NWTF
NATIONAL WIND TUNNEL FACILITY

Transonic Wind Tunnel

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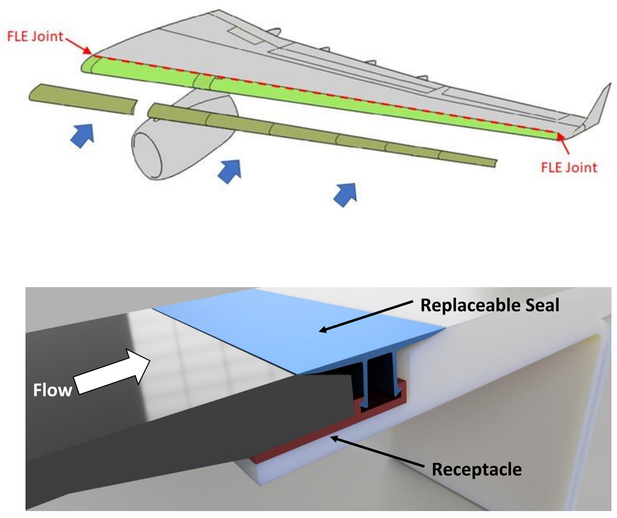
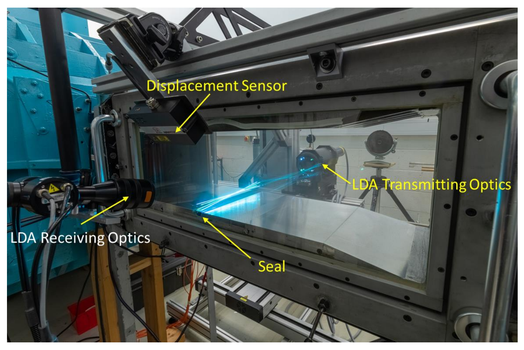
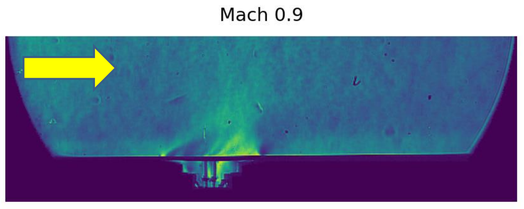


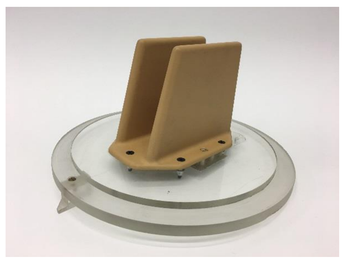


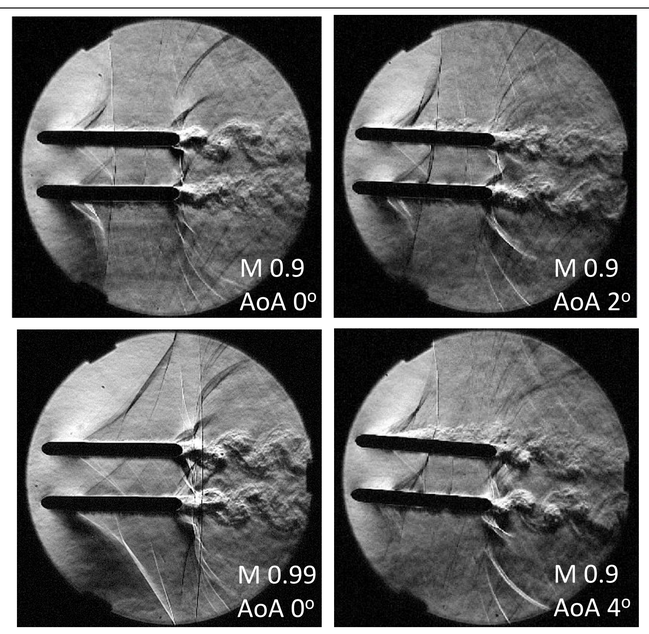
Mach 0.9



Laminar-Flow Friendly Aircraft Seals

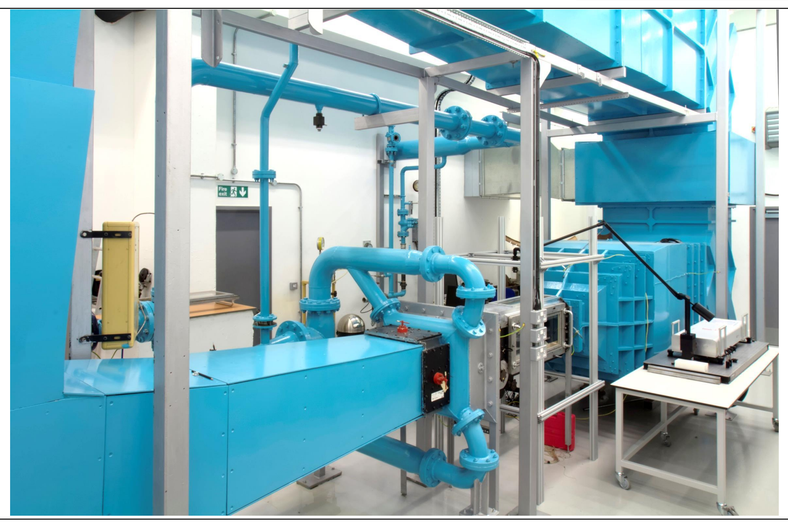
- For commercial aircraft wings, laminar flow technology is currently TRL2/3, with significant operability challenges remaining
- We are developing improved laminar flow friendly gap-bridging/fastener concealment snap-fit seal systems (TRL4)
- New targeted seal wind tunnel data/tools to predict onset of turbulence and sealing performance have been developed
- Tribological assessment of seal in situ within a ground based demonstrator is underway





Aerodynamic redesign of Radome fins

- Study of fluid-structure interaction in transonic flow regimes as applied to parallel-fin elements
- We studied the structural loading on the fins due to vortex shedding and associated VIV
- Flow control strategies are explored to alleviate the periodic loads
- Effect of spanwise geometry variation (leading edge sweep) on the dynamics of flow separation are being investigated



T-5 TRANSONIC WIND TUNNEL

- Test Section Dimensions: 0.25m X 0.24m X 0.7m
- Operating Mach number range: Mach 0.4 – Mach 1.5
- Turbulence Intensity: 0.8 %
- Instrumentation: Laser Diagnostics (3D LDA; Stereoscopic PIV), Thermal Anemometry, Pressure Transducers, High-Speed Flow Visualization

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