

# Aviation Capabilities

A Leading Provider of Structural Solutions to the Aviation Industry

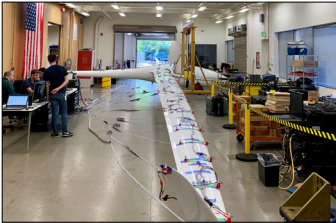
## Superior Structural Design, Analysis, and Test Solutions

ATA Engineering, Inc., (ATA) has teamed with, and supported, many of the latest cutting-edge aviation programs, providing the highest-value design, test, and analysis solutions to challenging aerospace structural and thermal design issues. Over the last 20 years, ATA has supported, among others, Gulfstream, Boeing, Lockheed Martin, General Atomics Aeronautical Systems, Inc. (GA-ASI), Northrop Grumman, Embraer, and Mooney International. Recent programs include the Global Hawk/Triton, Embraer 170, C-17, F-117, Joint Strike Fighter (both Lockheed and Boeing models), Predator, Fire Scout, Firebird, the high-altitude glider Perlan 2, and the Nixus fly-by-wire glider.

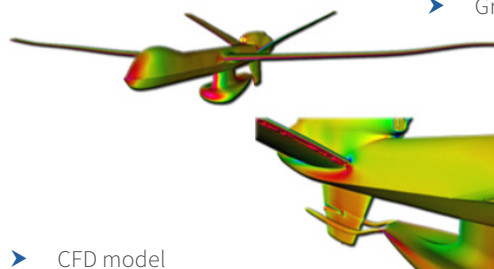
ATA has an industry-leading combination of analysis tools and test equipment and software (including advanced modal IMAT), with staff who are experts in the use of a wide variety of analysis suites, including Simcenter 3D (formerly NX I-deas), Simcenter (formerly NX) Nastran, MSC.Nastran, Abaqus, and ZAERO. Our test equipment can record over 750 channels of acceleration simultaneously and condition up to 192 channels of dynamic strain, greatly reducing the number of runs required to gather data. All test equipment is portable and can be shipped to the customer site, avoiding expensive shipping costs and extended downtime.

### Services We Provide

- ▶ Development of detailed finite element models (FEMs) for aircraft from drawings and CAD geometry.
- ▶ Modeling of complex composite layups and joints for airframe primary and secondary structure, novel radomes, and prediction of ply-by-ply composite stresses and strains.
- ▶ Pretest analysis to choose optimal measurement locations, testing (modal and operational), posttest data processing, and test-analysis correlation to generate test-validated analysis models.
- ▶ Unsurpassed modal test (ground vibration test) performance.
- ▶ Prediction of aerodynamic forces and resultant internal loads.
- ▶ Computational fluid dynamics (CFD) and fluids-related multiphysics analysis across the full range of fluid dynamic regimes, including turbulence modeling, high-speed compressible flows, multiphase flows, and reacting flows.
- ▶ Aeroelastic flutter analysis, including presentation of results to the US Federal Aviation Administration (FAA) to reduce need for flight-flutter testing.
- ▶ Thermal or conjugate heat transfer analysis to analytically drive the thermal management design of avionics and communication equipment.



▶ Ground vibration test



▶ CFD model

*“The ability to use multiple tools in a tightly integrated fashion lets the engineers focus their efforts on the design issues, resulting in faster, better solutions.”*

**David Alexander**  
VP Engineering  
GA-ASI