# RIMCAW

## Robotic inspection of mooring chains in air and water

### Background

Failure of mooring chain systems for offshore structures in the oil and gas industry represents a critical threat to the assets themselves, human life and the environment. Considerable effort is made to ensure that the integrity of the chains is maintained to high standards, and a key part of this is increasing the precision and reliability of inspection methods.

TWI has recently been involved in the inspection of a critical chain link on a floating production storage and offloading (FPSO) vessel and developed a specific inspection tool for implementation by divers. This tool is able to detect critical fatigue cracking which has developed during service.

The RIMCAW project takes this further by aiming to:

- size and accurately map fatigue cracks within the body of a chain
- replace the diver with robotic systems to meet evolving health and safety regulations
- assess all the links of a mooring chain system whether subsea, at the splash zone or in the air.

### Objectives

To:

- develop a mechanised scanning trajectory and technique for critical areas of a mooring chain
- develop ultrasonic transducers and instruments for marine conditions
- design, develop and demonstrate a robotic system to travel on a mooring chain, inspecting critical areas of each link for fatigue cracking.

### Benefits

The RIMCAW project will deliver a robotic system for mooring chains that will operate autonomously from the top side of a vessel to subsea. This will aid systematic inspection schemes for critical mooring systems, with the ability to rapidly deploy the systems on demand and, importantly, maintain traceability on the condition of a mooring system for lifetime monitoring for the emergence of critical fatigue cracking.


**Project partners**
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TWI Ltd

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