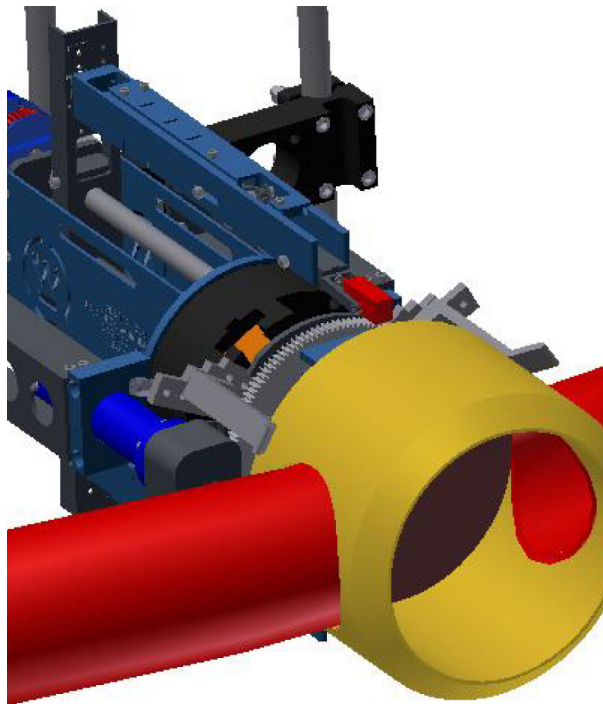


Internal Core-spray Examination System

Background

The Internal Core-spray Examination System (ICESys™) was designed to improve the quality of examinations of the core-spray piping system in boiling water reactor (BWR) nuclear power plants, while providing significant critical-path savings and mitigating radiation exposure during refueling outages. The ICESys performs ultrasonic inspections in parallel with fuel movement and reactor maintenance activities without interfering with other in-vessel operations that require the use of refueling bridges or auxiliary platforms.



ICESys scanner

The ICESys provides optimal examination coverage and a reduction in examination time. The BWR field services in-vessel ultrasonic manipulators minimize the requirements of overhead cranes, refueling bridges and auxiliary platforms, and can be used with a 360-degree platform installed.

The ICESys has been successfully demonstrated to support utility boiling water reactor vessel and internals project (BWRVIP) examination guidelines.

Description

The ICESys is a universal design that leverages standard platforms for successful delivery. It is deployed by the Westinghouse all-purpose submersible platform (WASP™), which is also used in the jet pump assembly inside-diameter manipulating system (JAIMS™). The WASP system provides a means for the ICESys to perform inspections remotely without the use of external cameras, refueling bridges or auxiliary platforms.

The ICESys is the first BWRVIP demonstrated core-spray inspection system to exclusively use phased-array ultrasonic techniques on all accessible internal core-spray piping welds.

The ICESys is a state-of-the-art system capable of delivering dual-sided coverage on the P2 weld. The high inspection coverage obtained by the ICESys allows utilities to maximize BWRVIP inspection intervals.

Benefits

Westinghouse customers benefit from ICESys in the following ways:

- Critical-path savings and unparalleled scheduling flexibility
- Inspections performed in parallel with fuel moving and other in-vessel activities
- Best-in-class data quality and coverage for accurate results and flaw characterization
- Modular and flexible design accommodates various plant configurations
- Minimized need for continuous tool monitoring by personnel and cameras, which frees up valuable 360-degree platform or refueling bridge space for other in-vessel activities
- Built-in contingencies to minimize potential failure mode effects
- Minimized project delivery crews in support of cost reduction and as-low-as-reasonably-achievable goals
- Minimized human manipulation of equipment reduces dose exposure and human performance errors
- Maximized BWRVIP inspection-cycle intervals
- Standard platforms for electrical, pneumatic and hydraulic motion control, ultrasonic systems, WASP remote-operated vehicle, cameras, communications and standard refueling equipment
- Standard platform for cross utilization of spare parts, cost control and personnel knowledge

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