

<b>Hendrik B. Helleman</b>		
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## **1. CAREER FOCUS**

<b>Over 25 Years Industry Experience – Occupant and Vehicle Crash Safety Engineering</b>	
Seat Belt & Airbag Systems Development	Intellectual Property Assessment
Frontal, Side-Impact, and Roll-Over Restraints Design & Analysis	Occupant Classification Sensor Systems Development
Deployment Risk Analysis & Injury Risk Mitigation	Vehicle Crash & Occupant Kinematics, and Injury Risk Analysis

### **EDUCATIONAL BACKGROUND:**

- Aerospace Engineering (BSc), Haarlem Polytechnic College, 6/85
- Computer Science, Delft University, 6/92

### **PROFESSIONAL CONTRIBUTIONS:**

- 4 Issued Vehicle Occupant Safety Technology Patents;
- Member of the SAE Pedestrian Dummy Task Group;
- Over 30 Technical Reports, Papers, Lectures, and Presentations.

## **2. PROFESSIONAL EXPERIENCE**

### **2008 – 2018 Consultant, Vehicle and Occupant Crash Safety, MI**

and **Creator of VirtualCrash.com**, a web-portal for conduction occupant crash analysis.

- Occupant Classification Sensor Software Algorithm Review and Contra Expertise;
- Patent Research, Inter Partes Review, and Litigation;
- Advanced Airbag Rule: Specifications, Chronology, and Implementation Research;
- Airbag Deployment Algorithm Evaluation;
- Crash Sensor Systems Capabilities Evaluation;
- Accident Statistics Research;
- Injury Biomechanics Research;
- VirtualCrash.com Occupant Crash Safety Web Portal Application Development;
- Global Small Car Crash Safety and Restraint Systems Development;
- Safety Systems Robustness Assessment and Quantification;
- Restraints System Requirements Specification for Frontal and Side Impact;

**2000 – 2008 Takata Electronics, MI - Manager, Restraint Systems Research**

In this function directly involved in the research and development of Frontal, Side-Impact, and Roll-Over Occupant Restraint Systems, including:

- Advanced Airbag Systems – Design and Assessment;
- Inflation Injury Risk Assessment to Out-of-Position Occupants (Low Risk Deployment);
- Ejection Mitigation and Gap Closure Timing studies for Roll-Over accidents;
- Active and Passive Tailored Response Restraint Systems;
- Patent Research and Intellectual Property Development;
- Participation in the Global Human Body Modeling Effort;
- Side Impact Sensing Strategies, Side Curtain Design; Adaptive Side-Impact Restraints;
- Pre-crash Strategies, Active / Passive Safety Systems Integration.

**1998 – 2000 Consultant, Vehicle Occupant Safety and Restraint Systems, MI**

- Vehicle Occupant Classification Sensor Systems Development;
- Proof of Concept Assessment of a Highly Aspirated Airbag Inflator;
- Simulation Analysis of Injury Risk from Airbag Tether Failure;
- Assessment of the Injury Potential of different Passenger Airbag Door Designs;
- Simulation Analysis of Head Injury Mitigation Potential of Side Airbags;
- Assessment and counter check of Seat Belt and Roll-Over Analysis.

**1995 – 1998 Breed Technologies, FL**

**Manager Restraint Systems Engineering (1997/98)**

**Restraint Systems Development Lead Engineer (1995/97)**

The scope of work included the following:

- Vehicle Occupant Classification Sensor Systems Development;
- De-Powered Airbag Systems & Advanced Frontal Restraint Systems Research;
- Side Impact Injury Risk Assessment and Mitigation;
- Total Restraint Systems Analysis;
- Lower Limb Injury Mitigation Research;
- Restraint Systems Integration for several vehicle platforms.

**1985 – 1994 TNO (Dutch organization for applied scientific research), Netherlands**

**Software and Crash Dummy Database Development Engineer (1989/95)**

**Materials Research Engineer (1985/89))**

- Provided Training for Occupant Simulation Analysis to Customers, world wide;
- Contributed Finite Element Airbag Analysis code to the TNO-MADYMO Crash-Victim Simulation software suite;
- Developed Numerical Databases of Crash Dummies for Simulation Analysis;
- Conducted Materials Research into fiber composites, plastics, and rubbers for applications in automobiles, aircraft, satellites, and orthopedic devices.

### 3. PROFESSIONAL CITATIONS

#### ISSUED PATENTS

- US 5,695,242 *Seat Cushion Restraint System* (1996,1997).  
 US 5,924,723 *Side Safety Barrier Device* (1997,1999).  
 US 6,529,809 *Method of developing a system for identifying an object in a vehicle* (1999,2003).  
 US 7,905,516 *Airbag Module with Integrated Gas Generation* (2007,2011).

#### PUBLISHED REPORTS, CONTRIBUTIONS AND LECTURES

- ESV 07-0368 *Adaptive Side Impact Restraints using Intrusion based Sensing.*  
 SAE J2782 *Surface Vehicle Recommended Practice: Performance Specifications for a 50<sup>th</sup> Percentile Male Pedestrian Research Dummy.*  
 DN 10/04 *Simulation Saves Time – featured article in Design News Magazine.*  
 UNC 11/99 *Airbags as they relate to Accident Reconstruction, Crashworthiness & Biomechanics – lecture.*  
 SAE 960503 *Seat and Airbag Design to Mitigate frontal crash lower limb injuries.*  
 ESV 91S9023 *The MADYMO Finite Element Airbag Model.*

#### DEPOSITIONS

- Fahey v. Ford *Randolph Co., IL; court# 00-L-759; 13-Nov-2000; Donohue, Brown, Mathewson & Smyth (Atny. for Defense)*  
 Newsom v. Cardoza *Fulton Co., Ga; court# 2007-EV-002252A; 24-Mar-2010; Wiggins, Norris, Coffey LLC. (Atny. for Plaintiff)*  
 Hyundai-Mobis v. Autoliv *US Patent and Trademark Office, IPR2014-01005, 12-May-2015; U.S. Pat# 7,347,450; Alston & Bird, LLP. (Atny. for Patent holder)*  
 Hyundai-Mobis v. Autoliv *US Patent and Trademark Office, IPR2014-01006, 13-May-2015; U.S. Pat# 7,614,653; Alston & Bird, LLP. (Atny. for Patent holder)*  
 SignallP v. Mazda *Central District of CA Case No.: 8:14-CV-00491, 27-Jan-2016; U.S. Pat# 6,012,007; DLA Piper, LLP. (Atny. For Defense)*

#### DEFENSE SUPPORT LITIGATION CASES

Katz v. DaimlerChrysler, Engelbrecht v. DaimlerChrysler, Parks v. Ford

**OEM CUSTOMER EXPERIENCE** : BMW, Chrysler, Fiat, Ford, GM, Honda, Hyundai, Jaguar, Lotus, Mazda, Tata, Tesla Motors, Toyota, Volvo, VW.

**CAE SOFTWARE EXPERIENCE** : ATB, MADYMO, LS-Dyna, Dytran, Pam-Safe, Radioss.

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