DESIGN RESEARCH ENGINEERING

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JOEL T. COWELLS, P.E.
Senior Project Engineer

PROFESSIONAL PROFILE

Senior Project Engineer in Electrical Engineering at Design Research Engineering (DRE) specializing in electrical and electronic system hardware and software. Expertise in hardware and software algorithms for vehicle embedded control systems including diagnostics and communication networks. Analysis and testing of vehicle electrical systems hardware and/or software performance including engine control systems, brake systems, supplemental restraint systems (SRS), and others, including various aftermarket products. Proficient in vehicle Event Data Recorders (EDRs) data retrieval and analysis, including both passenger vehicles and heavy trucks, and 3D digitization of accident vehicles and sites. Failure analysis investigations of residential, commercial, and industrial electronics, wiring, and controls, and analysis of thermal events attributed to vehicle components and commercial and residential equipment.

Prior to joining DRE: Senior Engineer in Exponent's Electrical and Semiconductors practice. Also worked at General Motors Corporation, involved in algorithm definition and software development for powertrain control modules, vehicle level integration and testing, and performing root cause analysis of identified issues, developing an expertise in problem identification and resolution by performing Failure Mode and Effects Analyses.

EDUCATION AND HONORS

M.S. (Computer Engineering) Wayne State University, 2003
B.S. (Electrical and Computer Engineering) Wayne State University (*summa cum laude*), 2001

Tau Beta Pi Engineering Honor Society (TBP)
Wayne State University College of Engineering Alumni Association, Outstanding Graduating Senior Award
Wayne State University Presidential Scholarship, General Motors Intern Scholarship

Sensors and Actuators Seminar Modules 1-3, Society of Automotive Engineers, 97019, 97020, and 97021
Vehicle Accident Reconstruction Methods Seminar, Society of Automotive Engineers, C0416
Acquiring and Analyzing Data from Sensors and In-Vehicle Networks, Society of Automotive Engineers, C0522
Applying Automotive EDR Data to Traffic Crash Reconstruction, Society of Automotive Engineers, C1210
Bosch CDR Tool Technician Training, Institute of Police Technology and Management, Course 02127-4002
Accessing and Interpreting Heavy Vehicle Event Data Recorders, Society of Automotive Engineers, C1022
Air Brakes Training Program, Bendix, ABT101
Crash Data Group EDR Summit, 2016-2019
Northwestern Center for Public Safety, Traffic Crash Reconstruction 1, CI-TCR10 081020

LICENSES AND CERTIFICATIONS

Licensed Professional Engineer, Michigan, #54704

PROFESSIONAL MEMBERSHIPS

Member, Society of Automotive Engineers (SAE)
Member, Institute of Electrical and Electronic Engineers (IEEE)

PUBLICATIONS

A Guide to Developing and Implementing Safety Checklists: Plant Steam Utilities. American Institute of Chemical Engineers, Spring National Meeting, 44th Annual Loss Prevention Symposium, San Antonio, Texas, March 22-24, 2010 (with Fecke MT, Martens JD, and Morrison DR).

Root Cause Analysis of a Cryogenic Refrigeration System Explosion. American Institute of Chemical Engineers, 43rd Annual Loss Prevention Symposium, Tampa, Florida, April 26-30, 2009 (with Morrison DR, Martens JD, and Ogle RA).

Accident Investigation Using Process Control Event Diagrams. American Institute of Chemical Engineers, 24th Annual Center for Chemical Process Safety (CCPS) International Conference, Tampa, Florida, April 26-30, 2009 (Morrison DR, Martens JD, and Ogle RA).