



**D E S I G N  
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**Thomas G. Livernois, Ph.D., P.E.  
Principal Engineer**

**Professional Profile**

Dr. Thomas G. Livernois is a Principal Engineer heading the Electrical Engineering Discipline at Design Research Engineering. He specializes in the analysis and design of electrical and electronic systems, including automotive and commercial vehicle systems functionality in adverse environments. Specific vehicle experience covers powertrain, chassis, and safety systems, including system performance in crashes and fires. Other areas of expertise include hybrid vehicle powertrain architectures and systems performance, mobile communication systems including railroad and commercial vehicle applications, conformal/wireless antenna system design and integration, root cause analysis of electrical fires, corrosion performance of materials, electrocution risk assessment, electrical power distribution faults, automatic door sensor system performance requirements, electronic and feedback control system malfunctions, and various electrostatic discharge phenomena. Dr. Livernois has also been involved with several intellectual property cases.

Prior to joining Design Research Engineering, Dr. Livernois was a Principal Engineer in Exponent's Electrical and Semiconductors practice. He was previously founder and President of Physics Solutions, LLC, where he was responsible for engineering and client relations. He performed root cause analyses for many major corporate clients.

Dr. Livernois worked for several years in the automotive industry for both OEM's and suppliers, holding various positions related to automotive electrical and electronic system product design. He has worked in the advanced electrical and electronics systems office at Ford Motor Company, focusing primarily in vehicle architecture and power distribution system design. Work experience at DaimlerChrysler encompassed electrical and electronic systems compatibility testing and analysis, light truck chassis electronics design, and participation in various design standardization work. He was responsible for Failure Mode and Effects Analysis, Design Verification/Production Verification testing, process review and approval, and cost analysis. He was also employed by AGC America, Inc. where he was the director of a new product development activity that emphasized conformal antenna and sensor system design.

**Academic Credentials and Professional Honors**

Ph.D., Electrical Engineering, University of Michigan, Ann Arbor, 1991

M.S., Electrical Engineering, Michigan State University, 1986

B.S., Electrical Engineering, Michigan Technological University, 1984

**Licenses and Certifications**

Registered Professional Engineer, Michigan, #51733

Registered Professional Engineer, Arkansas, #14358

**Professional Memberships**

Member, Institute of Electrical and Electronic Engineers (IEEE)

Member, Society of Automotive Engineers (SAE)

Chair, SAE Odometer and Speedometer Committee

## **Thomas G. Livernois, Ph.D., P.E.**

### **Publications**

Arora A, Medora NK, Livernois TG, Swart J, "Safety of Lithium-Ion Batteries for Hybrid Electronic Vehicles," *Electric and Hybrid Vehicles*, 2010, 18: 463-491

Medora, NK, Arora, A, Livernois, TG, "Series Arcing Faults in Electrical Transportation Systems," SAE 2010-01-0036, April 2010

Livernois TG, "On the Reciprocity Factor for Shielded Microstrip," *Microwave and Optical Technology Letters* 1995; 10(6):327-330, December.

Livernois TG, "Characterization of Dissipative Losses in Microwave Circuits," *Microwave and Optical Technology Letters* 1994; 7(15):687-689, October.

Livernois TG, East JR, "Analysis of a Microstrip Step Discontinuity Fabricated on a Metal-Insulator-Semiconductor (MIS) Substrate," *Microwave and Optical Technology Letters* 1992; 5(13):661-666, December.

Livernois TG, Nyquist DP, Cloud MJ, "Scattering Effects in the Dielectric Slab Waveguide Due to Electrically Dissipative and Active Discontinuities," *IEEE Transactions on Microwave Theory and Techniques* 1991; 39(3):579-583, March.

Livernois TG, Katehi PB, "A Simple Method for Characterizing Planar Transmission Line Discontinuities on Dissipative Substrates," *IEEE Transactions on Microwave Theory and Techniques* 1991; 39(2):368-370, February.

Livernois TG, Katehi PB, "Characteristic Impedance and Transverse Field Distribution in MIS Microstrip," *IEEE Transactions on Microwave Theory and Techniques* 1990; 38(11):1740-1743, November.

Livernois TG, Katehi PB. "Generalized Method for Deriving the Space-Domain Green's Function in a Shielded, Multilayer Substrate Structure, with Applications to MIS Slow Wave Transmission Lines," *IEEE Transactions on Microwave Theory and Techniques* 1989; 37(11):1761-1767, November.

Livernois TG, Nyquist DP. "Integral Equation Formulation for Scattering by Dielectric Discontinuities Along Open Boundary Waveguides," *Journal of the Optical Society of America A* 1987; 4(7):1289-1295, July.

### **Symposium Papers**

Arora A, Medora N, Livernois T, "Circuit Protection Devices & Arc Fault Detection Schemes for Electrical Automotive Systems," *IEEE Symposium on Product Compliance Engineering*, Austin, TX, October 20-22, 2008.

Teune J, Livernois TG, "Correlation Between Automotive Electromagnetic Immunity Tests," *IEEE 1999 International Symposium on Electromagnetic Compatibility*, Seattle, WA, August 2-6, 1999.

Slattery K, Neal J, Livernois T, Smith S., "A Description of the Implementation of an Automated Conducted Emissions Chamber for Automotive Testing," *IEEE 1998 International Symposium on Electromagnetic Compatibility*, Denver, CO, August 24-28, 1998.

Schuster JW, Leubbers RJ, Livernois TG, "Application of the Recursive Convolution Technique to Modeling Lumped Circuit Elements in FDTD Simulations," *IEEE AP-S Symposium*, Atlanta, June 21-26, 1998.

Slattery KP, Monahan RL, Livernois TG, Smith SV, "Characterization of TEM Cell Discontinuities Due to Filtered DUT Test Harnesses," *IEEE EMC Symposium*, Austin TX, August 18-22, 1997.

Slattery KP, Livernois TG, "The Effects of I/O Wire Extensions on Measured RF Voltage," *IEEE EMC Symposium*, Austin TX, August 18-22, 1997.



## **Thomas G. Livernois, Ph.D., P.E.**

### **Symposium Papers (Cont'd)**

Livernois TG, "Module Level Conducted Immunity Testing," 1995 Society of Automotive Engineers EMC TopTec, Novi, MI, September 13–14, 1995.

Livernois TG, "TEM Cell Radiated Immunity Testing," 1995 Society of Automotive Engineers EMC TopTec, Novi, MI, September 13–14, 1995.

Livernois TG, "Analysis and Design of Slow Wave Structures Using an Integral Equation Approach," IEEE/MTT-S International Microwave Symposium, Long Beach, CA, June 12–16, 1989.

### **Guest Lecturer**

Product Liability Hot Topics Seminar for Defense Counsel, "Collision Avoidance Technology – New Technology Bringing A Host of New Claims", Troy, Michigan, September 2009.

### **Doctoral Thesis**

Livernois TG, "Numerical and Experimental Analysis of Metal-Insulator-Semiconductor Microstrip Structures," The University of Michigan, Ann Arbor, Michigan, 1991.

