



www.tlgaerospace.com

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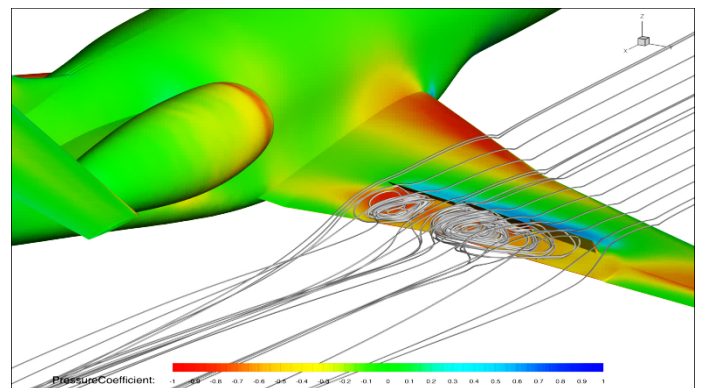
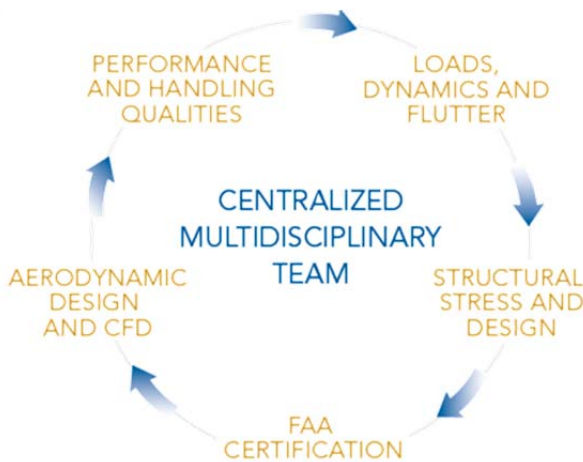
Robert Lind
 Director of Engineering
 FAA Flutter DER (14 CFR Part 23 and 25)
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Overview

TLG has the skills to get your projects completed from start to finish. TLG is committed to providing engineering solutions that meet your needs – from a fast rough estimate to make quick product decisions, to the accuracy needed for detailed design and certification.

Services

Aerodynamic Design • Computational Fluid Dynamics (CFD) Analysis • Static and Dynamic Loads • Flutter • Stress Analysis and Design • FAA Certification • Aircraft Performance • Handling Qualities



CFD Analysis with Spoilers Deployed

Projects

New Aircraft Development (TC)
 Major Modifications (STC)
 Aircraft Certifications (FAA, EASA, Others)
 Aerodynamic Design
 Structural Stress and Design
 External Antennas, Sensors, Radomes
 CFD Analysis, Air and Water
 Freighter Conversions

Engine Upgrades
 Gross Weight Increases
 Flight Envelope Increases
 Performance Improvements
 Improved Wing Designs
 Fatigue and Damage Tolerance
 Loads Spectrum Updates
 Wind Tunnel, Flight and Ground Testing

Customers

Aviation Partners Boeing
 Scaled Composites
 Pilatus Aircraft Ltd
 Boeing
 Gulfstream Aerospace

Raisbeck Engineering, Inc.
 Sierra Nevada Corporation
 Northrop Grumman
 The Spaceship Company
 NASA

Experience

Loads and Flutter

- FAA Loads and Flutter DER (14 CFR Part 23 and 25)
- Static and Dynamic Loads for Strength, Fatigue and Damage Tolerance
- Flutter Analysis and Design for Aeroservoelastic Stability Margin
- Flight and Ground Testing for Loads and Flutter Certification
- Feasibility Studies and Product Development
- Engineering Project Management
- Simulation of Failure Modes including FCS Failure and Blade-out Conditions
- Fuselage Decompression Loads
- Full Aeroservoelastic Calculation Capabilities

Aerodynamic Design and CFD Analysis

- Applied Aerodynamics Expertise
- Full CFD Capability, Panel Methods to Navier-Stokes
- Concept Exploration, Aircraft Sizing and Preliminary Design
- Internal and External Flows, Subsonic, Transonic, Supersonic and Hypersonic including Chemical Reacting Non-equilibrium Flows
- Design of Airfoils, Wings, Control Surfaces, High-lift Devices, Fairings, Antennae, Nacelles, Struts, Inlets, Ducts, etc.
- Power Plant Integration
- Thermodynamic and Heat Rejection Analysis
- Scalable Analysis using On-site and Cloud Based Computing Clusters
- Wind Tunnel Testing, Low Speed and Transonic, Quick Reaction and Production

FAA Certification

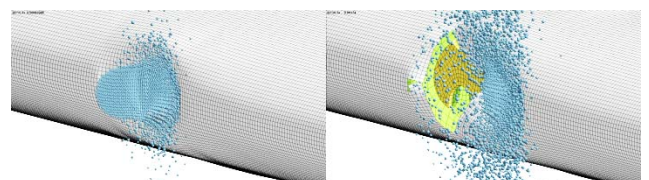
- Certification Plans
- Agency Certification Coordination (FAA, EASA, Others)
- STC and TC Certification Documentation
- Test Witnessing
- FAA DER Approvals

Performance, Stability and Control, and Handling Qualities

- FAA Flight Analyst DER (14 CFR Part 23)
- Performance Prediction, Measurement and Validation
- Mission Analysis and Optimization
- AFM-based Performance Modeling
- Classical and Non-linear Stability and Control Analysis
- Flight Dynamics Simulation
- Aeroelastic and Closed Loop Handling Qualities Analysis
- Flight and Ground Test Planning, Support and Analysis

Stress and Design

- FAA Structures DER (14 CFR Part 23 and 25)
- Metallic and Composite Analysis and Design
- Static, Fatigue and Damage Tolerance Analysis
- Bird Strike and Rotor Burst Impact Simulation
- Industry Standard Analysis Tools
 - PATRAN/NASTRAN/APEX
- Finite Element Analysis Experience Includes:
 - Linear Static
 - Modal and Frequency Response
 - Buckling
 - Implicit and Explicit Nonlinear
 - Optimization
 - Thermal
 - Validated by Test or Classical Methods
- Industry Standard Design using CATIA V5
 - Trade Studies and Concept Development
 - 3D Model Based or 2D Drawings
- Continued Airworthiness Documentation
- Support In-service Major Repairs and Alterations
- Ground Test Planning, Support and Analysis



Bird Strike Impact Analysis