Hendrik B. Helleman

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1. CAREER FOCUS

Over 30 Years Industry Experience – Occupant and Vehicle Crash Safety Engineering	
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 – 2019 Consultant, Vehicle and Occupant Crash Safety, MI
and **Creator of VirtualCrash.com**, a web-portal for conducting 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

SAE 2019-01-1036	*VirtualCrash.com - Occupant Crash Simulation Analysis Made Easy*
ESV 07-0368	*Adaptive Side Impact Restraints using Intrusion based Sensing.*
SAE J2782	*Surface Vehicle Recommended Practice: Performance Specifications for a 50th 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	*13-Nov-2000; Randolph Co., IL; court# 00-L-759; Donohue, Brown, Mathewson & Smyth (Atny. for Defense)*
Newsom v. Cardoza	*24-Mar-2010; Fulton Co., Ga; court# 2007-EV-002252A; Wiggins, Norris, Coffey LLC. (Atny. for Plaintiff)*
Hyundai-Mobis v. Autoliv	*12-May-2015; US Patent and Trademark Office, IPR2014-01005; U.S. Pat# 7,347,450; Alston & Bird, LLP. (Atny. for Patent holder)*
Hyundai-Mobis v. Autoliv	*13-May-2015; US Patent and Trademark Office, IPR2014-01006; U.S. Pat# 7,614,653; Alston & Bird, LLP. (Atny. for Patent holder)*
SignalIP v. Mazda	*27-Jan-2016; Central District of CA Case No.: 8:14-CV-00491; U.S. Pat# 6,012,007; DLA Piper, LLP. (Atny. For Defense)*
Autoliv v. Hyundai-Mobis	*12-Dec-2019; Middle District of AL Case No.: 2:13-cv-141-ECM-WC; Alston & Bird LLP. (Atny for Plaintiff)*

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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