Background

In order to provide a complete, integrated secondary services package, Westinghouse and Rolls-Royce, formerly Brooks, work together through a Joint Cooperative Agreement (JCA) that has been in place for approximately 15 years. This partnership allows resources, equipment and internal processes to be shared and encourages the development of new technology. The JCA provides Westinghouse customers a full steam generator package that combines Westinghouse cleaning technology with Rolls-Royce inspection capabilities.

Rolls-Royce focuses on all regions of the steam generator above the tubesheet, including the steam drum. Steam generator services include:

- Performing component cleanliness inspection
- Locating and documenting anomalous conditions
- Locating foreign objects
- Removing foreign objects as directed by customer

Description

Upper Bundle In-bundle Inspection

The Brooks Upper Bundle In-bundle Inspection System (UBIB) gives Rolls-Royce customers the exclusive ability to view the upper in-bundle regions of steam generators, including the bottoms of upper support plates. The tooling used is UBIB (Remote).

General Steam Drum Inspection

This service provides critical information to determine general steam drum structural integrity and cleanliness, as well as to locate anomalous conditions and foreign objects. Foreign objects may cause tube failures through impacting, vibrations and other means, thereby adversely affecting plant operability, which may cause unplanned outages.

Additionally, Rolls-Royce can conduct J-nozzle/feedring dissimilar metal weld inspections with visually encoded location feedback using the Brooks J-nozzle inspection tool.

Main Areas of Focus

- Tangential nozzle impingement areas
- Primary and secondary moisture separator assemblies
- Flow hold blockage detection
- Decks and deck supports
- Feedwater header, header supports, J-nozzles and weld backing rings
• Auxiliary feedwater
• Drain lines
• Ladder and access hatches

Access to steam drum also grants access to:

• Anti-vibration bars
• U-bend region
• Lattice support structures

Tooling used:

• Hand held camera / video recorder (manual)
• Video probes (manual)
• J-nozzle inspection tool (manual)

Benefits

Rolls-Royce has unique capabilities, specialized tooling and unmatched experience performing steam generator inspections that give customers the following exclusive benefits:

• Unprecedented access to the upper in-bundle region
• Inspection of the bottoms of the upper level support plates
• Comprehensive steam drum inspection capabilities, including J-nozzle/feedring dissimilar metal welds

• Reduce dose exposure to as low as reasonably achievable (ALARA) by using remote location for inspections
• Enhanced trending capabilities for improved maintenance planning with Component Information System (CIS)

The CIS database gives Rolls-Royce and Westinghouse customers the exclusive ability to view inspection data within minutes of the inspection, cutting characterization and decision-making time to a minimum. Images and tracking data are stored on a password-protected, secure server and are accessible 24 hours a day, seven days a week from anywhere in the world. CIS allows customers to easily compare past inspection data with new inspection results for an increased understanding of system trends and improved maintenance planning for the future.

Experience

Rolls-Royce performs approximately 80 steam generator inspections for the nuclear power generation industry on a yearly basis. Westinghouse and Rolls-Royce possess unique capabilities, knowledge of power generation systems and experience performing specialty inspections that are utilized at facilities around the world to provide customers with critical information about plant health and operation.