



Inspect. Detect. Protect.

Your trusted partner for tailored, non-destructive examination solutions.

About Us

When it comes to providing tailored inspection solutions and technologies that will safely, quickly and cost-effectively address any challenge, no other company has more expertise than Westinghouse.

For more than three decades, Westinghouse has been the power industry's demonstrated leader for providing state-of-the-art, non-destructive examination (NDE) products and services to our valued global customers. Westinghouse provides NDE products and services from the Waltz Mill site near Pittsburgh, Pennsylvania, USA, the Täby, Sweden facility, the Villejust, France facility, the Mannheim, Germany laboratory, and the Madrid, Spain location.

Our experience in creating, manufacturing and applying innovative and advanced technology solutions to inspection challenges is recognized worldwide. Our comprehensive portfolio of inspection techniques includes ultrasonic (UT), visual (VT), eddy current (ECT), replica molding (RMT), 3D surface measurement (3D) and dye penetrant (PT) services.

Although historically focused on the global nuclear power industry market, Westinghouse also delivers our proven line of products and services to many adjacent markets, including aerospace, oil and gas processing, hydro, petrochemical, and transportation.

The track-mounted ROSA™-based examination system (T-Rex)



Reactor Vessel Examination Services

PWR Reactor Vessel

The Westinghouse reactor vessel in-service inspection (RVISI) program is designed to meet the requirements for reactor vessel volumetric and visual examinations per ASME Sections V and XI requirements, as modified by 10CFR50.55a and PDI implementation of ASME Appendix VIII with supplements, 2, 4, 5, 6, 7, 10 and 14 of Section XI. The WesDyne Submersible Platform with ROSA™ End Effector Motion (SUPREEM) system integrated with our PARAGON™ data acquisition and analysis system provides proven, reliable performance.

Reactor Vessel Nozzle Dissimilar Metal Weld Pressurized water reactors with dissimilar metal, nozzle safe end welds, which are susceptible to primary water-stress corrosion cracking (PWSCC),

are required to examine those welds with increased frequency unless mitigative actions are taken. Requirements for these examinations are specified in ASME Section XI, Code Case N-770-1 as modified by 10CFR50.55a.

The Westinghouse SQUID (SUPREEM eQuivalent Ultrasonic Inspection Device) scanner was designed specifically for examination of reactor vessel nozzle safe end welds and, as such, provides an alternative for when the balance of the reactor vessel does not require inspection. Designed with safety, reliability and efficient operation in mind, SQUID incorporates features that allow the examination to be performed quickly (less than one shift), with minimal impact on other plant maintenance activities. Using Westinghouse's PARAGON™ II data acquisition and analysis system, SQUID will continue to be the industry-leading scanner for reactor vessel nozzle inspections.

Qualified and demonstrated inspection procedures, equipment, and techniques

The Westinghouse SQUID (SUPREEM eQuivalent Ultrasonic Inspection Device) scanner



Reactor Vessel Examination Services

Bottom Mounted Instrumentation

Westinghouse provides a volumetric examination of the bottom-mounted instrumentation nozzles to determine if any Alloy 600 cracking is evident. The inspection employs a specially designed end effector and an inspection procedure demonstrated at EPRI. The BMI system is designed to be used with the SUPREEM system and is performed in parallel with the ASME Code required reactor vessel examinations to minimize the schedule impact.

Reactor Vessel Head

The Westinghouse reactor vessel head penetration examination program is designed to meet the provisions of the ASME Code Case N-729-1, as modified by 10CFR50.55a, September 10, 2008. Westinghouse provides UT and ECT techniques and tooling for under-the-head inspection of reactor vessel penetrations. Our remotely operated manipulators are used to deliver a variety of end effectors, depending on the head type, penetration configuration and specific inspection requirements. The IntraSpect™ system is used for data acquisition and analysis. Westinghouse also provides the latest technology to meet visual inspection requirements looking for indications of boric acid deposits surrounding the top and bottom head penetration tubes.

GAP Scanner for sleeved penetrations

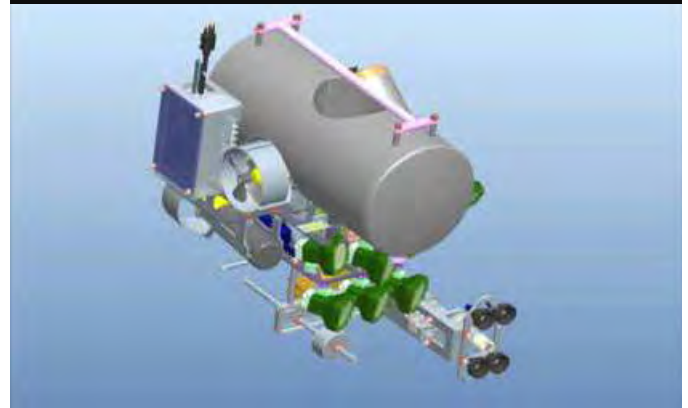


Reactor Internals

Westinghouse can offer a complete line of inspection, engineering, and repair capabilities associated with long-term management of the reactor vessel internals established through the Materials Reliability Program (MRP-227-A) guidelines. Westinghouse capabilities focus on the lower reactor vessel internal region, using UT, VT-3 and enhanced visual (EVT-1) inspection techniques. UT is used to inspect the baffle to former bolts to determine bolt integrity.

The latest generation of the Westinghouse-designed MIDAS mini-submarine fleet is used to deliver the UT transducer to each bolt. The VT-3 visual examination technique is used to inspect the baffle edge bolts, baffle plates and thermal shield flexures to determine the general condition of the component. The VT-3 exams are performed using radiation tolerant cameras. An EVT-1 technique is used to inspect the various core barrel circumferential welds to identify evidence of cracking. Other Westinghouse experts provide capabilities in engineering analysis and repair technologies to support the MRP-227-A program.

MIDAS Sub for Baffle Bolt Inspections



BWR Reactor Vessel

Westinghouse uses a variety of tooling to perform inspections at BWR plants. Automated ultrasonic inspection of reactor vessel welds is performed with either our T-crawler manipulators (ID exam) or Navigator system (OD exam).

Remote operations result in reduced exposure and lower overall dose

In-Service Inspection Services

ASME Section XI Exams

Westinghouse provides a full range of complementary NDE techniques to examine components. Typical Section XI examinations include IWE, IWL, intergranular stress corrosion cracking (IGSCC), bare metal visuals, piping, supports, hangers, welded attachments, bolting, and vessels. Our inspection methods include both automated and manual examinations, while our NDE inspection techniques cover conventional and phased array UT, PT, MT, VT, and ECT applications.

Automated Piping UT

Westinghouse has extensive experience in performing automated piping examinations on various components using conventional and phased array UT NDE methods. Our multiple outside diameter scanner designs are capable of supporting different pipe sizes and configurations. Depending on pipe geometry and accessibility, scanners and crawlers can be designed or modified for a specific application.

Alloy 600 Dissimilar Metal Weld Inspections

Westinghouse employs Appendix VIII PDI UT Level II/III personnel on our staff to support Alloy 600 dissimilar metal (DM) weld inspections. Westinghouse provides both conventional and phased array ultrasonic inspection capabilities in accordance with ASME Code, Section XI, Appendix VIII requirements. These inspections are performed manually or automated using performance demonstration initiative (PDI) procedures.

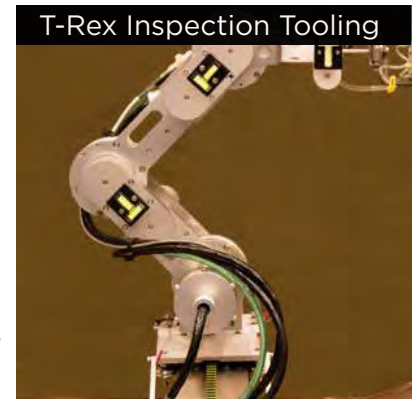
RCP Shaft Inspections

Westinghouse's automated ultrasonic examination of RCP shafts is a proven process to establish repeatable baseline acoustic characteristics, and as a diagnostic tool for evaluation of potential cracking.

Track-mounted ROSA™ (T-Rex)

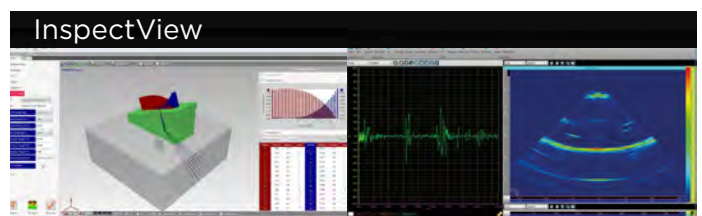
Our T-Rex inspection system is capable of performing automated examinations of nozzle-to-shell welds, nozzle inner radii, nozzle-to-pipe welds, and pipe-to-pipe welds from the outside diameter.

This system provides significant advantages over conventional manual inspections in terms of reduced dose to inspection personnel, and the ability to collect and store encoded data for comparison with data acquired during future examinations. Using a more compact arm design, the T-Rex examination system, in conjunction with the IntraSpec or IntraPhase data acquisition and analysis systems, is capable of performing conventional or phased array UT examinations. The examinations are performed in accordance with ASME Code, Section XI, Appendix VIII, and PDI program requirements.



InspectView

InspectView is a comprehensive software suite that supports the entire NDT inspection process, including inspection planning, trajectory calculation, machine control, calibration, data acquisition, evaluation, and report generation. The unified platform enables seamless information sharing across all applications, streamlining the inspection workflow from start to finish. InspectView integrates machine control and acquisition in a single environment and provides focal law calculation for phased array probes, supporting multiple geometries, probe designs, and inspection techniques. Advanced evaluation capabilities include synchronized analysis of multiple files, TOFD and FFT tools, and full integration with trajectory generation software for functions such as retest, go-to-point navigation, and defect marking.



Westinghouse offers a broad range of inspection capabilities and resources to provide comprehensive, synergistic solutions directed toward minimizing the overall impact of the inspection services on the overall outage schedule

Turbine Inspection Services

Rotor Bore

In the power industry, Westinghouse provides comprehensive rotor bore inspection services on turbine generators up to 50 feet long, with bore diameters ranging from 24 to 11.25 inches and including bottle and step bores. Inspection service capabilities include visual examination of the bore inside diameter; creep detection on high pressure and reheat rotors; automated, computer-controlled ECT and UT; and MT magnetic particle testing.

Rotor Bore Scanner



Disc

Westinghouse provides manual and automated UT inspections on low-pressure turbine disc bores and inter-disc button drives for multiple original equipment manufacturers (OEMs). The automated examination process targets the disc bores, keyways, or peg / button drive holes. Versatile tooling configurations allow inspections to be tailored to meet specific customer needs while minimizing plant support.

Tangential Entry Blade Attachments

Our linear phased array ultrasonic testing (PAUT) technology examines critical areas of the wheel dovetail region without the need to remove the blades from the rotor. One entire side of a wheel dovetail can be inspected as a single scan from the opposite side of the wheel. This inspection can be applied to steam turbine designs from Alstom, General Electric, Hitachi, Toshiba, Elliott and Parsons.

Axial Entry Blade Attachments

Westinghouse's linear PAUT technology is able to examine critical areas of the axial entry steeple blade attachments without the need to remove the blades from the rotor. Using multidirectional beam sweeping of the blade attachment, and matrix array probes, flaws can be detected and sized for both length and depth. A flaw's orientation can also be determined. This inspection can be applied to steam and combustion turbines from virtually all original equipment manufacturers.

Westinghouse Inlet Features

Westinghouse provides PAUT and visual inspection of the high-pressure inlet sleeves and nozzle chamber-to-cylinder weld area of Westinghouse high-pressure turbines.

Generator Slot Dovetails and Rotor Tooth Top

The Westinghouse generator slot dovetail examination provides a viable inspection alternative to the requirements of GE TIL-1292. Westinghouse uses PAUT methods to inspect the load-bearing surfaces of the slot dovetails on GE, Toshiba, and Hitachi designed two-pole and four-pole generators for flaws located at the wedge-butt interfaces.

Generator Retaining Ring

Westinghouse has the capability to inspect the retaining rings of all OEM rotors. These inspections are conducted on 18Mn-5Cr, 18Mn- 18Cr, and magnetic alloy materials using both manual and automated inspection techniques.

Automated Retaining Ring Scanner

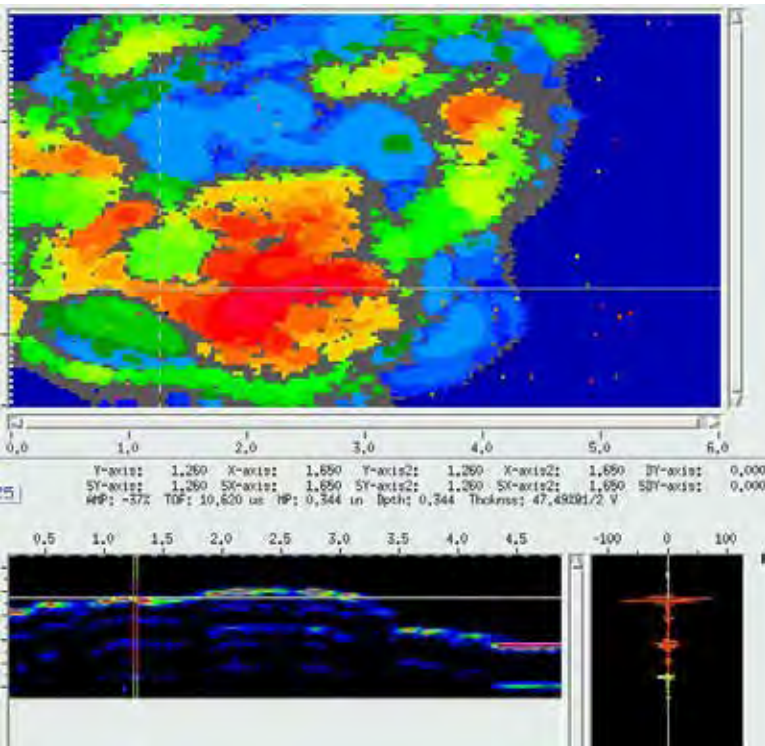


Non-Destructive Testing Products

Westinghouse features the AMDATA™ line of ultrasonic and eddy current inspection systems, which feature the most advanced technology available to provide supreme performance. AMDATA IntraSpect™ conventional ultrasonic systems and IntraPhase™ ultrasonic phased array systems acquire and save complete waveforms at operator-defined grid locations and generate A-, B-, and C-scan images. Our IntraECT™ eddy current systems offer digital C-scans, complex impedance planes and on-screen strip charts. All systems are available in any configuration – from those suitable for the factory floor to systems that are small, lightweight and truly portable.

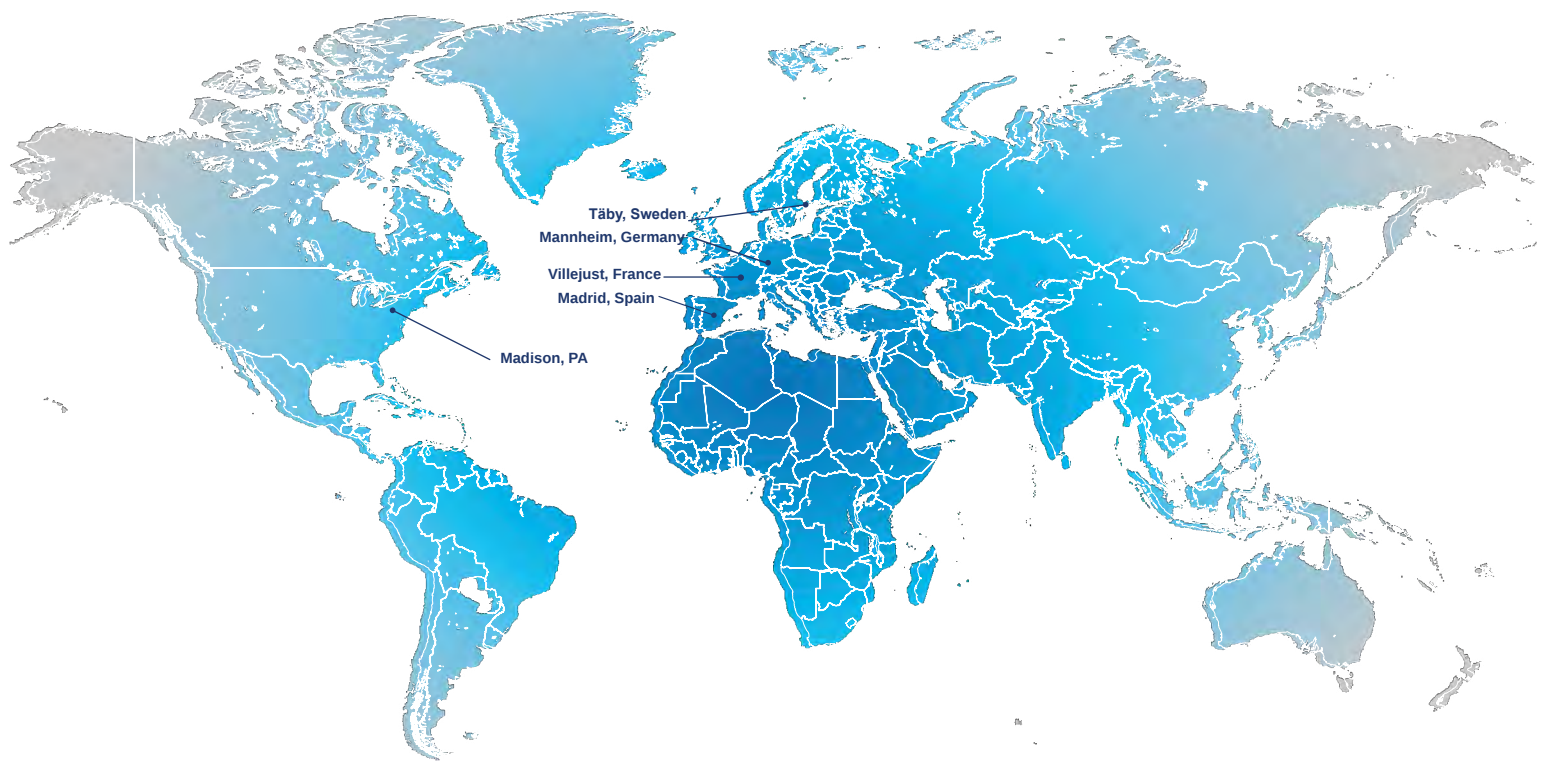
Our NDE laboratories are specifically designed and equipped to handle the most challenging NDE issues while providing practical, economical solutions. Our ability to design and produce our own transducers allows us to supply quick, accurate testing mechanisms to the power industry with easy-to-read and readily interpreted results.

**Custom design and manufacture
of products, systems, and service
solutions to meet industry's need
for non-destructive testing of
materials and components**





Your trusted partner for tailored non-destructive testing product and service solutions



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