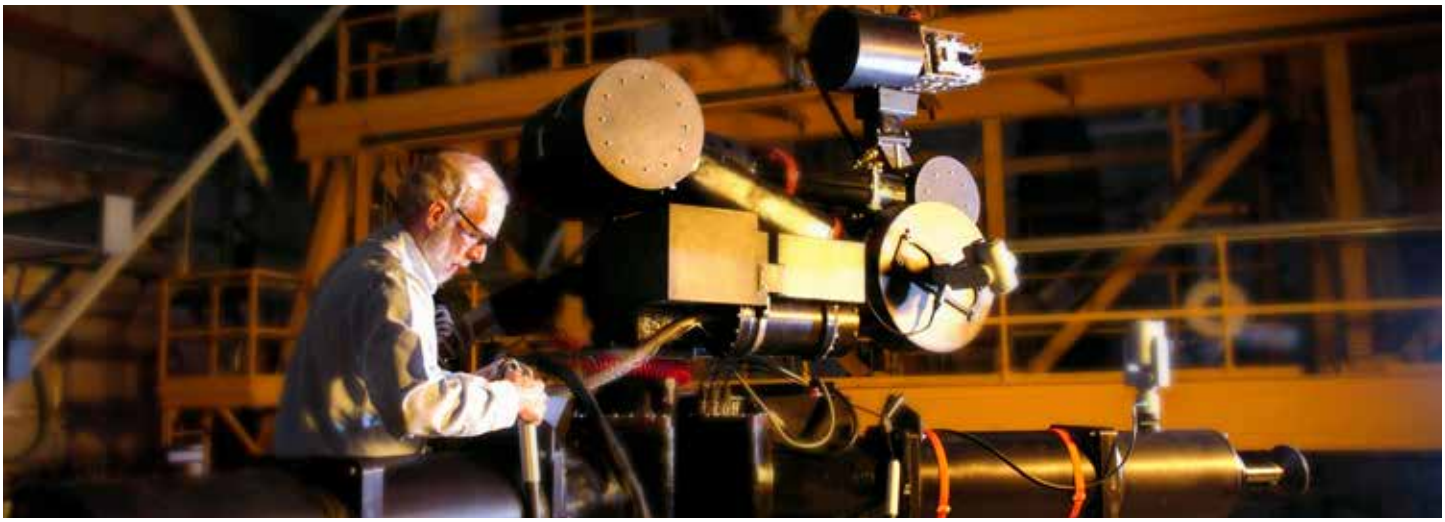
framatome

TWS Manipulator

PWR Reactor Vessel UT Examination



Framatome's Trans-World System (TWS) manipulator is an advanced underwater robot for ultrasonic (UT) examination in compliance with a wide range of global code demands.

Challenge

PWR inspections can be time-consuming and require efficient inspection equipment that reduces critical path time, and also be adaptable to a variety of plant needs. Reactor vessel examinations are required for pre-service inspection (PSI) and periodic in-service inspection (ISI). Performing these examinations requires safe, compliant tools that ensure examination requirements are accurately met, yet minimize plant equipment use and personnel.

Solution

Framatome has proven, innovative technology to shorten PWR vessel examination time. The Trans-World System (TWS) manipulator is an advanced underwater robot for UT examination in compliance with a wide range of global code demands. The TWS is a field-proven manipulator designed for minimum vessel occupation time (VOT) and has the longest history and experience for multiple reactor vessel configurations with record examination times. Framatome's TWS also has the most complete range of Performance Demonstration Initiative (PDI) and global qualifications, including nozzle inner radius.

Customer benefits

- Years of examination experience with demonstrated accuracy and quality
- Minimal on-site handling with polar crane and auxiliary bridge
- Adaptable to a large range of vessel designs
- Proven to reduce critical path time and foster predictable outage schedules
- Limited lay down space requirements and minimum utility support
- Proven reliability and advanced phased-array UT (PAUT) examination technology for improved detection and exam times

Features

- Robust six-axis robotic arm designed for accurate positioning and heavy payloads
- Remote head change for various PAUT transducer configurations: nozzle to shell welds, and flow skirt-occluded welds
- On-board calibration confirmation
- Anchor to vessel independent of radial supports: no move required for maximum weld coverage
- Flip joint to allow robot operation above or below base
- PAUT technology
- UT analysis compensation for wavy surfaces

Kinematics optimized for “rainbow” scans around nozzles

Flip joint to allow vessel weld examination with arm either above or below the base

Full access near radial supports and meridional welds without re-positioning base

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

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