

Gecko Robotics Introduces Tri-Lateral Phased Array: A New Tool to Detect Wet H₂S Damage

Gecko Robotics introduces Tri-Lateral Phased Array, a robotic inspection method for identifying and quantifying the hidden enemy in sour service.

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introduces its latest inspection

technique to its growing suite of NDT/NDE robotic solutions, Tri-Lateral Phased Array (TriLat). Tri-Lateral is a revolutionary method for identifying and quantifying damage mechanisms in sour service environments, including hydrogen-induced cracking (HIC), stress-oriented HIC (SOHIC), and sulfide stress cracking (SSC), with unparalleled productivity, resolution, and data density.

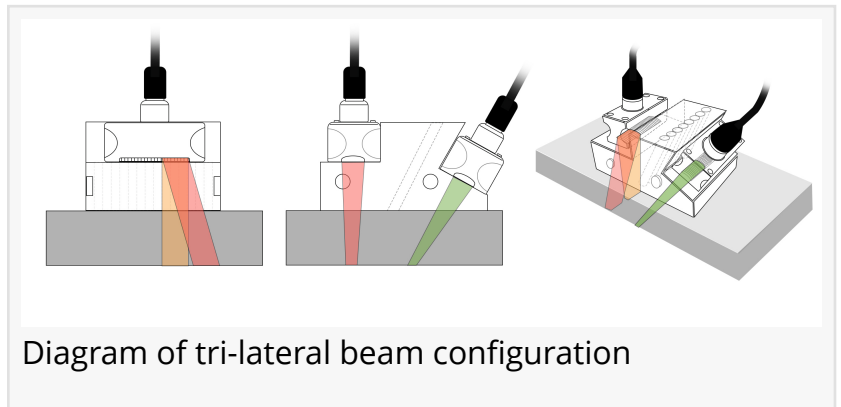
“

When undetected or misinterpreted, wet H₂S damage can cause sudden and catastrophic failure. We developed TriLat to accurately confirm wet H₂S damage vs. inherent flaws from steel manufacturing.”

*Jose Aparicio, Gecko Robotics’
NDT Technology Manager*

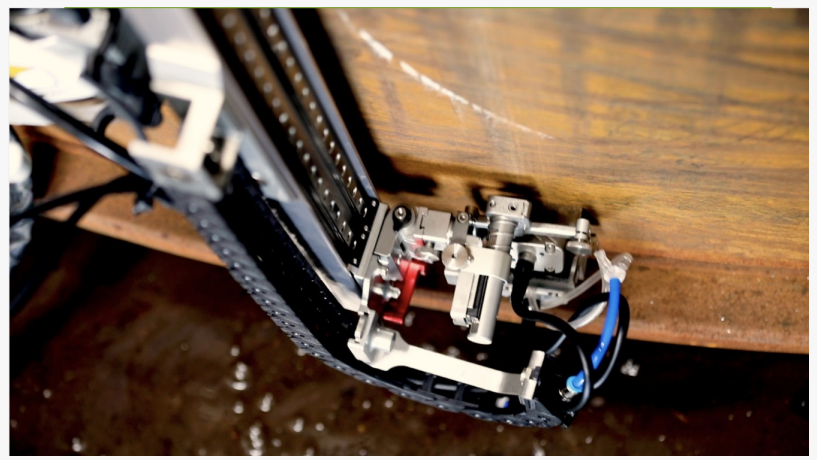
Sour service, or wet hydrogen sulfide (H₂S), environments result from hydrocarbon production. Wet H₂S damage causes blistering, corrosion, and cracking in the base metal of carbon or low alloy steel equipment. It is regularly misclassified by other NDT techniques as less pernicious damage such as minor cracks, laminations, or base metal inclusions. Underestimating the true extent of damage leads to unexpected equipment failure, often material release, and sometimes injury, even death.

“When undetected or misinterpreted, wet H₂S damage can cause sudden and catastrophic failure,” explains Jose Aparicio, Gecko Robotics’ NDT Technology Manager and co-creator of Tri-Lateral. “That is why we developed TriLat with multidirectional focalization customization and two-axis resolution to efficiently and accurately confirm wet H₂S damage. And not less important, it can sort indications from cracking or inherent flaws from steel manufacturing.”



TriLat builds upon the prior development of Rapid Automated Ultrasonic Testing ([R-AUT](#)), a

robotic inspection technique that uses rastering and a linear probe to efficiently scan equipment for corrosion. TriLat is driven by the same robotics and rastering as R-AUT, but instead utilizes a state-of-the-art probe for identifying subsurface cracking and damage. Contained within a single unit are two 64 element probes: one in a lateral position the other in a linear position, comprising three angle beam sets. The result is an inspection speed up to 10x faster, depending on probe size, and exceptional electronic resolution with a data density 25x greater than conventional AUT methods.



Robot with tri-lateral phased array scanning a storage tank



“It is estimated that 50% of the equipment operating in sour service contains wet H2S damage. This is a real game-changer for oil and gas, but also the chemical and petrochemical industries,” explains Chase David, Gecko Robotics’ Director of NDT Technology and co-creator of Tri-Lateral. “Up until now, there hasn’t been an industry-standard solution that offers comparable productivity and data resolution in just a single scan of the equipment.”

Inspections with Tri-Lateral Phased Array are available immediately. For more information, visit <https://resources.geckorobotics.com/trilat-inspection-service>.

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