

Improved Integrity of Welded Joints with Complex Geometry



**PUBLISHABLE
SUMMARY**

24172

Background

Welded joints with complex geometries are widely used throughout the Power Industry (Nuclear and Fossil) and the Oil and Gas Industry. These sectors place a great emphasis on energy efficiency and safety through periodic inspection programmes, cooperation with independent regulators and compliance with standards (eg BS 7910). The positive drivers to do so include increasing safety, lowering operating costs and reducing environmental impacts. As a consequence, and due to the critical nature of welded joints such as nozzles, regular service inspections are carried out in order to verify their integrity and fitness for service (FFS).

In support of this requirement, the project aimed to improve inspection procedures to verify the integrity of welds on complex geometry fittings such as nozzles via the development of a generic inspection method using phased array ultrasonic inspection (PAUT).

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Objectives

- Provide a generic methodology for applying phased array inspection (field operation and advanced equipment) to variable configuration nozzle components and establish its range of application.
- Evaluate and establish inspection coverage and detection capabilities for phased array inspections.

Project Outcome

- Generic methodologies document for applying phased array technology for the inspection of nozzle configurations based on field and advanced equipment.
- A capability statement based on theoretical and experiment evidence of each methodology to establish their performance on selected nozzle configurations.

Benefits

- Increased joint reliability by providing an improved and qualified inspection method.
- Reduced outage times.
- Increased safety by establishing a more effective inspection tool to determine weld quality.
- Savings by reducing cost of equipment investment (evaluating and selecting the optimum inspection technique and tools)

Participants

The Sponsor Group comprised:

- EDF
- ESKOM
- PETROBRAS
- ENSA
- The Project was also supported by TWI internal funds

Price and Duration

The project had a duration of two years and a budget of £380,000. The fee for companies wishing to access the results by buying-back into the project is £76,000. Further Information

For further information on how a Joint Industry Project (JIP) runs please visit:

<http://www.twi-global.com/services/research-and-consultancy/joint-industry-projects/>

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