CARR ENGINEERING, INC.

12500 CASTLEBRIDGE DRIVE HOUSTON, TEXAS 77065-4532
TELEPHONE 281-894-8955

Technical Biography for Aaron Osterhout

I am a resident of the State of Texas and an employee of Carr Engineering, Inc. (CEI), a Texas corporation at 12500 Castlebridge Drive, Houston, Texas 77065. I received my bachelor's degree in Mechanical Engineering from Lawrence Technological University in Southfield, Michigan in 2001. I have compiled a total of over 22 years of automotive engineering experience starting at the Lear Seating Corporation in Southfield, Michigan in 1994 and continuing to this day at Carr Engineering, Inc. in Houston, Texas. As a result of my direct industry experience, I have gained specialized expertise in the fields of automotive crash testing, accident reconstruction, the design and performance of seating systems, and the design and performance of occupant restraint systems.

From 1994 until 2001, my primary responsibilities at Lear included both the setup and the execution of full seating system crash testing using a Hyge acceleration crash sled. This work allowed me to gain experience with crash pulse development, anthropomorphic test device (dummy) instrumentation, data analysis, video motion analysis, dynamic seat and occupant performance analysis, and compliance report generation. In addition, I was responsible for evaluating full seating system compliance to performance standards in various types of static and dynamic tests. In each of these activities, my primary focus was ensuring that Lear seating systems complied with all Federal, internal, and external testing requirements prior to delivery to OE vehicle manufacturers. During this time, I was promoted from the role of Test Technician to the role of Test Engineer.

In 2001, I was promoted to the position of Senior Engineer / Supervisor of Safety Systems. My expanded responsibilities in this role included dynamic crash testing, static load testing, and static airbag deployment. In addition, I was responsible for verifying the compliance of seating systems to dynamic specifications such as NCAP, FMVSS (including 202, 207, 208, 214, 225, and 301), static specifications such as FMVSS 207 and 210, and internal/external specifications and requirements for Lear and Lear's OEM customers.

Through 2003, I performed, supervised, and/or managed thousands of dynamic and static seating system evaluations at both the component and vehicle level. Specific projects included:

- The replacement of an existing quasi-static seat back deflection specification for a major OEM with a Hyge acceleration test. The result of the project was the successful development of a specification verifying strong yielding seating systems that would properly absorb crash energies.

- The implementation of a side-impact crash system to the Hyge sled. This work included a secondary sled system developed by MIRA in the United Kingdom and the correlation of crash pulses to match unique side impact-type barrier crashes.

- The implementation of a low-speed rear impact test requirement for a major OEM. The result of the project was a seating system which minimized head accelerations, upper neck loading, and lower neck loading during the test.

In 2003, I was hired by CEI in Houston, Texas. My initial role at CEI involved the construction, installation, and preparation of a Hyge acceleration crash sled similar to the Hyge acceleration crash sled used at Lear. Over the past 13 years I have performed numerous Hyge acceleration tests in support of matters pertaining to product liability litigation as well as seating system / restraint system development programs. These projects have typically involved developing a test to match crash reconstruction evidence and simulate the conditions on the Hyge acceleration crash sled. I have also coordinated full-scale vehicle crash tests to validate reconstruction theories.

While my specific expertise and training are in the fields of automotive crash testing, the design and performance seating systems, the design and performance of occupant restraint systems, I have developed the skills necessary to reconstruct a wide variety of motor vehicle crash scenarios. This includes performing vehicle inspections, scene inspections, and collecting / assembling / analyzing the data and evidence pertinent to the crash reconstruction. Over the past 13 years I have performed hundreds of these analyses in order to determine contributing factors such as travel speeds, delta-V, occupant and vehicle kinematics, and vehicle performance. Additionally, I am proficient with the technique of photogrammetry, allowing me to establish the location of evidence no longer available at a crash scene, but visible in still photographs or video.

The technologies I am skilled at employing also include computer-aided dynamic simulations and state-of-the-art analysis software such as HVE Crash, HVE SMAC, and HVE SMAC4. My experience additionally encompasses the collection and interpretation of event data recorder information and the use of frame-by-frame video capture analysis.

I have augmented these analytical skills with real-world and test-track driving experience. In these environments I have dynamically evaluated a wide variety of passenger cars, utility vehicles, light trucks, and off-road side-by-side machines. This work includes evaluations using manual steering inputs as well as automated steering inputs generated by a steering robot in order to execute standardized and custom maneuvers both on and off road.

My most recent experience includes retention in the field of accident reconstruction by tire manufacturers, on-road vehicle manufacturers, off-road and recreational vehicle manufacturers, and insurance providers. I have testified in multiple litigation cases via depositions and state court. Through my involvement with SAE International and other professional societies, I continue to receive additional training and education related to the fields of automotive crash testing, the design and performance of seating systems, the design and performance of occupant restraint systems, automotive crash reconstruction, and vehicle dynamics.