

FMCW Radar Sensor

Contactless Asset Integrity Inspection



The Frequency Modulated Continuous Wave (FMCW) radar is being developed to enable sensing in extreme environments. Deployable by robotics and autonomous systems, the device presents a new generation of inspection, providing fast and accurate state of health assessments of dielectric and metallic materials.

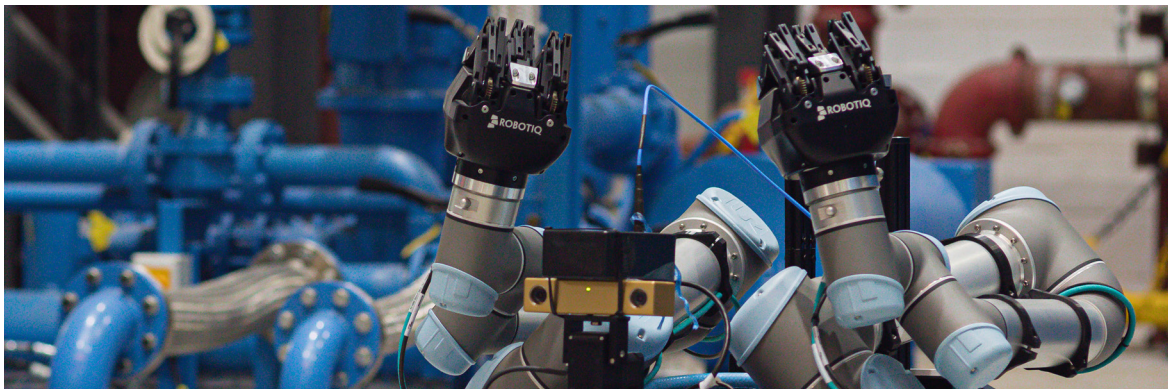
Without the need for couplant or any priming of the asset and with no physical contact with the asset, the sensor has the ability to provide insight to previously inaccessible areas without the need to have humans working within hazardous environments.

Benefits

- Make the inspection process more efficient by inspecting infrastructure without requiring physical contact
- Improve infrastructure integrity sensing by allowing for a holistic assessment
- Gather accurate, real-time data about the integrity of assets supporting more informed decision-making, and asset health and failure predictions
- Reduce risk to personnel by integrating the sensor to robotic and autonomous deployment vehicles such as remote or autonomous Unmanned Aerial Vehicles
- Make confined space integrity inspections safer by removing the need for personnel to enter vessels, carrying out internal inspections from outside the structure

Possible Applications

- Asset integrity with the ability to evaluate dielectric and metal materials
- Corrosion Under Insulation (CUI) pipeline inspection without the need to remove insulation
- Flare stack inspection
- Internal vessel integrity inspection without entering the confined space
- Wind turbine blade inspection and modelling
- Harsh environment Simultaneous Localization and Mapping (SLAM) in opaque environments





ORCA HUB
Offshore Robotics for Certification of Assets

Remote Safety and Integrity

Prof. David M Lane, CBE FREng FRSE
Heriot-Watt University
ORCA Hub Director

Prof. Sethu Vijayakumar, FRSE
University of Edinburgh
ORCA Hub Deputy Director

Dr. Lindsay Wilson
ORCA Hub Manager
E: Lindsay.Wilson@hw.ac.uk
T: +44 (0)131 451 8253
M: +44 (0)7779 982 134

David Wavell
ORCA Hub Business Development
E: D.Wavell@hw.ac.uk
T: +44 (0)131 451 8200
M: +44 (0)7717 779 417

ORCAHub.org
ORCAHub@hw.ac.uk

 @ORCA_Hub
 ORCA Hub