

James McLellan
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Augspurger Komm Engineering, Inc.
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EDUCATION

B.S. in Mechanical Engineering from Carnegie-Mellon University, 1976
Mechanics of Composite Materials course, Arizona State University, 1980

PRINCIPAL AREAS OF CONSULTING

Finite Element Analysis using NASTRAN, ANSYS, ALGOR's SAP, and specialized 2-D, ax symmetric and 3-D programs.

Stress Analysis of stationary and rotating structures.

Fatigue and Fracture analysis to determine component lives for various missions.

Vibration analysis using finite element programs, holography, strain gage and accelerometer data.

Dynamic time history analysis using finite element programs and "Working Model" by Knowledge Revolution.

Prediction of stresses due to concentrated loads, pressures, thermal gradients, centrifugal loads, and forced vibrations.

Analysis of isotropic, orthotropic, honeycomb, laminate and sheet and stringer structures.

Design with metals, monolithic ceramics, and advanced composites. Composites used include glass, aramid, graphite/carbon, and silicon carbide fibers in matrices of epoxy, bismaleimides, polyamides, thermoplastics, titanium, carbon, and silicon carbide.

Creation of Fortran programs for finite element model generation and laminate analysis.

Component design and detailing using AutoCAD.

EXPERIENCE

1998-Present Augspurger Komm Engineering Inc. (AKE, Inc.), Scottsdale, Arizona

Provide structural and mechanical analysis to support expert witness testimony in legal cases. I was also involved in product design for a composter and light weight trench shield.

2001-Present M-DOT Aerospace, Tempe, Arizona

Structural analysis of turbine exhaust ducting, an electrically driven compressor, and small turbine fuel pump. Assist in other analysis as a mentor for M-Dot engineers.

2006-2007 Manpower Professional Services

Contract engineer doing structural analysis of valves and valve components at Honeywell's Fluid Systems Division in Tempe, Arizona.

EXPERIENCE (Continued)

- 2002 CDI, Inc.
Work at CDI in Phoenix reviewing engineering documents involved in the split between Allied-Signal and Vericore. Documents were categorized, summarized, and ranked for usefulness of contained information. Composite part design/analysis done from 1983 to 1989 included spinners, prop fan blades, fan stators, core stators, fan ducts, compressor cases, turbine wheels, turbine stators, and exhaust nozzles.
- 1998-1999 AlliedSignal Engines
Work at AlliedSignal Engines with AS900 engine design team. Design and structural analysis of the high pressure turbine static structure.
- 1997-1998 AlliedSignal Engines
Structural analysis of service revealed difficulties on TFE-731 and TFE-738 engines. Determination of root cause of various field problems and acceptable fixes for the problems.
- 1995-1995 AlliedSignal Engines
Part time contract engineer working at AlliedSignal Engines. Work involved analysis and some design of a ceramic combustor for use in an experimental engine.
- 1993-1993 Garrett Engine Division
Part time contract engineer working at Garrett Engine Division. Work included: 1) preliminary design and analysis of a composite bleed air duct for 731 engines (fiberglass/BMI), 2) final stress and vibration analysis of 731-60 fan stators (graphite/epoxy), 3) plastic twist deflection analysis of nickel based single crystal turbine blades, and 4) creation of a method to predict residual stresses in TBC (thermal barrier coating) as a result of manufacturing parameters.
- 1990-1997 Advanced Structures Technology (AST)
Structural design and analysis of compressor test rigs, helicopter fuel tanks and restraint systems, aircraft test equipment mounts, and composite airframe components. I also performed dynamic time history analysis of seat belt buckles through AST for Arndt and Associates to predict what crash loading would open the buckles.
- 1989-1990 Garrett Engine Division
Part time contract engineer working at Garrett Engine Division doing dynamic and structural analysis of ceramic and organic composite components. This includes design for manufacturability, and material and component testing to validate the design. The main job was an organic composite prop fan blade designed for low radar signature and included structural design, fabrication of test components, material and component testing. I also performed the structural design and analysis of ceramic composite (gr/SiC and SiC/SiC) combustors for use in a burner rig to determine durability in an actual combustor environment. The challenge on the combustors was to minimize stresses near attachments and other rig specific features so that the test results would be usable for engine combustor design. I was gone before the burner rig tests but they apparently were very successful.

EXPERIENCE (Continued)

- 1986-1989 Garrett Engine Division of Allied/Signal Corporation
Specialist in composite materials. This job was created to coordinate the effort of different project groups with the goal of avoiding duplication of effort and to provide a consistent method of composite part design and analysis. I was involved in setting up drawing standards, reviewing vendor proposals, creating computer codes for use in analysis, and the design and analysis of composite components. Composite part design/analysis done from 1983 to 1989 included spinners, prop fan blades, fan stators, core stators, fan ducts, compressor cases, turbine wheels, turbine stators, and exhaust nozzles.
- 1983-1986 Advanced Engines Group
Structural analysis of static and rotating components in the Advanced Engines Group.
- 1982 Contract engineer doing analysis of turboprop components.
- 1982 Sundstrand Aviation, Rockford, Illinois
Contract engineer doing structural analysis of pump housings, heat exchangers, and airframe mount systems.
- 1981-1982 Contract engineer doing structural analysis of flap and pitch trim actuators, a hydraulic powered actuator drive unit, and a high pressure fuel pump housing and bearing assembly.
- 1980-1981 Advanced Engines Group
Contract engineer in the Advanced Engines structures group doing design and analysis work on turbine and diesel components, a large part of this work being done on ceramic components.
- 1976-1980 Pratt and Whitney Aircraft, West Palm Beach, Fla.
Stress and life analysis of stationary and rotating components on the FT4, TF30, F100, advanced F100, and ATEGG programs. This included life analysis, engine testing, and testing to develop blade containment criteria.
- 1976-1976 Pratt and Whitney Aircraft, Hartford, Conn.
Engine transient performance engineer defining surge lines and engine control limits to ensure maximum performance and stable engine response.