

# Cascade Aerospace Engineering

## Conception Development Certification

### Composite Structural Analysis

Supporting airframe, interiors and engine intake design, from concept to certification

### Our Capability

#### Structural Design & Certification

- Provide advice to customers on the appropriate analyses; materials and lay-ups; testing; structural optimisation
- Monolithic Carbon, Glass, Kevlar or Boron in numerous epoxy resin systems
- Honeycomb panels with Nomex or Aluminium cores
- Structural Damage Assessment, such as Delamination, Water ingress, BVID
- Electrical continuity inclusion
- PEEK analysis & assessment
- Repair Scenarios
- Impact/Bird strike assessment of composite structures
- Thermal environment and metallic interaction analysis

#### Manufacturing Techniques

- Development of component manufacturing process
- Autoclave cure temperatures and cycles
- Advice on Mould development & assessment
- Cold cure system assessment
- Automatic Tape layup, manual placement or chop strand injection mould assessment



#### Delegated Signatories

- Composite Approval for A350 Fixed Trailing Edge, A400M & Boeing Wide Body Stow Bins



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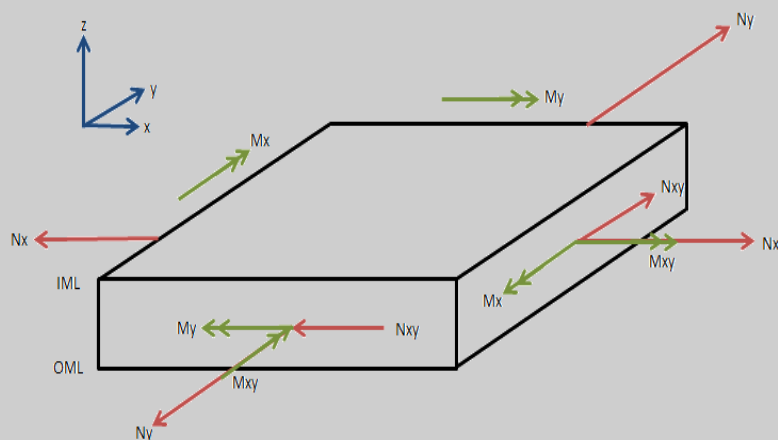
## Conception Development Certification

### Our Experience

- A350 Fixed Trailing Edge:
  - Led client teams during development of Inner & Outer Structural & Honeycomb Shroud panels
  - Certification of the Inner Structural, Shroud & Main Landing Gear Door panels, including all formal documentation including Airbus Stress Dossiers & Structural Repair Manuals
  - Development of FE models containing composite structures, including 3D representation of honeycomb regions
  - Impact and PRA assessments due to Tyre Burst & Wheel Rim Release
- A350 Rear Fuselage metallic to composite joint Certification analysis
- Pilatus PC-24: Certification static analysis including engine pylon composite panels
- A320 CPD: conducted investigation into optimised composite re-design of existing metallic belly fairing in order to reduce weight
- Pall Aerospace: Air filters and Intake door Design & Certification analysis, including bird strike

### Software & Analysis Techniques

- Development of Analysis Techniques in conjunction with clients
- Analysis and calculations for all the principal failure modes of composite structures: including joints, strength, buckling and sandwich region wrinkling or core shear.
- From Classical Laminate Theory to tools such as Airbus bespoke ISAMI software



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