



DYNAMIC STRUCTURAL ASSESSMENTS

SUPPORTING AIRFRAME, ENGINE INTAKE, ROTORCRAFT AND
INTERIOR DESIGN FROM CONCEPT TO CERTIFICATION

03

CAPABILITY STATEMENT

STRUCTURAL DESIGN, DEVELOPMENT & CERTIFICATION

- Provide advice to customers on the appropriate analyses, materials and lay-ups, testing arrangements and structural optimisation
- Impact/Bird Strike assessment of metallic & composite structures
- Dynamic Response Analysis covering Normal Modes, Modal Analysis, Forced Vibration, Damping and Test Correlation
- Fatigue Analysis, Test Development/Assessment and Safe Life determination
- Crack Growth, Damage Tolerance Analysis and Inspection Periodicity
- Flight Control & Mechanism Analysis
- Engine Nozzle Acoustic Vibration Assessment
- Thermal environment and metallic/composite interaction analysis
- Blade Antenna dynamic response analysis and test correlation

ANALYSIS TECHNIQUES

- Development of traditional theoretical engineering solutions
- Linear & Non-Linear FEA Simulation using Hyperworks suite or MSC/Nastran
- Usage of open source or customer empirical test data
- Extensive bespoke OEM method usage and assessments

DELEGATED SIGNATORIES

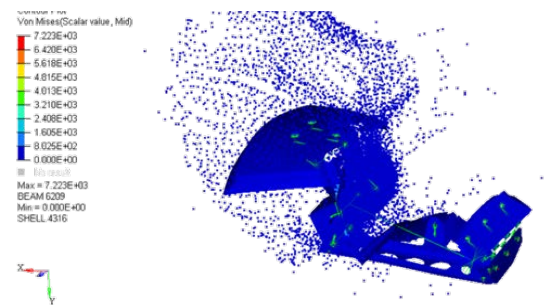
- Metallic, Composite & FEA Approval for A350 Fixed Trailing Edge, A400M & Boeing Wide Body Stow Bins
- F&DT Approval for A320NEO Engine Pylon Attachment
- QinetiQ GmbH Structural CVE for Pilatus PC-12 Modifications

EXPERIENCE AT A GLANCE

CASE STUDIES

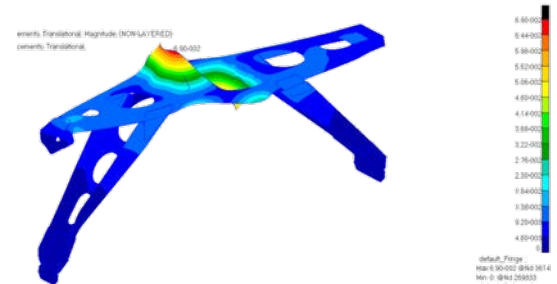
HELICOPTER BIRDSTRIKE ASSESSMENT

- Composite Helicopter Engine Inlet Bypass Door
- Defined relevant impact scenarios
- Simulated Bird Strike using FEA techniques
- Provided advice to develop the design to meet the certification requirements
- Formal reports provided to support the customer certification effort
- Post test support to end client



HELICOPTER VIBRATION CRACKING

- Helicopter Engine Inlet Filter Scavenge Fan Support Cracking during test
- Developed FEM to replicate the issue
- Confirmed cracking to be expected under in-service/test environment
- Developed design change to mitigate issue
- Confirmed modified structure acceptable
- Customer confirmed by test the redesign introduced



www.cascade-engineering.co.uk

DYNAMIC CAPABILITY STATEMENT



DEPENDABLE ENGINEERING,
CERTIFIED SOLUTIONS

Cascade Engineering
Building B
Riverside Way
Camberley, GU15 3YL

+44 1252 594121
info@cascade-engineering.co.uk

www.cascade-engineering.co.uk

Cascade Engineering is a trading name of Cascade Aerospace Engineering Limited. Reg. No. 05838778