

## NDE Services / NDE Systems

### Background

We have extensive experience in delivering non-destructive examination (NDE) inspection services coupled with the design and building of those systems. As a result, we can provide us engineering insights that few others can match. That collective experience – creating, manufacturing and applying innovative technology solutions to inspection challenges – produces unique NDE value that is recognized worldwide.

### In-Service Inspection Services

Our portfolio of inspection techniques includes conventional and phased array ultrasonic (UT), visual (VT), eddy current (ECT), magnetic particle (MT) and dye penetrant (PT) services. We also have the capability to perform Computed Radiography (RT) inspections of individual components at our in-house test facility.

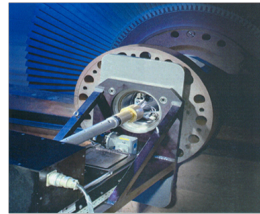
Our NDE techniques are comprehensive and complementary, can be integrated, and are in accordance with ASME and Original Equipment Manufacturer (OEM) requirements. Our qualified personnel and specialized equipment support a range of balance of plant (BOP) and flow accelerated corrosion (FAC) inspections including:

- Piping exams
- Piping supports and hangers
- MIC inspections
- Valves (bonnet and seats)
- Diaphragms
- Strainers
- Steam chests
- Snubbers
- Welded attachments
- Mechanical fasteners (studs, bolts, pins)

### Turbine Generator Inspection Services

Our electric power generating turbine and rotating machine services include the following:

- **Rotor bore exams** – Up to 50 feet long with varying bore diameters and bottle and step bores. Visual, computer-controlled ECT and UT; and MT inspection techniques

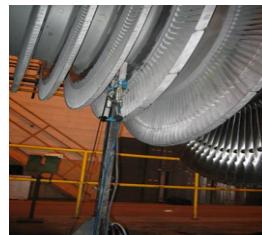


*Rotor Bore Scan*



*Auto Retaining Ring Scan*

- **Retaining ring inspections** – All OEM rotors. Inspections on 18Mn-5Cr, 18Mn-18Cr, and magnetic alloy materials. Manual and automated inspections.
- **Disc exams** – UT inspections on low-pressure turbine disc bores and inter-disc button drives. Automated exam of disc bores, keyways, peg/button drive holes.
- **Tangential entry blade attachments** – Our linear phased array ultrasonic testing (PAUT) technology examines critical areas of the wheel dovetail region without need to remove 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.



*Tangential blade scans*



*Axial blade scans*

- **Axial Entry Blade Attachments** – Using PAUT, multidirectional beam sweeps with matrix array probes, flaws are detected and sized for length and depth. Flaw orientation can also be determined.

## Other Industry-specific NDE Offerings

Our cutting-edge NDE services, engineering, inspection technology and systems, as developed for the highly regulated nuclear industry, have proven valuable in the following industrial settings:

- Specialty metal production
- Airframes and aerospace
- Oil and gas pipelines
- High-pressure piping
- Petrochemical/ethane “cracker” plants
- Paper and pulp production

## NDE Systems

We provide advanced ultrasonic and eddy current inspection systems that feature the industry’s most advanced technology. The IntraSpect™ conventional ultrasonic (UT) systems and IntraPhase™ ultrasonic phased array systems acquire and save complete waveforms at operator-defined grid locations. We then generate A-, B-, and C-scan images. Our IntraECT™ eddy current systems offer digital C-scans, complex impedance planes and on-screen strip charts.

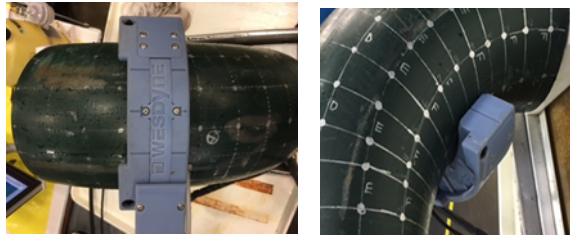


*The IntraSpect Mercury performs multi-channel inspection for corrosion and hydrogen-induced cracking (HIC)*

Our pipe scanner systems include both conventional and those designed to focus on solutions unique to the power generation industry challenges. Two key pipe scanner systems are our 5080eHT scanner capable of withstanding the demand of high temperature UT environments. Our new ELscan™ scanner provides fast, accurate, high resolution inspection of elbow extrados and intrados.



*IntraSpect 5080e HT Scanner in use.*



*ELscan™ Scanner*

All NDE systems are available in configurations ranging from the factory floor to those that are small, lightweight and fully portable.

## Benefits

The depth and breadth of our capabilities separates us from other NDE providers. Our inspection services, NDE systems, and engineering skills have been perfected in the nuclear industry and developed to meet rigorous reliability standards. As a result, we provide benefits including:

- Tailored solutions for even the most challenging inspection need, with a cost effective delivery model employed in every situation
- Advanced technology and techniques allowing many inspections to be performed while your operations remain in service – reducing down time and loss of revenue.
- Engineering, technology, services and systems defined by extensive NDE expertise, which help to minimize repair costs and optimize plant maintenance, inspection and planning

*ELscan, IntraECT, IntraPhase and IntraSpect are trademarks or registered trademarks of Westinghouse Electric Company.*