

Exponent®
Engineering & Scientific Consulting

Harry Pearce, P.E.

Office Director and Principal Engineer | Vehicle Engineering
Farmington Hills
+1-248-324-9176 | hpearce@exponent.com

Professional Profile

Mr. Pearce has over 26 years of expertise in the automotive industry with a focus on structural crashworthiness, vehicle design as it pertains to CO exposure, and accident reconstruction. He gained automaker experience with over nine years at General Motors, serving as the Lead Structural Design Engineer for multiple vehicles.

Mr. Pearce explains the complex topic of structural crashworthiness with simple, straight-forward methods. He helps explain the severity of collisions and crash tests with quantitative and visual techniques. Mr. Pearce is knowledgeable on the details and historical implementation of the comprehensive set of crash tests to which vehicles are engineered and tested. He evaluates crashworthiness by reviewing crash test ratings, intrusion, and crash dummy injury values. He is knowledgeable on vehicle compatibility, including lift kits, and is experienced conducting vehicle structural lineups to visually explain compatibility. Mr. Pearce is knowledgeable on the use of high strength and ultra-high strength steels and aluminum in vehicle structures and has developed innovative visual methods to illustrate them. He is experienced in acquiring structural components from entire roof structures and quarter cars to bumper beams for groups of vehicles and performing design analysis and testing in Exponent's Detroit Vehicle Lab. Mr. Pearce is experienced in advising on vehicle crash testing at Exponent's Phoenix Test and Engineering Center. He has worked extensively with Finite Element Analysis (FEA) during his time at both GM and Exponent.

Mr. Pearce has extensive knowledge of the vehicle development process from initial design concept to production. Prior to joining Exponent, Mr. Pearce held several Lead Design Engineer positions during his nine years at General Motors. Most recently, Mr. Pearce was the Upper Structure Lead Design Engineer for the 2007-2016 GMC Acadia, 2008-2017 Buick Enclave, and 2009-2017 Chevrolet Traverse midsize crossovers. He was also an upper structure and lower structure design engineer on the 2006-2010 Hummer H3 and the Pickup Box Lead Design Engineer for the 2009-2010 Hummer H3T. Mr. Pearce was chairman of the product development teams responsible for all aspects of the vehicle development process. He was responsible for the design of the structural components, including part geometry, material, and thickness. He worked with the crashworthiness FEA and testing engineers to ensure requirements were met. He worked with the durability FEA and testing engineers to ensure requirements were met. He worked with the formability FEA engineers, die engineers, and suppliers to make sure the structural parts could be manufactured. He worked with manufacturing engineers to ensure the structure could be assembled in the robotic body shop and the rest of the vehicle could be assembled to the structure in general assembly. Mr. Pearce oversaw the construction of prototype vehicles for physical validation. Mr. Pearce has worked in assembly plants and is experienced with the manufacturing process from part stamping to final vehicle assembly.

Mr. Pearce has over 15 years of experience in the area of vehicle design as it pertains to CO exposure. Mr. Pearce is well versed in residence and vehicle inspections associated with such incidents. He has performed vehicle inspections on over 100 vehicles to understand how they respond visually and audially

to various scenarios. He has compiled a detailed database on the implementation of auto shutoff. Finally, he is familiar with the NHTSA rulemaking and SAE recommended practice on the topic.

Mr. Pearce has 17 years of experience in accident reconstruction. Mr. Pearce has conducted site inspections, vehicle inspections, photogrammetry, momentum and energy analyses, and computer simulations. Mr. Pearce has conducted extensive data analysis, including National Automotive Sampling System (NASS), warranty, and complaint data.

Mr. Pearce is knowledgeable on the implementation of vehicle technologies and has developed efficient methods to survey the entire vehicle fleet.

Academic Credentials & Professional Honors

M.S., Mechanical Engineering, Northwestern University, 1999

B.S., Mechanical Engineering, Rose-Hulman Institute of Technology, 1997

Traffic Accident Reconstruction, Northwestern University Center for Public Safety, 2009

Cabell Fellowship, Northwestern University

Heminway Gold Medal (Valedictorian), Presidential Scholarship, Rose-Hulman Institute of Technology

Licenses and Certifications

Professional Engineer, Michigan, #6201057044

Professional Affiliations

Society of Automotive Engineers (Chairman of Structural Crashworthiness Session)

Publications

Lange R, Pearce H, Jacuzzi E. Installation patterns for emerging injury mitigation technologies. 22nd International Technical Conference on the Enhanced Safety of Vehicles (ESV), Paper 11-0088, 2011.

Lange R, Jacuzzi E, Soderborg N, Pearce H. Injury mitigation technology applications and the relationships to vehicle mass, price, and fuel economy. 22nd International Technical Conference on the Enhanced Safety of Vehicles (ESV), Paper 11-0114, 2011.

Lange R, Soderborg N, Pearce H, Balavich K, Huang S. Side impact airbag efficacy, injury mitigation performance in vehicle models with and without side impact air bags and inflatable head protection. 22nd International Technical Conference on the Enhanced Safety of Vehicles (ESV), Paper 11-0115, 2011.

Lange R, Iyer M, Pearce H, Jacuzzi E, Croteau J. Rollover injury science and rollover crash typology. 22nd International Technical Conference on the Enhanced Safety of Vehicles (ESV), Paper 11-0116, 2011.

Balavich K, Soderborg N, Lange R, Pearce H. Deployment characteristics of seat mounted side impact airbags. 22nd International Technical Conference on the Enhanced Safety of Vehicles (ESV), Paper 11-0358, 2011.

Pearce H, Parker D. Lug nut trace analysis to determine velocity ratio. 2011 Society of Automotive Engineers (SAE) World Congress, SAE 2011-01-0282.

Pearce H. The design and construction of an intelligent power assist jib crane. Masters Thesis, Northwestern University, August 1999.