

**BRIAN M. DAVIS, MSME, PE**

**SUMMARY**

BRIAN M. DAVIS, MSME, PE has over 27 years of cross-functional experience in:

- Aircraft propulsion systems/aircraft engines
- Medical device design including ultrasonics
- Marine/ship and transportation systems
- Component failure and forensic analysis
- Manufacturing processes
- Fatigue and fracture mechanics
- Intellectual property
- Power generation systems
- Composite materials
- FAA certification and FDA 510(k) approval

**EDUCATION/TRAINING**

BSME (University of Florida) cum laude

- Pi Tau Sigma, Mechanical Engineering Honor Society
- Tau Beta Pi, Engineering Honor Society

MSME (University of Cincinnati) cum laude

Certified Six Sigma Greenbelt graduate

TOPS8D root cause investigation trained

**REGISTRATIONS/CERTIFICATIONS**

Licensed professional engineer in OH, license no. 68061& FL, license no. 79103

Holder of NCEES Record with Model Law Engineer designation

NCEES International Registry member

US Naval Engineering Duty Officer qualified

Prior holder of three (3) DoD security clearances

**PROFESSIONAL ASSOCIATION MEMBERSHIP**

National Society of Professional Engineers (NSPE)

American Society of Mechanical Engineers (ASME)

American Institute of Aeronautics and Astronautics (AIAA)

American Society for Metals (ASM)

Society of Automotive Engineers (SAE)

National Academy of Forensic Engineers (NAFE) -- affiliate

## CAREER HISTORY

### **FORENSIC ENGINEERING & CONSULTING**

**Forcon International** - Provides forensic engineering and expert witness services regarding automotive, aviation, marine, industrial and medical devices with emphasis on failures of gas turbine and jet engine propulsion systems.

**Old Iron Innovation LLC** (forensic engineering), Cincinnati, OH - President and principal investigator in mechanical engineering forensic and design consultation with practice areas served including automotive, aviation, marine, industrial and medical devices. Wide experience encompassing over 27 years including significant intellectual property experience. Licensed professional engineer in 2 states, former USN officer and prior holder of several government clearances. Has led multiple complex field failure investigations to successful resolution.

### **AVIATION (GAS TURBINES/JET ENGINES)**

**General Electric Aviation (Aircraft Engines)**, Cincinnati, OH - Over 17 years as technical leader and manager for the following GE commercial, industrial, marine and military gas turbine/jet engine product lines: GE90, HF120, CF6, LM1600, LM6000, LM2500, F101, F110, F118, F136

- As formally-recognized senior technical leader, performed and lead teams in:
  - Component mechanical design
  - Systems engineering
  - Failure analysis/forensic engineering
  - Root cause assessment
  - Product quality
  - Product qualification/certification
  - Field investigations
  - Manufacturing support and repair
  - Reports to USG and certifying authorities e.g. FAA
  - Compliance to USG and industry/regulator (FAA) specifications e.g. CFR FAR
  - Product qualification to USAF
  - Presentation before senior USAF, GE and customer representatives
- Twice recognized as "Senior" engineer and graduate of GE Advanced Course in Engineering
- Significant mechanical design and analysis experience with CAD/FEM tools
- USG clearance required

**Allison Advanced Development Company (Rolls-Royce)**, Indianapolis, IN - Lead Engineer, Advanced Mechanical Design

- Lead engineer for all cold section static hardware for advanced compressor
- Executed from conceptual design to issued drawings in 1 year
- Performed trade studies and mechanical analysis for design optimization using CAD/FEM
- Presentation before senior USAF and company representatives
- Compliance to USG specifications
- USG clearance required

**Pratt and Whitney (Aircraft Engines)**, West Palm Beach, FL - Senior Design Engineer, Government Engine Business

- Design lead for compressor vanes, seals and shrouds
- Supported Initial Flight Release for the F119/F-22 weapon system
- Introduced several redesigns for cost and durability
- One of a small team to develop a hollow, composite fan blade design
- Performed stress/modal analysis of isotropic and composite structures using CAD/FEM
- Presentation before senior USAF and company representatives
- Compliance to industry and government specifications
- USG clearance required

## **MEDICAL DEVICES**

**Ethicon Endo-Surgery Inc.**, Blue Ash, OH (Johnson & Johnson) - Senior Design Engineer, Harmonic Franchise

- As Lead design engineer for 45cm length laparoscopic ultrasonic surgical instrument (ACE45E), led team to FDA 510(k) approval of longer device for use in bariatric markets (gastric bypass and laparoscopic cholecystectomy)
- Field surgical observation of ACE45E in patient use and gathered on-site surgeon feedback
- On-site test support at CSA labs, Toronto, ON as part of FDA compliance testing
- In-vivo animate testing of the device to demonstrate FDA compliance for cut and coagulation performance
- Human factors assessments
- Component lab testing for wear, heat generation, vibration and failure/forensic analysis using state-of-the-art techniques e.g. IR camera and laser vibrometry
- Significant mechanical analysis using CAD and FEM
- Compliance to FDA regulations

## **US NAVY & MARINE/INDUSTRIAL APPLICATION ENGINEERING**

### **Lieutenant, US Navy (Reserve)**

- Qualified as Engineering Duty Officer, 1445
  - Completed two (2) shipyard tours at NNSY and PHNSY
  - Completed Engineering Orientation course, Kings Point MMA, Kings Point, NY
  - Completed at-sea tour aboard USS DONALD COOK (DDG 75)
  - Completed EDO School, Port Hueneme, CA
- Completed "NAVSEA Basic Paint Inspectors Course," Norfolk NSY, MARMC
- Presentation before senior US Navy officers
- Awards: Navy Achievement Medal, National Defense Service Medal, and Global War on Terrorism Service Medal

### **Staff Engineer, GE Marine and Industrial Systems Engineering**

- Lead \$7M fuel efficiency improvement program for US Navy LM2500
- Model engineer for LM1600 industrial engine
- Systems leader for LM6000PF+ industrial low pressure turbine
- Lead field investigation at customer power generation installation

- Lead field investigations with 2 foreign navies, root cause analysis, failure/forensic analysis, on-site engine teardown with customer witness
- Reports to US Navy and product customers
- Presentation before senior foreign navy leadership, GE, and other external customers

### **PATENTS**

- 6,076,835 "Interstage vane seal apparatus"
- 6,217,283 "Composite fan platform"
- 6,354,780 "Eccentric balanced blisk"
- 6,914,215 "Real time laser shock peening quality assurance by natural frequency analysis"
- 8,061,975 "Slipring bushing assembly for moveable turbine vane"
- 8,197,196 "Bushing and clock spring assembly for moveable turbine vane"

### **PUBLICATIONS**

- Davis et al., "Performance of GenIV LSP for Thick Section Airfoil Damage Tolerance," GE Aircraft Engines, 45th AIAA SDM Conference, April 2004.
- Above paper also presented at AeroMat 2005 conference, Orlando FL, June 2005.