



AVIATION DISASTERS • STRUCTURAL FAILURE • PATENT INFRINGEMENT • PRODUCT LIABILITY • PERSONAL INJURY

Capabilities Statement

Summary

Armellino Engineering, LLC is an engineering consulting company providing mechanical engineering services to the aerospace industry. Our specialty is the static and fatigue stress analysis of military fixed and rotary wing airframe and secondary mechanical systems. We have been working with several aviation OEMs including Sikorsky, Gulfstream, Lockheed-Martin and Northrop Grumman since the mid-1980s. Our small company permits flexibility, cost efficiency and detailed, high quality work with one-on-one attention to our customers.

Services

We have 30 years of experience in the design and structural analysis of primary and secondary airframe structure and flight-critical components and systems. We are well versed in the static and fatigue stress analysis of many military, commercial and private aviation platforms including the F5, F-20, F-18, S-92, VH-92, Blackhawk and CRH (Combat Rescue Helicopter). We offer in-house finite element modeling services including coupled solutions, non-linearity studies and modal analyses. We are also well-versed in supporting a variety of complex test programs including development, qualification and certification. Our classical hand calculation and formal stress report writing skills are written in accordance with FAR Part 25 and 29 Airworthiness Standards with emphasis on the correlation of FEM, test and the classical solution.

A. Airframe Stress Analysis

Armellino Engineering, formerly Precision Dynamics, Inc. has been analyzing military airframe since the mid-1980s. We have amassed a library of approved structural engineering methods and reports from aerospace majors worldwide. We can produce most any type of classical stress analysis from a simple trade study to a formal structural certification report for issuance to the FAA. The majority of our analyses employ industry standard methodologies from NASA, Bruhn, Peery, Flabel, Roark and Niu. We are the co-authors of the 2800 page 'common frames' report for the Sikorsky S-92 and the sole authors of several certification reports on the Gulfstream G650. We are currently contributing heavily to the final phase analysis on the Sikorsky CRH helicopter.

B. Finite Element Modeling

We have performed all aspects of finite element modeling on primary and secondary airframe structure including static, fatigue, modal, thermal and kinematic analyses. The majority of our FEA work is on fixed and rotary wing aircraft, however we have analyzed electromechanical systems and components as well. The countless number of models we have built vary with intent and fidelity ranging from broad scope internal loads models to highly detailed, Level 3 FDT models. Our most recent FEA work includes modeling of the composite access doors and main rotor pylon fairings on the CRH. We have also done pre-warp analysis of composite doors, composite floor boards and metallic wing spoilers on the Gulfstream G550. We are equally adept in the linear, non-linear, normal modes and buckling solutions with Femap and MSC/NASTRAN as core analysis tools.

C. Structural Testing

We offer an array structural testing support services including design of experiments and test lab coordination and we are familiar with most destructive and non-destructive structural test methods. Armellino Engineering has supported a multitude of test plans over the years ranging from in-house company tests for ITT Defense Systems and Marotta Control Systems to full-scale flight certification testing for Gulfstream. Our involvement includes flight load simulation, correlation of test article with global FE data, design of experiments, test requirements, plans and reports. We have also supported qualification and HALT (highly accelerated life testing) of electromechanical actuators for GE Aerospace. We anticipate supporting Sikorsky on upcoming flight certification efforts for both the CRH and Presidential platforms. We have considerable expertise with strain gages, LVDTs, load cells and load jacks.

D. Advanced CAD/CAM Capabilities

Supporting design and manufacturing for so long creates capable Catia v5 users. We can manage the most difficult CAD work you may have including composite ply definition, surface lofting, complex solid modeling and kinematic and dynamic simulations. Armellino Engineering can also support 3-5 axis CNC programming requirements along with fixture design.

E. Clients/Past Employers

Boeing	NAVAIR
Northrop-Grumman	GE Aviation
Lockheed-Martin	Gulfstream Aerospace Corporation
Sikorsky Aircraft Corporation	ITT Defense Systems

F. NAICS Codes

541330 - Engineering Services	541512 - Computer-aided engineering (CAE)
541340 - Drafting Services	541380 - Testing Laboratories (support of)
541690 - Other Scientific and Technical Consulting Services	

G. Contact Information

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Expertise: Civil design of reinforced concrete structures and platforms	Expertise: Static and fatigue stress analysis of fixed and rotary wing aircraft	Expertise: Contracts and business management