.**
- **Compliance with the ENIQ guidelines for inspection qualification.**

Figure 1:



Figure 2:

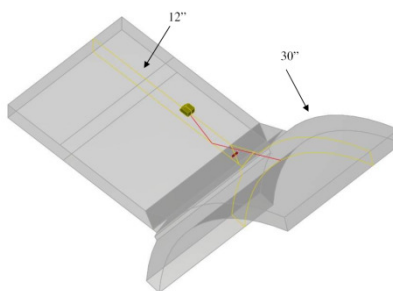


Figure 3:

