Exponent®
Engineering & Scientific Consulting

Harry Pearce, P.E.

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Professional Profile

Mr. Pearce has over 24 years of expertise in the field of structural crashworthiness. He gained industry experience with nine years at General Motors, serving as the Lead Structural Design Engineer for multiple vehicles.

Mr. Pearce has analyzed structural crashworthiness at Exponent for about 15 years. He has also served as an expert in accident reconstruction, and vehicle design as it pertains to CO poisoning.

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 for the subject vehicle and a set of peer vehicles. 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 performs comparative visual analyses among peer vehicles. 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 Buick Enclave, Chevrolet Traverse, and GMC Acadia midsize crossovers. He was also chairman of the product development teams responsible for all aspects of the vehicle development process. Mr. Pearce 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. In the area of 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.

With his knowledge and experience with vehicle sealing, Mr. Pearce has addressed claims of Carbon Monoxide (CO) intrusion. He has performed Electro Magnetic Interference (EMI) testing in anechoic chambers and Brake Override System (BOS) testing at Exponent's Test and Engineering Center. Mr. Pearce is also knowledgeable on the implementation of vehicle technologies and has developed efficient methods to survey the entire vehicle fleet.

Mr. Pearce is experienced in: the acquisition of all types and ages of automotive parts; photography and videography; Computer Aided Design (CAD), FARO arm, FARO laser, and Mantis scanning; material testing; and component testing.

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.