

Allen K Powers, P.E.
3 AXIS ENGINEERING LLC
5929 Knight Ave
Tuscaloosa, Alabama 35405
Phone (205) 758-4488

PROFESSIONAL EMPLOYMENT

January 2013 **3 AXIS ENGINEERING, LLC, TUSCALOOSA, ALABAMA**
To Present Forensic Engineering and Accident Reconstruction

August 1997 **DOUGHTY & POWERS ENGINEERING, LLC, TUSCALOOSA, ALABAMA**
to
January 2013 Technical experience includes the application of engineering principles, theory and design. Have implemented standards, including safety standards, in the design process and have been involved in establishing and developing engineering standards. Have extensive experience performing analysis, research and computer simulations. Forensic areas of investigation and reconstruction include: automobile, industrial, manufacturing and farm accidents. Have investigated and reconstructed single vehicle, articulated vehicle and multi-vehicle accidents, including tractor and semi trailers. This includes the determination of speeds, kinematics and dynamics of vehicles and the evaluation of performance at the component level.

January 1994 **PRIVATE CONSULTING, TUSCALOOSA, ALABAMA**
to
August 1997 Traffic Accident Investigation and Reconstruction – Application of engineering principles and theory for the reconstruction of motor vehicle accidents. Capabilities include: computer Crash analysis-including 3-D simulation, survey quality scene data acquisition and scale CAD drawings of scenes and vehicles. Began this part-time in 1982 and went full-time in January, 1994.

June 1995 **UNIVERSITY OF ALABAMA, TUSCALOOSA, ALABAMA**
to
May 2000 Taught undergraduate classes in Thermodynamics and Engineering Design for the Mechanical Engineering Department and Dynamics classes for the Aerospace and Engineering Mechanics Department.

Fall 1998 to **Director**, Mechanical Engineering Design Clinic
May 2000

June 1985 **SENIOR ENGINEER, TELEDYNE BROWN ENGINEERING, HUNTSVILLE, ALABAMA**
to
January 1994 Space Programs Division: Lead Design Engineer responsible for the mechanical development and design of several pieces of Ground Support Equipment (GSE). These were singular purpose design equipment to be used in the assembly and integration of Space Station Freedom. Performed configuration and verification analysis of flight equipment for SPACELAB payloads. This included testing and qualification of space flight hardware. Responsible for analysis and simulation of U.S. Laboratory automation elements, including the zero-G cutting and polishing unit and the glove box facility. Performed human factors modeling to establish design constraints and enhancements of the Space Station Material Sciences Glove Box. Developed computerized kinematic man and woman models for human factors analysis of manned Space Station activities. Kinematic and dynamic analysis of a space based robot for the Space Station Laboratory. Wrote a torque/tension test plan for SPACELAB center aisle bolts. Military Programs Division: Performed research on methods for slot cooling during hypersonic missile flight. Developed a computer code to perform parametric studies for missile for body cooling effectiveness of different gases. Used Computational Fluid Dynamics (CFD) codes to determine properties around hypersonic missiles. Performed mass property and heat transfer analysis for the Air Force Improved Data Link (IDL) pod. Performed mass property analysis for the FOG-M program.

August 1984 **UNIVERSITY OF ALABAMA, TUSCALOOSA, ALABAMA**
to
June 1985 Graduate teaching assistant. While taking graduate classes, taught undergraduate classes of Thermodynamics and the laboratory for Nuclear Engineering.

January 1983 **ENGINEER, NASA, MARSHALL SPACE FLIGHT CENTER, HUNTSVILLE, AL**
to
August 1984 Systems Engineer: Performed structural and systems engineering for the latching mechanism on the SPACELAB Instrument Pointing System (IPS). Responsible for the management and manipulation of real time data from experiments aboard the SPACELAB I mission, providing data to scientists and engineers operating consoles. Helped design and assemble experiment hardware for the Electrophoresis of Blood Cells Experiment for the Space Sciences Laboratory. Instrumented the experiment and wrote computer codes to collect, process and present the data.

EDUCATION

- 1985 University of Alabama, Tuscaloosa, Alabama. MS, Mechanical Engineering
- 1982 University of Alabama, Tuscaloosa, Alabama. BS, Mechanical Engineering – Honors Graduate.
Tau Beta Pi, Tau Sigma, Alumni Honors Scholarship, University Honors Scholarship.

ORGANIZATION & HONORS

Distinguished Departmental Fellow, Department of Mechanical Engineering, University of Alabama
Professional Engineer – State of AL – License #20711
American Society of Mechanical Engineers
Society of Automotive Engineers
National Association of Professional Accident Reconstruction Specialists
AIAA Committee on Standards for Space Automation and Robotics, 1990, 1991

RELATED CONTINUING EDUCATION

- **NUTI Traffic Accident Reconstruction** course in Chicago, IL; April 4 – 15, 1994
- **EDC EDCRASH** course on computer crash analysis in Los Angeles, CA; April 18 – 22, 1994
- **Commercial Vehicle Accident Investigation and Reconstruction** course at ASU; June 10 – 14, 1996
- **EDC Simulations (EDSMAC, DESVS and EDVTS)** course in Miami, FL; November 17 – 21, 1997
- Engineering Dynamics Corporation **HVE Forums**: 1998, 1999, 2000, 2005 and 2010.
- **Heavy Vehicle Rollover TOPTEC** in Richmond, British Columbia, Canada; July 11 – 14, 2000.
- **Vetronix Crash Data Retrieval (CDR)** course, at IPTM, in Jacksonville, FL; November 20 – 22, 2001
- Bendix Commercial Systems **Air Brake Training School** in Elyria, OH; November 3 – 6, 2003
- Occupant & Vehicle Kinematics in Rollovers, Detroit, MI; December 14 -16, 2005
- Caterpillar Electronic Technician, Birmingham, AL; August 9, 2006
- Detroit Diesel Electronic Report; Detroit, MI; August 14 – 15, 2006
- CDR System Data Analysis Certification, 2007, 2010, 2011, 2012
- IATAI Traffic Crash Reconstruction Conference, Bloomington, IL; September 2007
- CDR Train-the-Trainer Course, Houston, TX; February 2008, 2011
- Investigation of Motorcycle Crashes, Jacksonville, FL; August 2009, IPTM
- Advanced Skills for the CDR Data Technician, Seattle, WA; October 2009
- CDR Users Summit, Houston, TX; January 2011
- SAE Accessing and Interpreting HVEDR Data, 2011

COURSES TAUGHT

- CDR Technician Operator Classes, 2008, 2009, 2011, 2012
- HVE CSI Applications in Vehicle Crash Tests SCARS 2010, 2011; Charleston, South Carolina
- HVEDR – Heavy Vehicle Event Data Recorder Training – March 19 – 23, 2012; Ontario, Canada
- CDR Analyst Course, May 14 – 18, 2012; Chicago, Illinois