

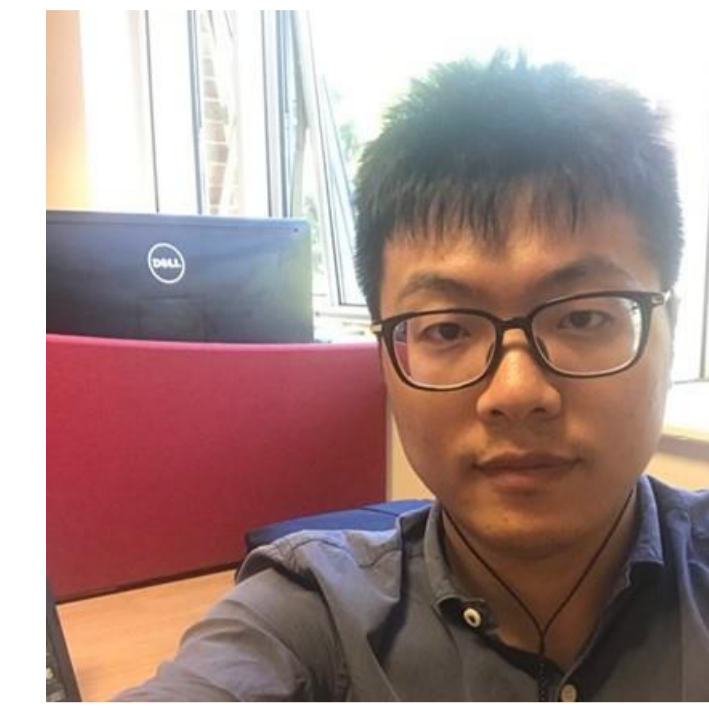
# Pressure-Neutral Wind Tunnel

University of Bristol

## Department of Aerospace Engineering



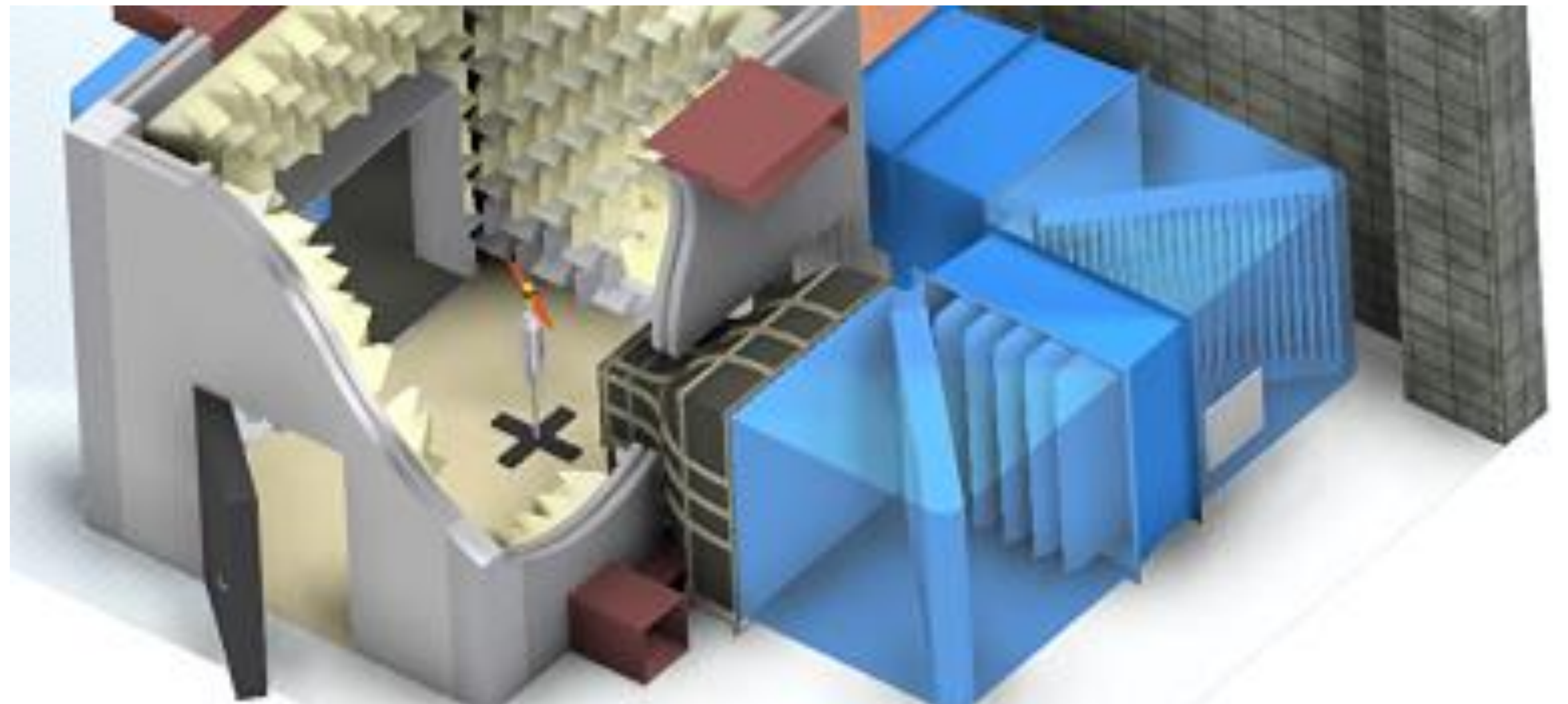
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### Facility capabilities

- A newly upgraded closed-loop, open section wind tunnel, with a **1m width × 0.7m height nozzle** and a **3.8m long × 4.2m wide anechoic chamber**
- Two sets of large splitter silencers to significantly reduce flow noise in the tunnel. New flow conditioners to reduce free-stream **turbulence intensity to 0.2%**
- New motor and control system for accurate control of free-stream velocity range of **5m/s to 35m/s**
- Four rectangular openings on both sides of chamber room, above and below the collector and nozzle, to achieve **pressure-neutral** in chamber
- **Measurement capabilities** include far-field microphone arrays, large beamforming array for far-field noise, 6-axis force plate, miniature load cells, pressure scanners, data acquisition and I/O modules, 2D and 3D PIV (can be phase-locked to propeller systems); hot-wire and hot-film CTA

### Propeller and aerodynamic research

#### SilentProp

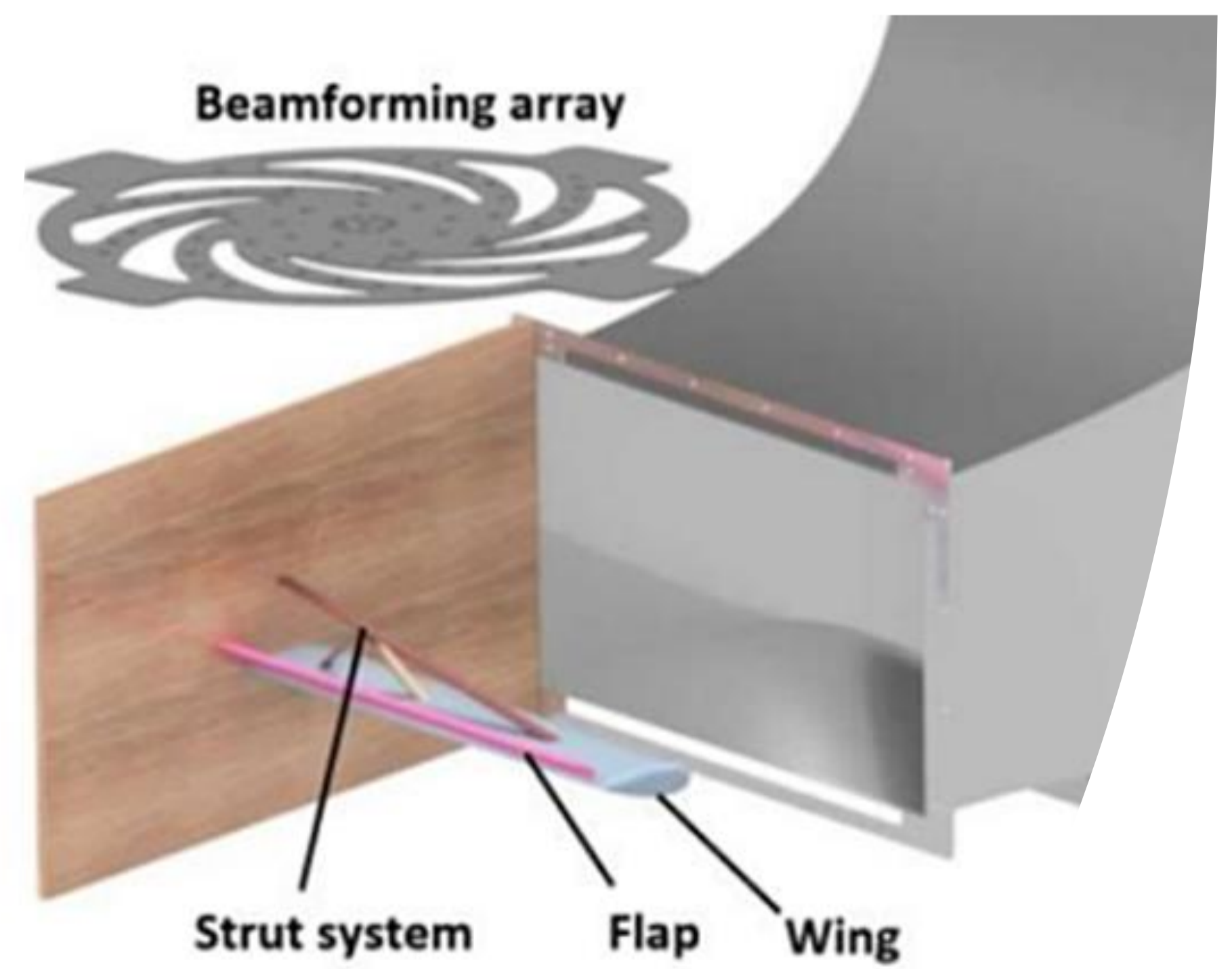
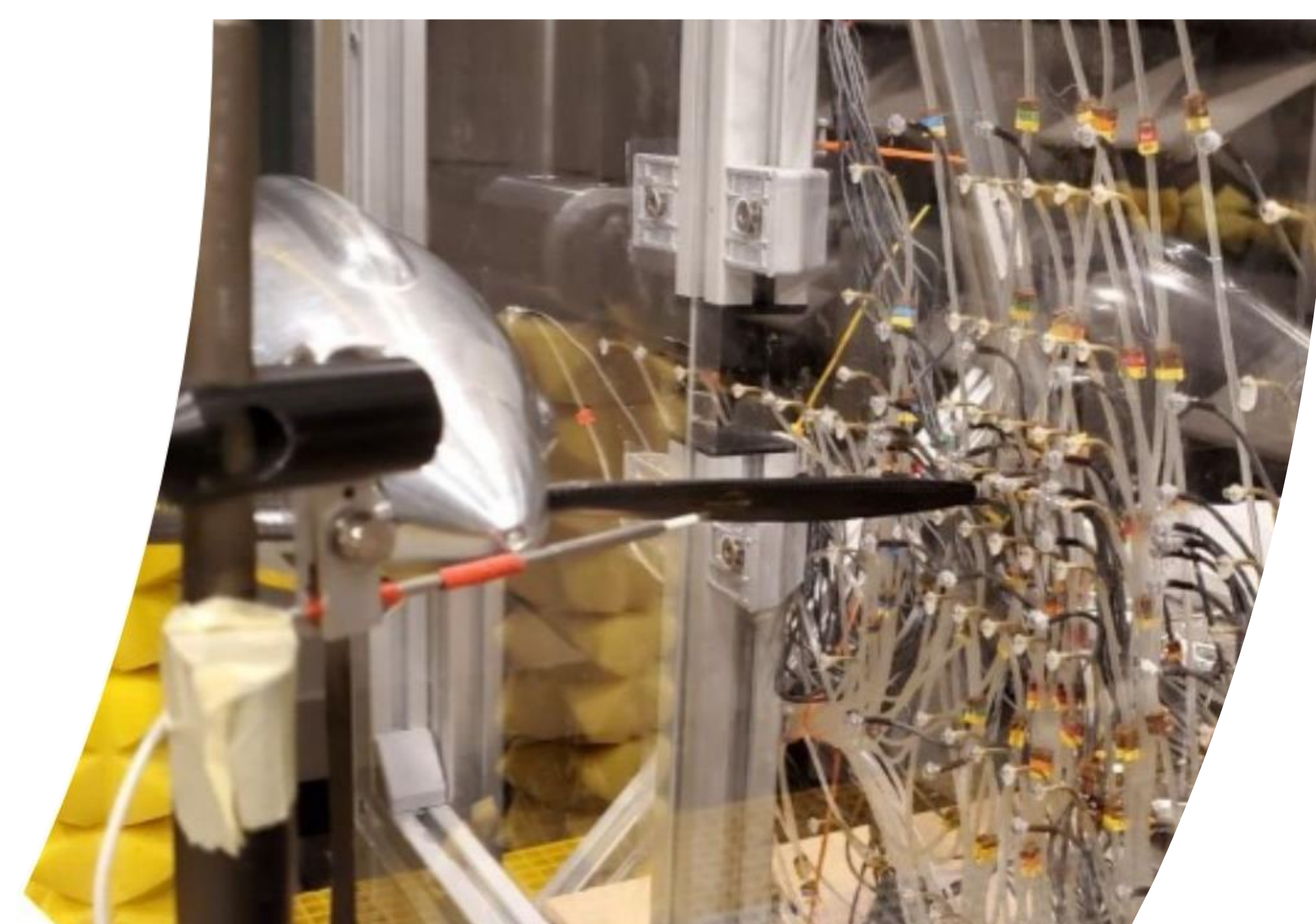
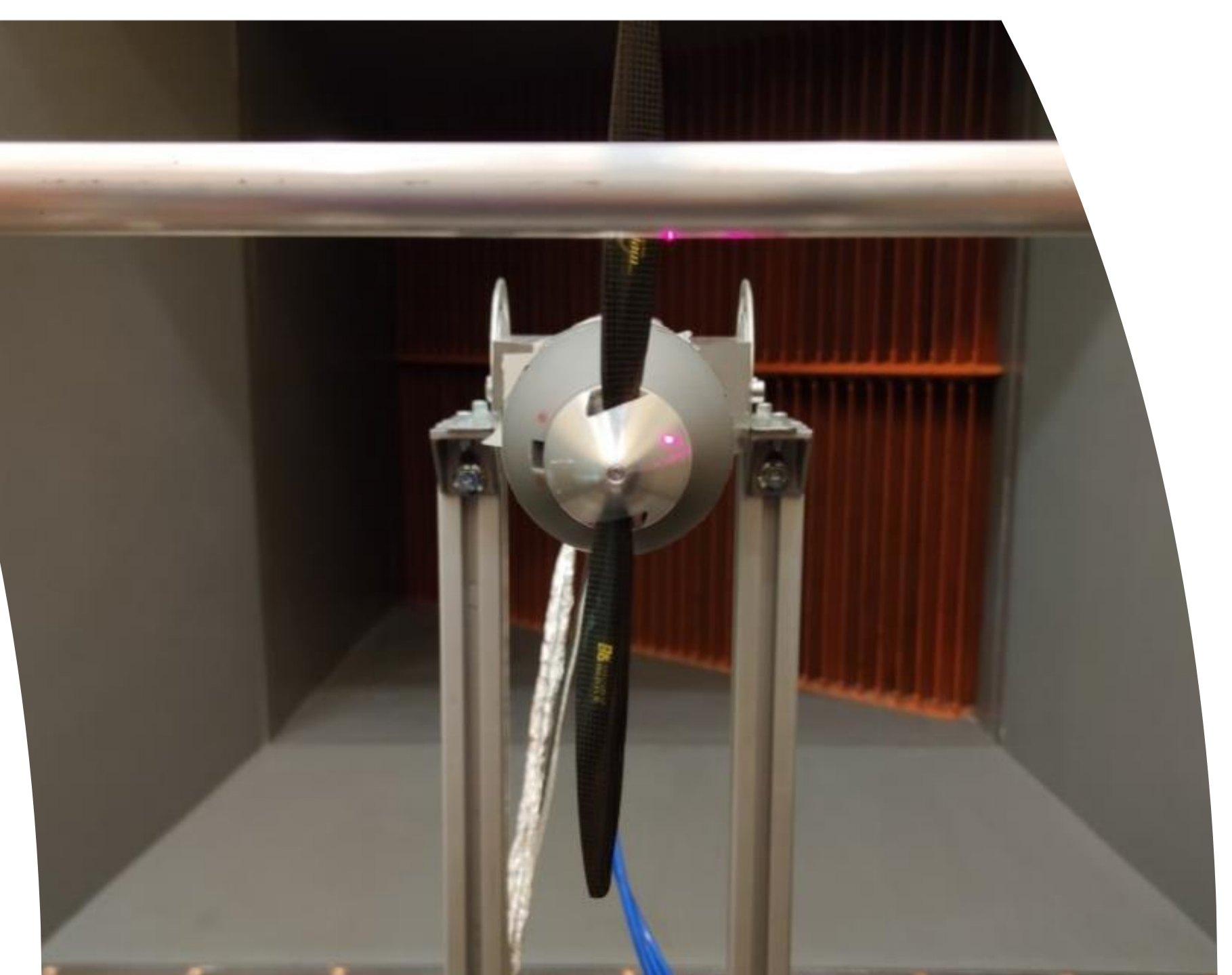
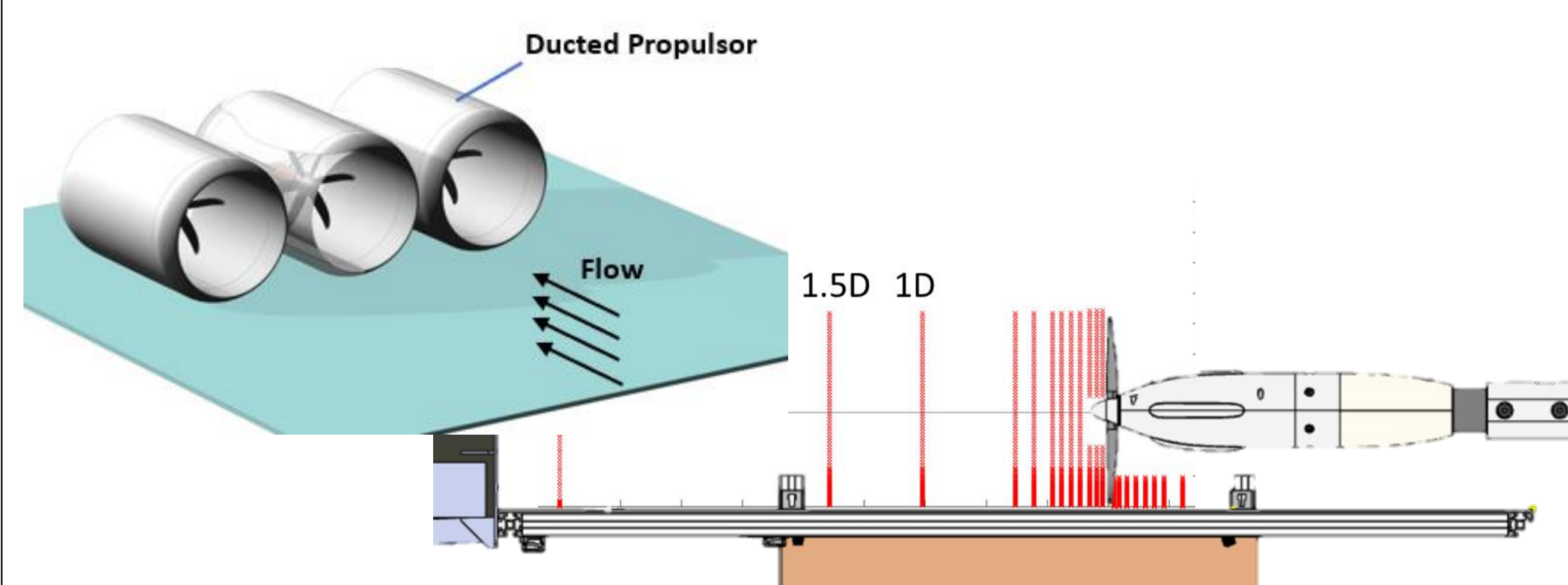
- Advance understanding of key noise aspects and evaluate noise suppression and shielding effectiveness for Distributed Electric Propulsion (DEP) systems

#### ENODISE

- Investigate key propulsion-airframe integration issues and minimize detrimental installation effects to reduce noise and greenhouse gas emissions

#### U-HARWARD:

- Facilitate the development of ultra-high aspect ratio wings for large transport aircraft using innovative aerodynamic and aeroelastic designs



### Industrial partners and funding agencies