

Aeroacoustics Wind tunnel

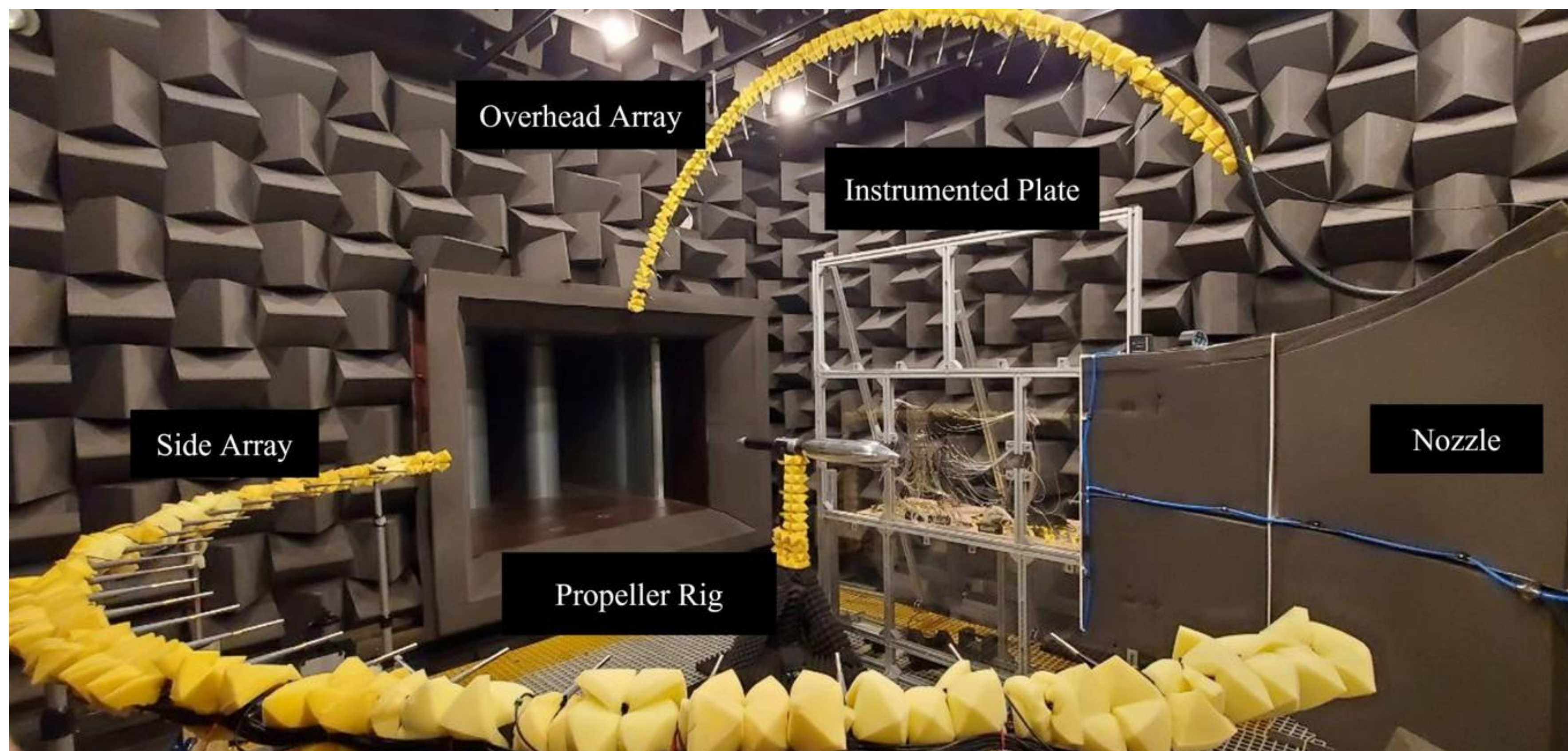
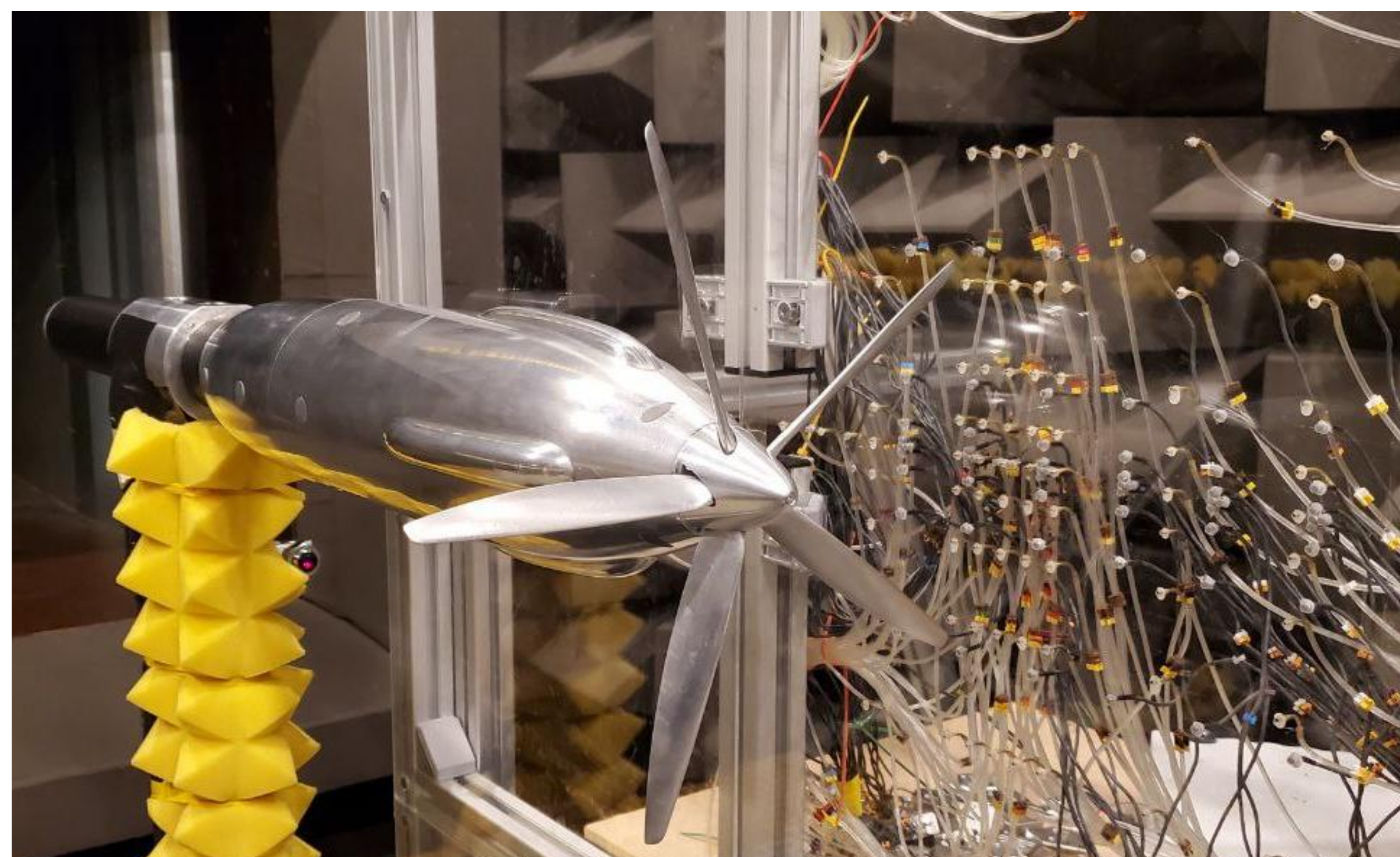
University of Bristol



Prof. Mahdi Azarpeyvand
m.azarpeyvand@bristol.ac.uk



Dr. Esmaeel Masoudi
e.masoudi@bristol.ac.uk

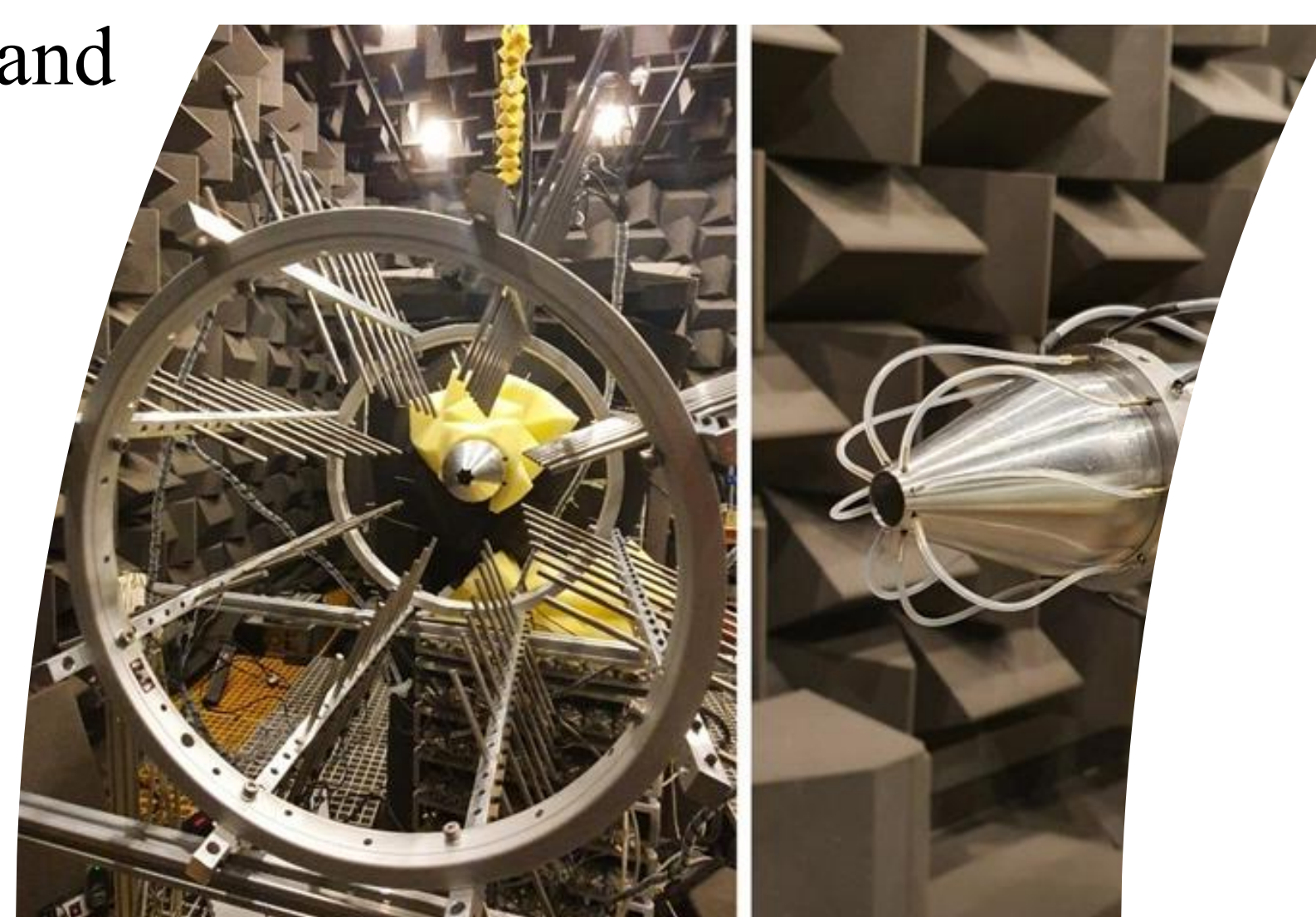
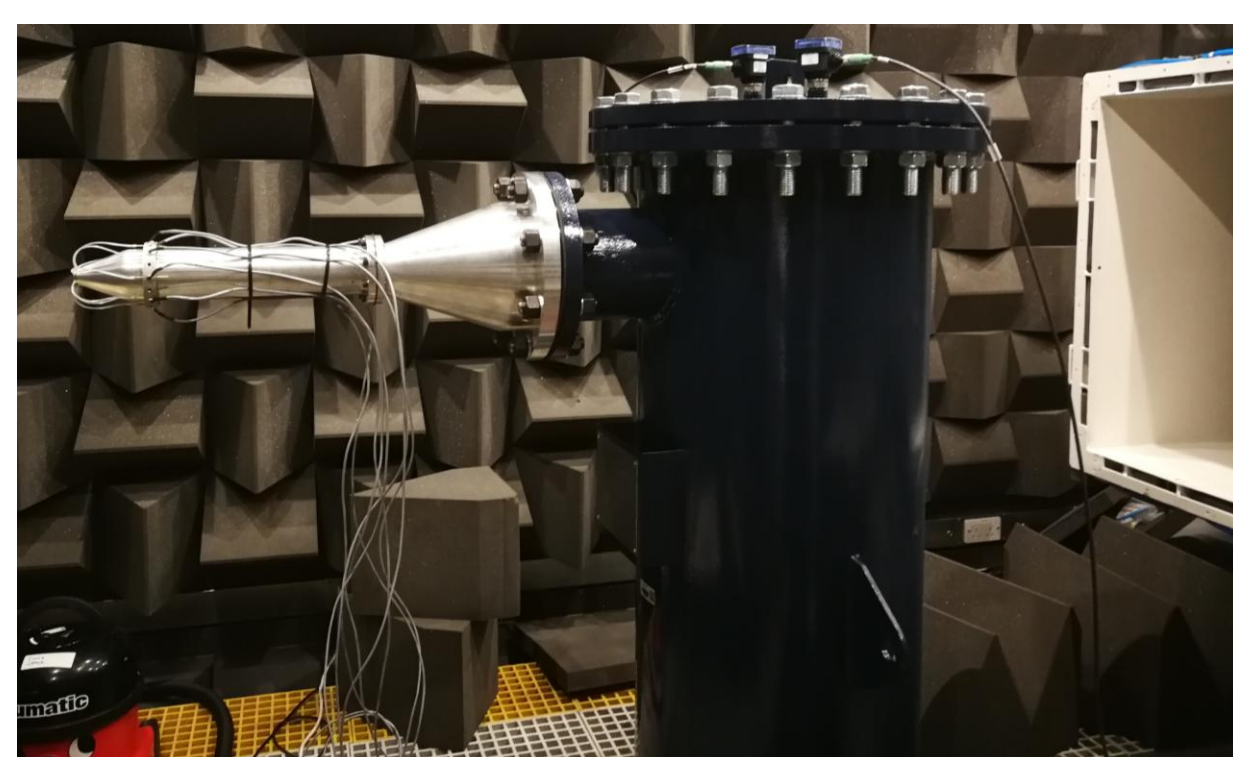


Facility capabilities

- A unique facility nationally, consisting of a very quiet closed-circuit wind tunnel and a **7m × 4.5m × 3.5m anechoic chamber**, fully **anechoic down to 160Hz**
- Powered by a 75kW centrifugal fan and equipped with a series of large silencers. Equipped with a 40kW water cooled chiller, enabling **continuous testing at 15°C to 30°C** set temperatures (Mayer et al., Appl. Acoust. 155, 358-370 (2019))
- Free-stream velocity range from of **8m/s to 120 m/s** with unfiltered free-stream **turbulence intensity of 0.1%** at 30m/s
- High speed jet (subsonic and supersonic)
- Measurement capabilities** include hotwire and hotfilm CTA systems, PIV, in-house unsteady pressure transducers, source localisation beamforming arrays, multiple farfield arcs with GRAS and B&K free-field microphones, NI DAQs for up to 160 channels for simultaneous measurements

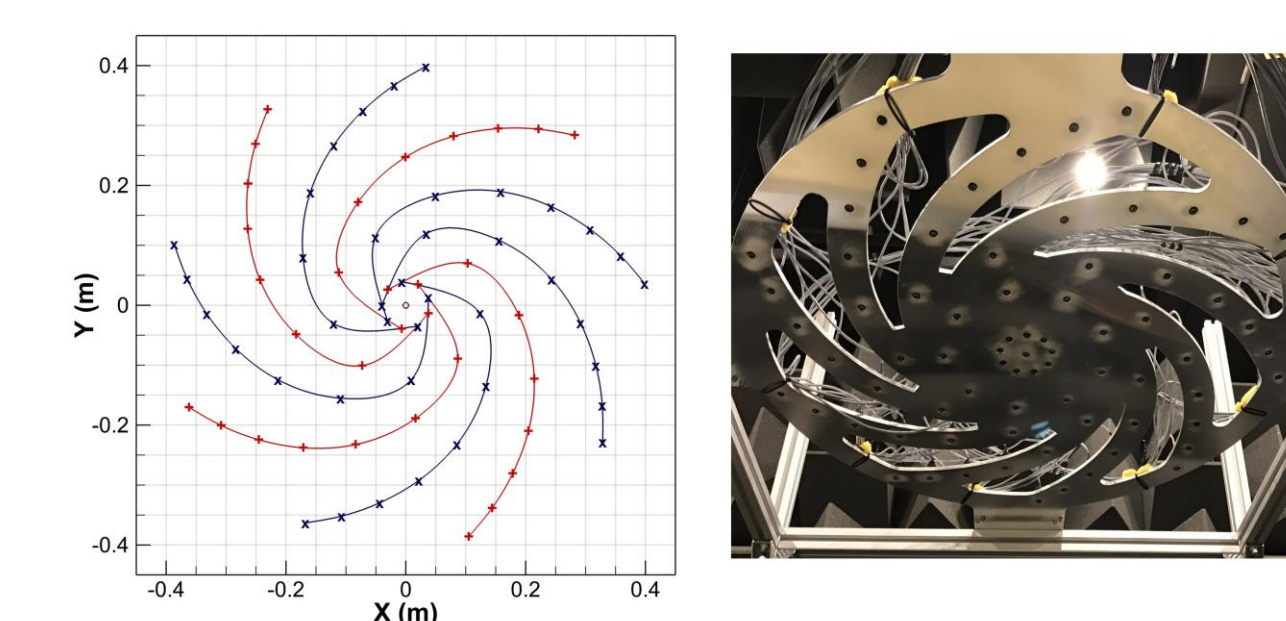
High-speed jets

- Jet Noise:** Jet hydrodynamic field and its interaction with installations



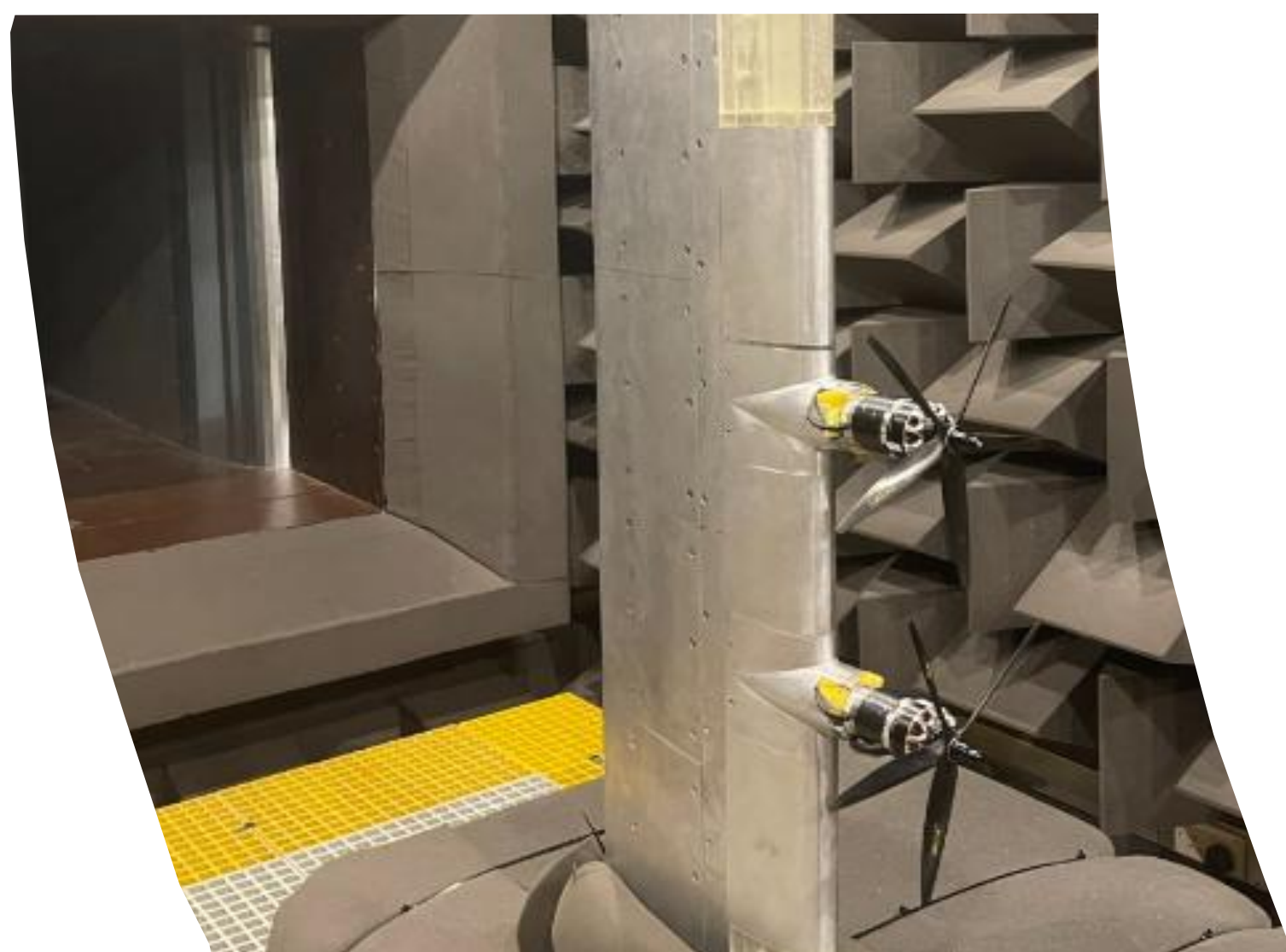
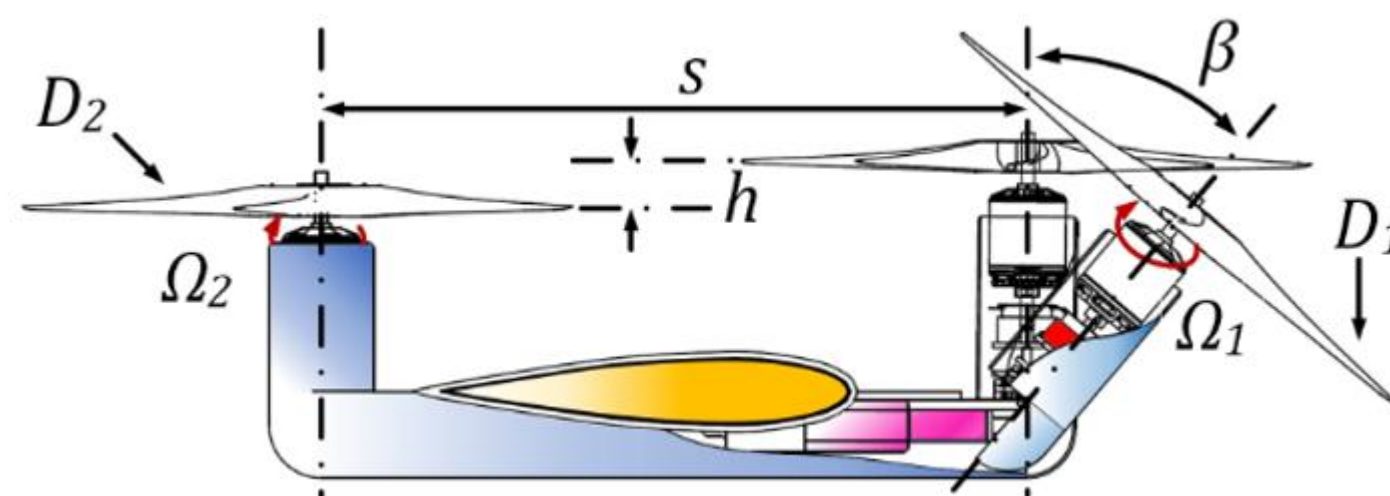
Aerofoils and high-lift devices

- Aerofoil self-noise:** Airfoil separation and stall noise using acoustically transparent Kevlar-walled test section

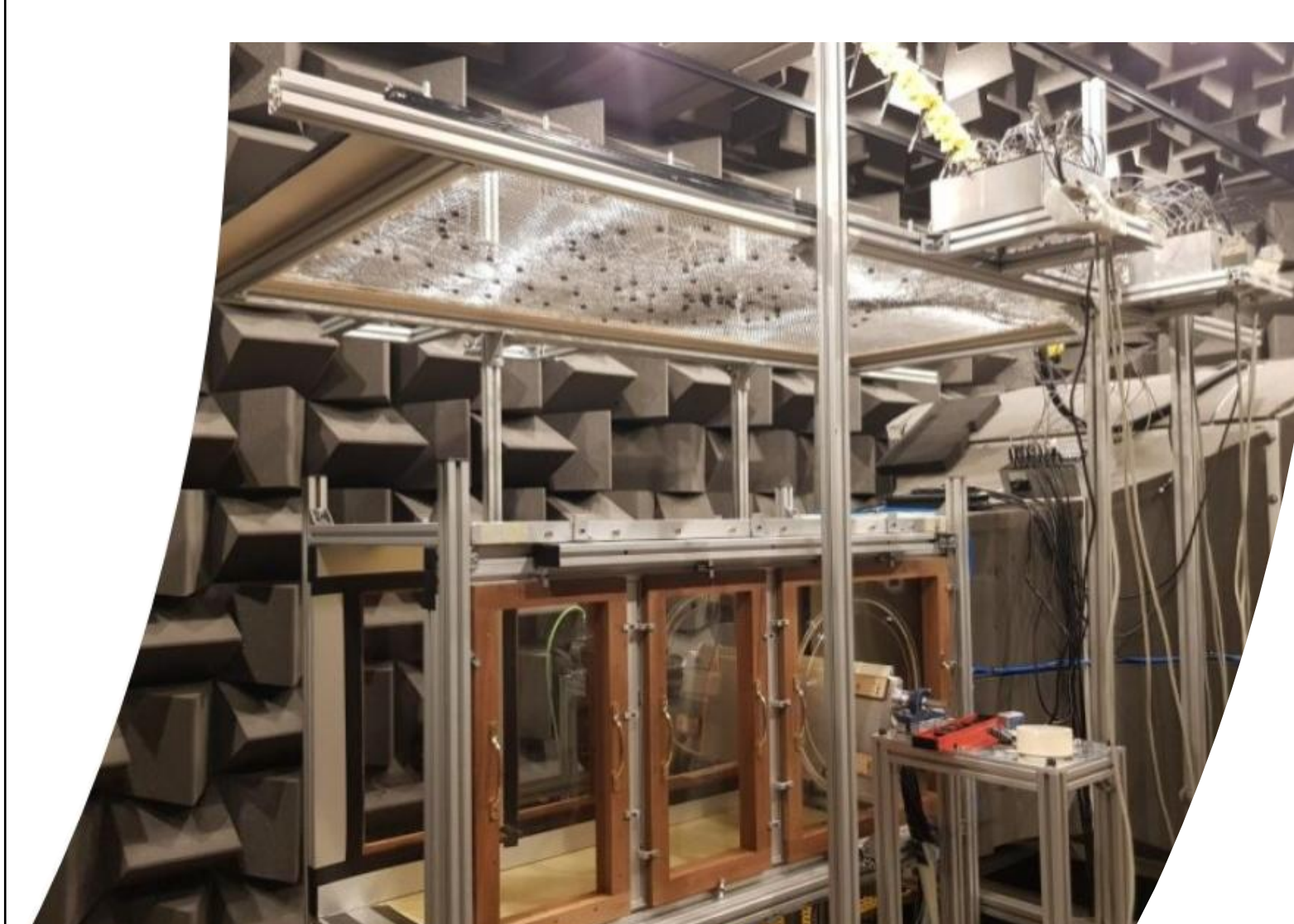


Propeller, rotor & DEPs

- Propeller/rotor noise:** Noise associated with various propulsion configurations including distributed electric propulsion systems, eVTOL, etc



Fundamental turbulence and aeroacoustics



- Turbulent boundary layer development across rough and irregular surfaces, trailing edge noise mitigation
- Gust interaction with aerofoils
- Passive and active noise control methods

Industrial partners and funding agencies