

LIFETIME PREDICTION FOR SAFETY OF MARITIME ASSETS



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA



Our research investigates complex, detrimental lifecycle factors that influence the long-term structural integrity of maritime assets, such as Australian Defence vessels. We do this using real-world field testing and metallographic and electrochemical laboratory experiments to increase scientific knowledge of the short- and long-term weld corrosion processes. We are also developing mathematical models to predict likely localised weld corrosion loss, which can contribute to guaranteeing operational safety and reliability for Australia's Defence and other critical shipping and offshore facilities across the country.

COMPETITIVE ADVANTAGE

- Real-world, multi-year empirically obtained data for increased realistic operational safety and reliability of assets

SUCCESSFUL APPLICATIONS OF RESEARCH

- Improved ship building practices in Australia
- Efficiently sustaining docked Royal Australian Navy fleets for optimal operational performance

PARTNERS

- Defence Science and Technology Group

IMPACT

The project outcomes will:

- Provide scientific, evidence-based models for corrosion of new and existing maritime assets, such as Australian Defence naval assets
- Improve understanding and predictive modelling of critical, rapid corrosion damage of welded assemblies
- Permit optimal maintenance regimes and reduction in risks of structural integrity, economic losses and undesirable environmental impacts

CAPABILITIES AND FACILITIES

- Natural and sterile seawater remote sense testing facility unique to Australia
- Scanning electron microscope and dispersive spectroscopy material analysis
- X-ray diffraction material phase detection
- Several national and international in-situ test sites