

## **24/7 Large Area Corrosion Monitoring**

**Thomas Vogt<sup>1</sup>, David Alleyne<sup>2</sup>, Chien An Chua<sup>3</sup>**

<sup>1</sup>Director of Monitoring, Guided Ultrasonics Ltd., United Kingdom, <sup>1</sup>CEO, Guided Ultrasonics Ltd., United Kingdom, <sup>1</sup>Regional Manager (SE Asia), Guided Ultrasonics Ltd., Malaysia

Evolving demands in the oil, gas, and petrochemical industries require new solutions for mechanical integrity. The risk and subsequent consequences of unexpected corrosion-induced wall loss leading to the release of hydrocarbons represent every operator's worst-case scenario. Utilizing risk assessments and intervention-based measurements exclusively, combined with limited site access, prevailing travel restrictions, labour costs, and site hazards, can place high-consequence areas, especially those situated above or adjacent to water resources, in jeopardy. In this presentation, we will discuss the latest advancements in guided wave technology, which combine high-accuracy wall thickness measurements with continuous long-range monitoring of pipe integrity changes through the use of permanently installed sensors. Guided waves offer a significant advantage by enabling the inspection of a large volume of pipework from a single location. In contrast to one-time inspections, permanently installed sensors can provide corrosion detection sensitivities up to ten times greater. This provides 24/7 oversight of critical areas, facilitating well-informed planning and intervention maintenance. Moreover, information derived from guided wave monitoring sensors can be leveraged to enhance profitability by optimizing the use of costly corrosion inhibitors and the management of risks associated with crude oil blending. We will also explore real-world applications, including the strategic placement of sensors and the analysis of cost-benefit relationships.