

**R. Patrick Donahue**  
Electrical Engineer  
Augspurger Komm Engineering, Inc.  
& BTI Consultants  
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### **Education**

B.S. Electrical Engineering, GMI Engineering & Management Institute  
(Kettering University), Flint, Michigan

### **Summary**

Electrical Engineering professional with more than 15 years experience in the automobile industry, with assignments in manufacturing, design and testing environments. Expert at analyzing, testing and troubleshooting all aspects of a vehicle electrical system. Broad base of experience with integration and testing of electrical and electromechanical systems.

### **Principal Areas of Experience**

Design and analysis of vehicle electrical systems. Testing and troubleshooting of vehicle electrical systems, both in the laboratory and in the field. Automated laboratory testing of software and hardware for vehicle control systems, including those for power train, HVAC, ABS, traction control and stability control.

### **Expertise**

Vehicle Electrical Systems  
Laboratory Test Equipment  
Charging Systems  
Sensors  
Displays  
Automated Testing  
Electromechanical Systems  
Vehicle Controls  
Vehicle Base Braking Systems

### **Professional Experience**

2007- Electrical Engineer, Engineering Institute, LLC, Farmington, Arkansas

2004- Electrical Engineer, BTI Consultants, Tempe, Arizona

2002-03 Sabbatical - Preplanned technical and cultural tour of twenty two countries, including Africa, Asia, Northern Europe and the Middle East.

1999-01 Senior Development Engineer, General Motors, Desert Proving Grounds Automotive Testing Facility, Mesa, Arizona

**Professional Experience (Continued)**

Performed testing of prototype and production braking systems for light duty trucks. Troubleshoot hardware/software problems with anti-lock braking systems. Organized and led braking system test trips to Death Valley. Responsible for braking system compliance with Federal Motor Vehicle Safety Standards.

Performed testing on base braking systems, including brake balance and Federal Motor Vehicle Safety Standards 135 and 105. Recommended and implemented design changes. Tested for performance and compliance with government regulations. Identified and determined the root causes of problems with electronic anti-lock braking systems and chassis control systems for cars and light trucks.

1994-99 Senior Project Engineer, Microcomputer Laboratory, General Motors, Great Lakes Technology Center, Flint Michigan

Managed simulator laboratory. Interfaced with design and release engineers to prevent, identify, and solve problems with prototype, pilot, and production level hardware and software. Tested and troubleshoot power train, chassis, and Heating, Ventilation and Air Conditioning (HVAC) control systems. Tested hardware and software on simulator and system bench to determine if systems were performing to specifications and compatible with each other. Analyzed data obtained from simulator. Identified problems and recommended changes to hardware and software. Oriented, trained and managed new employees. Peers recognized laboratory as the most capable site within GM.

Increased testing capability of simulator to include stability control, HVAC, and adaptive radar cruise systems. Changes were implemented at over 7 simulator laboratories throughout GM. Procured funding and purchased equipment to increase testing capabilities of the lab. Used simulator to accelerate development of Alpha, Beta, and prototype level software and hardware. Used rapid prototyping controller to emulate HVAC controller to test and demonstrate software algorithms prior to availability of prototype hardware, enabling clearer communication of requirements to vendors. Designed and performed field tests on Anti-lock Braking Systems, Traction Control Systems, Ignition Control Systems, and HVAC systems to gather data for correlation and improvement of simulator models. Managed and trained students and Application Engineers. Specified testing scripts to control simulator and verify software for target controllers. Reduced field problems due to software bugs on test and calibration trips by more than 80%.

**Professional Experience (Continued)**

Identified and resolved field problem with ABS 5.0 system. Rapid identification minimized cost of manufacturing downtime and subsequent recall.

1990-94 Project Engineer, Analysis Department, General Motors, Great Lakes Technology Center, Flint, Michigan

Analyzed analog and digital electrical circuits using Saber analysis software. Optimized designs of future vehicles circuits and systems. Installed and managed real-time hardware-in-the-loop vehicle simulator. Configured simulator to interface with power train, anti-lock brakes, chassis and HVAC control systems.

Troubleshoot, redesigned and tested fuel pump speed control module.

Developed Saber software models for electrical and electromechanical components and systems to improve accuracy of simulations.

1988-90 Associate Engineer, Analysis Department, General Motors, Great Lakes Technology Center, Flint, Michigan

Analyzed analog and digital electrical circuits using SYSCAP circuit analysis software. Optimized designs of future vehicles circuits and systems. Troubleshoot problems encountered in operations of automotive electrical systems.

Troubleshoot and redesigned analog twilight sentinel module to solve field problem.

Developed SYSCAP software models for electrical and electromechanical components and systems improve accuracy of simulations.

1983-88 Cooperative Student, General Motors, Central Foundry Division Iron Casting Foundry, Saginaw, Michigan

Assignments in quality, maintenance, finishing, plant engineering and annealing departments.

Supervised production lines with up to 50 employees. Troubleshoot problems in operations of manufacturing equipment and controls.

Collected, prepared and analyzed metallurgical samples used for process control.

Designed and implemented a measurement device calibration program for the entire plant, resulting in improved process control.