



**DESIGN  
RESEARCH  
ENGINEERING**

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## **KAREN M. BALAVICH**

### **Professional Profile**

As an experienced automotive engineer, Ms. Balavich specializes in vehicle restraint systems and crashworthiness. She has expertise in designing, developing and implementing occupant protection safety systems that align with Federal Motor Vehicle Safety Standard (FMVSS) requirements, Insurance Institute for Highway Safety (IIHS) guidelines and recognized industry working group procedures. Ms. Balavich has provided consulting services to automobile manufacturers, automotive suppliers and non-automotive clients such as the federal government, insurance companies, and law firms. She conducts research in her field and provides consulting on automotive testing, accident investigations, and litigation projects. She has been retained to apply her product development knowledge to other innovative applications outside the automotive industry.

Ms. Balavich has provided engineering expertise in product litigation matters involving crashworthiness claims including side structure, side impact airbags systems, rollover airbag systems, front occupant classification systems as well as other safety technologies. She has addressed claims in the area of technology availability, implementation of advanced technologies, designed function, and real-world performance. She has experience in defending intellectual property claims and is the named inventor on seven patents.

Prior to joining DRE, Ms. Balavich spent ten years as a consultant with Exponent in the Vehicle Practice. She has over 20 years' experience in the automotive industry working for Ford Motor Company. She held the position of Technical Expert in Side Impact and Rollover Restraints. In this position, Ms. Balavich delivered advanced side impact and rollover restraint technologies to vehicle programs, defined and authored design and performance specifications, engineering disciplines and design guidelines. She was the technical leader in the design, development, and implementation of the safety technology for the industry's first rollover curtain system, the Ford Safety Canopy. She has also researched and applied side impact and rollover evaluation methods to alternative technologies such as inflatable tubular structures, glazing, and seat belt system performance. Prior to her TE position in restraints, she held product development engineering positions in restraints, door systems, and corrosion protection engineering also with Ford. Ms. Balavich has working knowledge of the vehicle development process and has had experience in launching new technologies into vehicle production, assisting in designs of assembly and supporting the vehicle assembly processes.

### **Academic Credentials & Professional Honors**

M.S. Corporate Finance, Walsh College

B.S., Mechanical Engineering, Michigan Technological University

### **Professional Affiliations**

Member, Society of Automotive Engineers (SAE)

### **Patents**

US 7,686,332 B2: Integrated Side Impact Air Bag With Single Layer Sail Panels, March 30, 2010 (W. M. Abramczyk, E. Valdez, K. B. Balavich)

US 7,338,070: A Multi Chamber Airbag for a Motor Vehicle, March 04, 2008 (K. Balavich, J. Belwafa, C. Madasamy).

US 7,178,827: Occupant Ejection Prevention Assembly, February 20, 2007 (K. Balavich, C. Chou, J. Le, F. Wu).

US 20060131845 A1: A Multi Chamber Airbag for a Motor Vehicle, June 22, 2006 (K. Aekbote, K. Balavich, J. Belwafa).

JP2005225487: Occupant Release Prevention Assembly, August 25, 2005 (K. Balavich, C. Chou, J. Le, F. Wu).

US 20070108745: Side Impact Air Bag, May 17, 2005 (K. Balavich, J. Belwafa, B. Spahn, I. Reyes-Helfrich)

US 6,237,943 B1: Vehicle Rollover Curtain with Improved Deployment, May 29, 2001 (K. Balavich, J.R. Brown, J.A. Zychowicz).

### **Awards**

Henry Ford Technology Award (HFTA) for the Invention, Development and Implementation of Rollover Occupant Protection System

Ford Customer Driven Quality Award for Rollover Test Methodology

Ford Customer Driven Quality Award for Windstar Quadruple 5 Star Safety Team  
(European) HFTA for Design Model for Robustness and Verification for Coupe Door Glass System

Awarded 1st place Ford Customer Driven Quality Award for 1998 Escort Coupe Frameless Glass System

### **Publications**

Balavich K., Gregory S., Brown T., Lange R., Pearce H., "Installation Patterns for Emerging Safety Technologies 2000-2015", 25th International Technical Conference on Enhanced Safety of Vehicle (ESV), Detroit, MI, June 5-8, 2017.

Newberry W., Imler S., Carhart M., Dibb A., Balavich K., Croteau J., "Belted Occupant Kinematics and Head Excursion During the Airborne Phase of Vehicle Rollover: Evaluation of the Effects of Rollover-Deployed Curtain Airbags," SAE Paper 2014-01-0527

Balavich K., Soderborg N., Lange R., Pearce H., "Deployment Characteristics of Seat Mounted Side Impact Airbags," 22nd International Technical Conference on Enhanced Safety of Vehicle (ESV), Paper 11-0358, 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 Airbags and Inflatable Head Protection," 22nd International Technical Conference on Enhanced Safety of Vehicle (ESV), Paper 11-0115, 2011

McCoy R, Balavich K., "Analysis of a Prototype Electric Retractor, a Seat Belt Pre-Tensioning Device and Dummy Lateral Motion Prior to Vehicle Rollover", SAE Paper 2005-01-0945

Balavich, K., Nayef, A., "Dummy Head Kinematics in Tripped Rollover Tests and a Test Method to Evaluate the Effect of Curtain Airbag Deployment", SAE Paper 2002-01-0690.