iLAuNCH

Digital Twins for Composites Manufacturing and Repair

THE PROBLEM

This program is dedicated to improving digital twin workflows for composite materials, by implementing Industry 4.0 methodologies for Boeing's existing commercial, space, and defence fleets.
These digital twin workflows will be utilised for a case study focused on the repair of composite components, to eliminate both engineering and laborious processes; and be applied to filament winding, for improved winding trajectories, particularly for complex components that cannot easily be supported by existing software. The linkage of vision tools in-situ during filament winding into the digital twin is key to optimised manufacturing processes.

THE SOLUTION

This project will leverage the expertise at MEMKO and UniSQ's Centre for Future Materials, to firstly identify the gaps that exist in the current commercial software capability that currently hinder the full uptake of Digital Twin solutions for composite materials. Once identified, the team will work to fill gaps that exist, to form a complete solution from design through to maintenance, repair, and overhaul working closely with Boeing stakeholders.
The project will create:

- Complete digital twin workflows for composite materials.
- Bespoke advanced filament winding tool for non-standard geometries, linked to the digital twin.

RESEARCH CAPABILITY

UniSQ – Centre for Future Materials

- Filament winding, associated vision systems, supercomputer capability, and Dassault Systems 3D Experience suite.
- Advanced skills in the development and manufacturing of filament wound parts, composites bonding, and the design of additively manufactured components for hybrid structures suited for aerospace/space applications.

PROJECT PARTNERS

University of Southern Queensland

memko

BOEING

CONTACT DETAILS - PROJECT LEAD
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