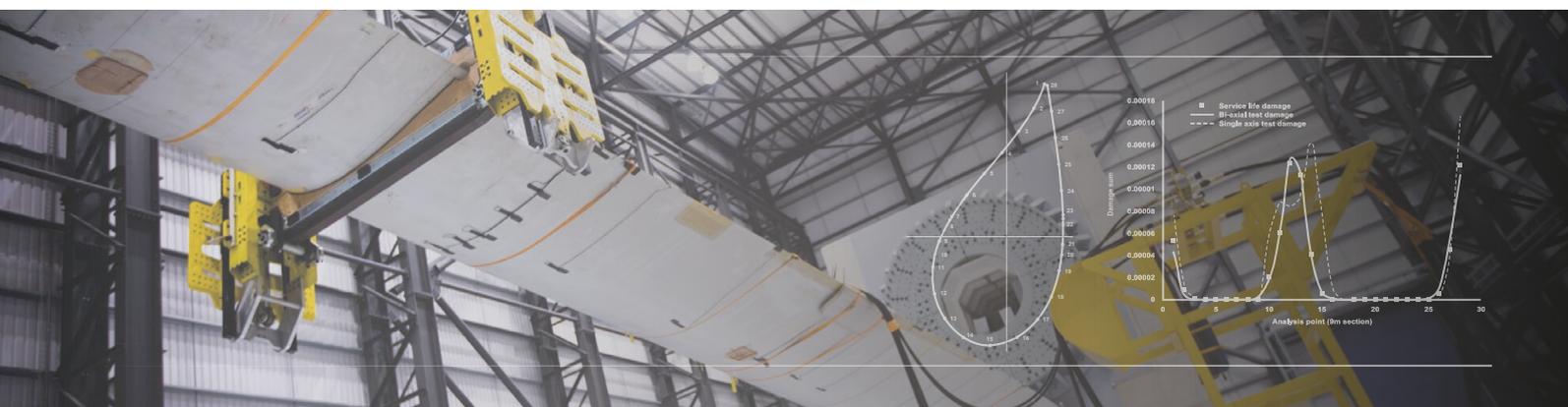


BI-AXIAL BLADE FATIGUE TESTING



CASE STUDY



BLADE TESTING THAT IS MORE REPRESENTATIVE OF REAL-WORLD OPERATING CONDITIONS, REDUCING OVERALL TEST DURATION AND COST

ORE Catapult's blade experts are developing a bi-axial testing method to address the challenge of reducing the duration and costs of blade testing, also making it more representative of real-world operating conditions. This joint industry and academic collaborative aims to reduce the overall test program duration by up to 25% and fatigue test duration by almost 50%.

ORE Catapult's bi-axial testing method involves understanding the theoretical fatigue damage of a blade during its service life. This is done using fatigue analysis software, developed by ORE Catapult and certified by DNV-GL, ensuring that the physical test loads replicate the service life damage over as much of a blade as possible. With data from the analysis, a bi-axial test can be designed and undertaken, exciting the blade in the flapwise and edgewise directions simultaneously to more accurately represent the fatigue that a blade in the field would experience over its lifetime.

Bi-axial moves away from conventional methods of testing, and can also be presented to a certification body. Having attracted significant interest from industry, the bi-axial testing programme is now set to be upscaled to become part of the XL-BLADE DemoWind project, alongside project partners ADWEN and LM Wind Power, validating one of the world's longest offshore wind blades at 88m.

“ The collaboration with a world-class research and test institution such as ORE Catapult cements our position as an offshore industry leader and enforces our commitment to innovation ”

Alexis Crama, VP Offshore, LM Wind Power



Reducing overall test times by up to 25% ensures more cost effective testing, reducing the levelised cost of energy.



Bi-axial fatigue testing can be designed to represent the damage that the blade is predicted to see in service.



Bi-axial testing reduces fatigue test duration by almost 50%, increasing speed to market for OEM client blades.