Gecko Robotics®

Inspection Services

As the leader in advanced ultrasonics, Gecko Robotics delivers a comprehensive package of inspection robots, methods, highly-trained inspectors, and software tools to give industry clients a total picture of asset health.

This hybrid of humans, machines, and platforms is the Gecko Advantage.

Our industrial inspection services cover multiple asset types and bring multiple NDT techniques to bear, providing unparalleled data coverage to make confident reliability decisions. Our covered industries, assets, techniques, and indications include:

**Industries**
- Power Generation
- Oil & Gas
- Chemical Manufacturing
- Pulp & Paper
- Government

**Assets**
- Recovery & Power Boilers
- Piping
- Pressure Vessels
- AST's
- Spheres
- Digesters
- Silos
- Scrubbers
- Towers/Stacks
- Municipal Water
- Defense Assets
- Superheaters/Economizers
INSPECTION SERVICES

Rapid Ultrasonic Gridding (RUG)
Technique: Robot-enabled straight-beam UT grids from 3”x3” (75x75mm) to 0.04”x0.04” (1x1mm)
Application: Wall Thinning (erosion) - Automated Corrosion Mapping - UDC Detection

Advanced Ultrasonic Inspections (AUI)
Technique: Robot-enabled Phased Array UT (PAUT), Time-of-Flight diffraction (TOFD), Total Focusing Method (TFM), Creeping/Head Wave Inspection Method (CHIME), Short Range Guided Wave (SRUT)
Application: Lamination/Inclusion characterization - HIC/SOHIC - Stress Corrosion Cracking - HTHA Cracking - Code-weld Inspections

API 510/570/653/1169
Technique: RUG, AUI, MUT, MFL, and Visual Inspections
Application: Full-service inspection of assets to meet reliability program requirements

Coating Thickness Inspection
Technique: Magnetic Induction
Application: Thermal Spray - Epoxies - Ceramic Coatings - Weld Overlay

Remote Visual Imagery
Technique: Robot-enabled HiDef Images
Application: Corrosion - Erosion - Burner Inspection (MATS)

Additional Capabilities
Technique: Magnetic Particle, Liquid Penetrant
Application: Surface Crack Detection
Assets experience damage in service life that impact reliability. And if left unchecked, asset failures can cause injury/fatalities, regulatory fines, costly remediation, and an acute loss of capacity.

Regularly scheduled inspections that provide thorough asset coverage have been shown to mitigate and prevent failures; however, equipment limitations and access costs have impeded inspection completeness. Too often, maintenance teams opt for sampling programs using thickness spot checking due to compromises of time, money and resources.

**Gecko changes this paradigm.**

We’ve pioneered the use of robotics, delivered as an inspection service, to rapidly and thoroughly inspect ferritic assets, such as coal-fired boilers, storage tanks, and piping. Our robots, led by certified NDT and API inspectors, crawl entire surfaces and access areas where inspection teams struggle.
TECHNOLOGY

With Gecko’s fleet of Rapid Ultrasonic Gridding (RUG) and Phased-Array Ultrasonic robots, detecting a full spectrum of damage mechanisms at any resolution is realized. Robots have the capability to distinguish damage mechanisms like wall-thinning, coating loss, corrosion, pitting, weld cracking, hydrogen damage and more.

High-density data maps are visually presented in Gecko Portal™ with maintenance and RBI programs in mind. The data deliverables in our portal allow for interactive discovery of your inspection data using thickness filters and time-based differencing, as well as markup, sharing, and exporting. Our customers return to the portal before, during, and after outages and turnarounds to plan maintenance steps.
RUG is an inspection technique designed to cover large areas with variable grid sizes at industry-leading speeds. Depending on the sensor payload, this method is suitable for tube-walled boilers, storage silos and tanks, and even piping.

RUG is suitable for equipment falling under API 510/570/653. For coverage scans, RUG identifies general wall thinning, large scale damage, and localization of corrosion areas for more detailed investigation.

At finer grid sizes, RUG can find pitting, under-side corrosion, and blistering due to various forms of hydrogen damage. These inspections routinely capture 1000X the data at 10X the speed of traditional methods. C-scan grid-size, appropriate to the inspection, is determined by the client and can determine the speed and time to conduct the inspection giving you the option to balance data fidelity and asset downtime.

C-scan grid sizes range from 3” x 3” (75x75mm) for our quickest scans down to 0.04” x 0.04” (1x1mm) for our highest density probes. This method is powered by our TOKA™ series of robots and integrations of off-the-shelf components from well-respected, original equipment manufacturers (OEMs), combined with the power of Gecko Portal™.
ADVANCED ULTRASONIC INSPECTIONS

AUI provides highly accurate defect coordinate and dimension measurements. Applications for weldments in oil, gas and power sectors, including Phased Array Ultrasonics (PAUT), Time-of-Flight diffraction (TOFD), Automated Corrosion Mapping (ACM), and Total Focusing Method (TFM). These inspections result in A, B, C-scan and sector scans to fully determine defect location, depth within the material, and geometry.

This inspection method is a powerful diagnosis tool commonly used for:

- Hydrogen induced cracking (HiC), Stress-oriented hydrogen induced cracking (SOHIC)
- High temperature hydrogen attack (HTHA) cracking
- Stress corrosion cracking (SCC)
- Corrosion mapping in Heat Affected Zones (HAZ) and near-weld regions

These systems have been integrated by Gecko to cover 5X the area of traditional AUT systems in a given period of time.
Gecko Robotics Inspection Team (GRIT) is enabled with the brightest minds and experienced inspectors in the ultrasonic testing industry.

For years, Gecko has been a leader in the ultrasonic business for asset integrity testing. Now expanding on our capabilities by bringing in the latest technology and best people to use it. We are here to help with your ASME, AWS, and API weld testing needs.

Gecko deploys magnetic induction methods to measure the effectiveness of asset coatings applied to prevent corrosion/erosion. Inspections currently measure thermal spray, epoxies, ceramic coatings and weld overlays. Our services can measure coatings over 5 mm.
These services are performed by certified inspectors who meet all applicable codes for that category. API inspections are requested along-side our general inspection offerings. Gecko Robotics Inspection Team (GRIT) inspectors use a combination of automated techniques, manual techniques, and additional equipment, to certify their results.

Remote Visual Imagery

High definition imagery is co-located and uploaded to Gecko Portal™ with every ultrasonic inspection. This comes standard with all Gecko Services inspection techniques.

API 510/570/653/1169 INSPECTIONS

Interactive deliverables provide the most comprehensive assessment and prediction tools to identify future failures of your asset.
The Gecko Robotics Inspection Team (GRIT) deploys globally to deliver these core capabilities.

Depending on the urgency, GRIT can mobilize in less than 48 hours to meet your most stringent and pressing inspection demands.

For customers with on-going and real-time needs, Gecko provides a premium option, Chartered Services. This service supplies a fully-equipped, dedicated team on-site for weeks, even months at a time to provide comprehensive site inspections.

Gecko Robotics commits to delivering advanced, non-destructive inspections that deliver out-sized value to your reliability and asset management programs. More coverage means more confidence. Challenge us with your most difficult project!

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