Cascade Aerospace Engineering

Conception Development Certification

Dynamic Structural Assessments

Supporting airframe, engine intake, rotorcraft and interior design from concept to certification

Our Capability

Structural Assessments for 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 and Damping
- Fatigue Analysis and component 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

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

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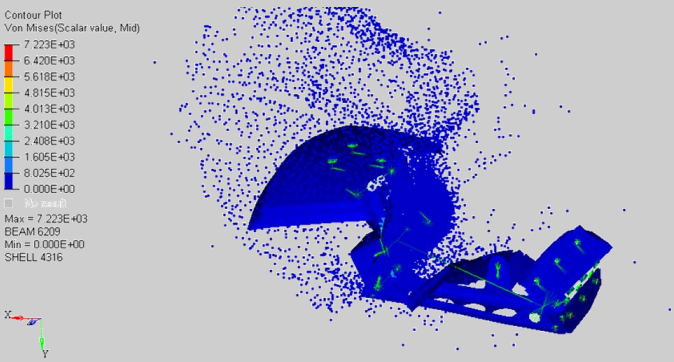
Experience at a Glance

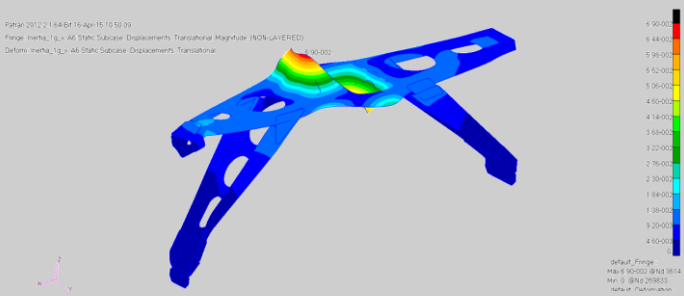
Case Study 1
Helicopter Bird Strike Assessment

- 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



Case Study 2
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



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