

ENGINEERING INTEGRITY
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WEBINAR: Force Measurement at the Bleeding Edge of Wind Tunnel Testing for Advanced Aerospace Applications

Wednesday 5 July 2023 1pm

Presenters:

Houda Bdeiwi, Manjit Ubhi & Simon Lawson
Aircraft Research Association



As the global heating crisis accelerates, the next generation of passenger aircraft will demand a substantial improvement in engine efficiency. The advent of ultra-high bypass ratios will introduce new aerodynamic challenges which are likely to require changes in nozzle geometry between each flight stage.

In close collaboration with Rolls-Royce, ARA has developed a dual stream jet propulsion rig for test and evaluation of variable geometry engine nozzles. This unique, world leading capability has been made possible by creating a bespoke force measurement balance which delivers reliable, highly accurate engineering data while cold, high pressure jets pass through it.

With a focus on the critical stages in the life of the balance, we will introduce the thermal modal analysis which informed design, the planning and installation of strain gauges and wiring following machining of the balance, and the performance monitoring during testing which ensured confidence in the engineering data.

About the Presenters

Houda Bdeiwi is a Senior Aerodynamics Engineer (MSc in Advanced Computational Methods for Aeronautics, Imperial College). She has led aerodynamic and structural analyses for multiple wind tunnel models and rigs.



Manjit Ubhi is a Senior Instrumentation Engineer with extensive expertise and experience in all aspects of strain gauge installation including consultation, planning, installation and thermal optimisation.



Simon Lawson is a Principal Aerodynamics Engineer (MSc in Aerodynamics, Cranfield); he is highly experienced in the design and delivery of complex wind tunnel tests and has been the technical leader of grant funded research projects. He is also an expert in the development and use of bespoke force measurement balances.



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