



Core Shroud Weld Examination & Off-Axis Flaw Scanning

Phased-Array UT and Robotic Tooling

Low-profile, phased-array core shroud examination is designed to maximize coverage and minimize inspection time.

Challenge

Phased Array for Core Shroud Weld Examination

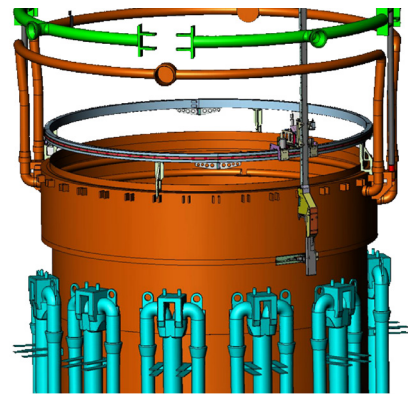
Utilities must perform periodic volumetric examinations of BWR core shroud welds to comply with BWR Vessel and Internals Project (BWRVIP) Inspection and Evaluation Guidelines. These guidelines now require examination of each shroud weld from two sides to maximize coverage. The challenge? Access limitations. Why? Conventional UT techniques cannot obtain two-sided examination coverage for all shroud welds.

Solution

Design Enhances the Inspection Process

To address these challenges, Framatome delivers phased-array ultrasonic technology to cover the two sides and provide highly precise flaw detection. The design of the Core Shroud Inspection Tool (CSIT) features a unique curved scan axis to improve your weld coverage. It can even go behind jet pump obstructions at most plants. What about interference? No problem. It reduces corners and edges during installation in the annulus. In addition, the tool contains powerful titanium to create a durable shield that prevents damage during handling or operation. Even with all this, the tool has a simple, practical design. Fewer parts mean fewer chances for foreign material concerns.

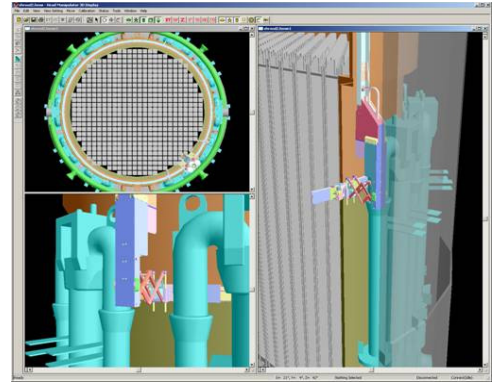
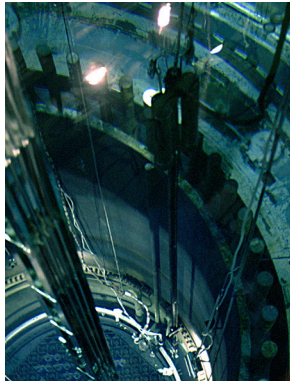
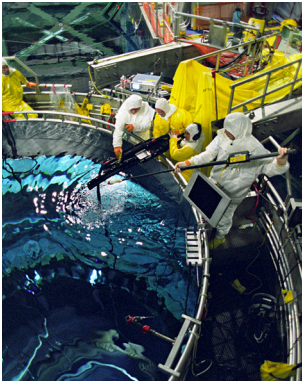
CSIT Control System has tooling software to graphically represent virtually every motion on the tool plus the position of the tool on the shroud. In addition, the program is equipped with Fuel Move Choreography. This software component allows the operator to display the actual fuel move sequences for any specified time to ensure that the shroud tool does not interfere with fuel moves. In addition to a 3-D model of the shroud with the tool, you get enhanced operator efficiency, plus the ability to move to the correct weld without hitting obstructions.



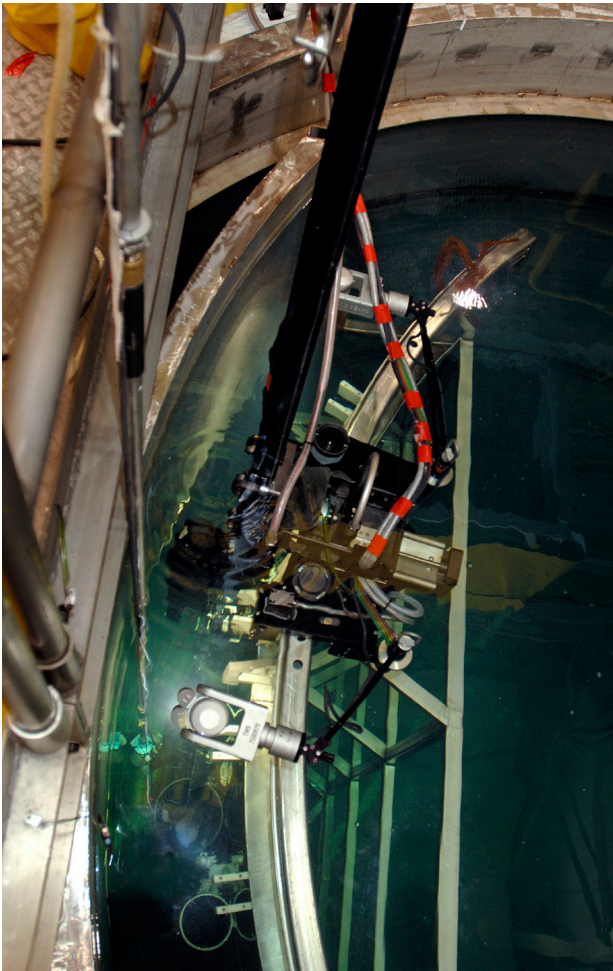
Customer benefits

- Phased-array technology delivers two-sided coverage of shroud welds and is qualified for detection and sizing of off-axis flaws
- Once installed, can perform examinations of horizontal and vertical welds
- Encoded tool position supports examination location repeatability
- Goes behind jet pump obstructions at most plants
- Simple, practical design and field-hardened tool supports operational reliability
- Fuel Move Choreography software allows the operator to display the actual fuel move sequences for any specified time to ensure that the shroud tool does not interfere with fuel moves
- Segmented mast enables you to avoid use of the overhead crane and tying up your refuel bridge
- Can be deployed to perform inspections in parallel with HawkEye IVVI inspections

Your performance
is **our** everyday **commitment**



Shroud Tool Fuel Move Choreography Software



Reduce Critical Path — Get the Reliability You Expect

Reduce critical path and improve weld coverage while reducing the time required to scan. Framatome brings BWR core shroud inspection into the next decade. The new CSIT minimizes examination limitations. Plus, it enhances flaw detection and sizing capabilities. And, it employs a segmented mast so you won't need to use your overhead crane or tie up your refuel bridge. This specially-designed mast allows you to pull the tool without both. And if the tool needs reconfiguration for an expanded scope, the risk to critical path is substantially lower.

Plants can be confident in Framatome's global resources, which enable predictable BWR inspections as well as maximum coverage and the best possible data quality.

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