



CAPABILITY STATEMENT

EMPREXX

Aerospace has the capability to support the entire iterative aircraft or spacecraft design cycle from product development to certification. Our full-service, in-house, multidisciplinary team of engineers offer engineering services in loads, dynamics, and flutter; structural stress and design; aerodynamic design and computational fluid dynamics (CFD); and performance and handling qualities.

Our team includes five Designated Engineering Representatives (DERs) who have the experience and tools to make decisions at the beginning of a program, providing engineering to optimize your product during development and to generate the certification plans, analysis, testing, and documentation needed to get your product to market.

ENGINEERING EXPERTISE

- Loads & Flutter
- Dynamics & Vibration
- Aerodynamic Design & CFD Analysis
- Stability & Control Analysis
- Metallic & Composite Analysis & Design
- Static, Fatigue, & Damage Tolerance Analysis
- Bird Strike & Rotor Burst Impact Simulation
- Finite Element Analysis
- Industry Standard Design with CATIA V5
- Continued Airworthiness Documentation
- Support In-Service Major Repairs & Alterations
- Ground & Flight Test Planning, Support, & Analysis

AIRCRAFT EXPERIENCE

- Large Transport Airplanes
- Fire Tanker Conversions
- Business & Commuter Aircraft
- General Aviation
- Space Launch Vehicles
- Satellites
- Advanced Air Mobility (eVTOL/VTOL)
- UAV/Drone
- New Space Industry
- Military Aircraft and IS&R
- Subsonic/Transonic/Supersonic/Hypersonic
- Agricultural



Emprexx Aerospace

ENGINEERING SERVICES

AIRCRAFT LOADS, FLUTTER, & VIBRATION*

- Loads & Flutter
- Dynamics & Vibration
- Aerodynamic Design & CFD Analysis
- Stability & Control Analysis
- Metallic & Composite Analysis & Design
- Static, Fatigue, & Damage Tolerance Analysis
- Bird Strike & Rotor Burst Impact Simulation
- Finite Element Analysis
- Industry Standard Design with CATIA V5
- Continued Airworthiness Documentation
- Support In-Service Major Repairs & Alterations
- Ground & Flight Test Planning, Support, & Analysis

STRUCTURAL STRESS & DESIGN*

- Senior Stress & Design Engineers
- Metallic & Composite Analysis & Design
- Static, Fatigue, & Damage Tolerance Analysis
- Bird Strike & Rotor Burst Impact Simulation
- Industry Standard Analysis Tools (PATRAN/NASTRAN/APEX)
- Finite Element Analysis Experience Includes Industry Standard Design Using CATIA V5
- Continued Airworthiness Documentation
- Support In-Service Major Repairs & Alteration
- Ground Test Planning, Support, & Analysis

AERODYNAMIC DESIGN & CFD ANALYSIS*

- Senior Experts in Applied Aerodynamics
- Full CFD Capability, Panel Methods to Navier-Stokes
- Concept Exploration, Aircraft Sizing, & Preliminary Design
- Internal & External Flows (Subsonic, Transonic, Supersonic, & Hypersonic) including Chemical Reacting Non-Equilibrium Flows
- Design of Airfoils, Wings, Control Surfaces, High Lift Devices, Fairings, Antennae, Nacelles, Struts, Inlets, Ducts, etc.
- Powerplant Integration
- Thermodynamic & Heat Rejection Analysis
- Scalable Analysis using On-site & Cloud-Based Computing Clusters
- Wind Tunnel Testing, Low Speed & Transonic, Developmental & Production

PERFORMANCE, STABILITY & CONTROL, & HANDLING QUALITIES*

- Performance Prediction, Measurement, & Validation
- Mission Analysis & Optimization
- AFM-based Performance Modeling
- Classical & Non-Linear Stability & Control Analysis
- Flight Dynamics Simulation
- Aeroelastic & Closed Loop Handling Qualities
- Flight & Ground Test Planning, Support, & Analysis

FAA CERTIFICATION*

- Certification Plans
- Agency Certification Coordination
- STC & TC Certification Documentation
- Test Witnessing
- FAA DER Approvals

