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Robert Scheibe, Ph.D., P.E., CFI

Principal Engineer | Mechanical Engineering
Seattle
+1-425-519-8717 | rscheibe@exponent.com

Professional Profile

For over 39 years, Dr. Scheibe has used his mechanical engineering background to investigate, reconstruct, analyze, and determine the cause for accidents, component failures, and fires involving industrial machinery, vehicles, heavy equipment, tools, appliances, recreational equipment, and consumer products. He specializes in the engineering analysis of product safety and performance from the standpoint of design, operation, manufacture, assembly, maintenance, instruction, guarding, and warning.

Dr. Scheibe has evaluated machinery operation in numerous industries including power generation, transportation, agriculture, food processing, manufacturing, chemical processing, marine, and mining, for concerns that include machine design, hydraulics, lubrication, vibration, power transmission, materials handling, and occupational safety.

Dr. Scheibe specializes in structural and vehicle fire and explosion origin and cause determination, and has conducted research, performed numerous investigations, published papers, and taught courses on vehicle fire investigation to industry engineers in the US and abroad. With a background in vehicle dynamics, design, and mechanics, he has also performed extensive research on commercial vehicle braking systems and specializes in the analysis, testing, and performance evaluation of vehicles and component systems that include brakes, steering, drivetrain, and suspension.

As a seasoned field investigator, Dr. Scheibe has been principally involved in a broad range of matters, from minimal premises liability issues to large recall investigations and other complex-loss investigations following significant disaster events including crane collapses, explosions, and multi-vehicle collisions. He regularly assembles a multidisciplinary team to address technical issues that serve the best needs of the client and situation.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, University of Washington, 1996

M.S., Mechanical Engineering, University of Wisconsin, Madison, 1982

B.S., Mechanical Engineering, University of Wisconsin, Madison, 1980

Affiliate Associate Professor, Department of Mechanical Engineering, University of Washington

Licenses and Certifications

Professional Engineer Mechanical, Alaska, #162562

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Professional Engineer Mechanical, Washington, #24845

National High-Performance Driving Instructor

Certified Forklift Operator (CFO)

Certified Vehicle Fire Investigator (CVFI)

Certified Fire Investigator (CFI)

Certified Fire and Explosion Investigator (CFEI)

Academic Appointments

Affiliate Associate Professor, University of Washington Department of Mechanical Engineering, 1996-present

Professional Affiliations

Society of Automotive Engineers

SAE ABA Fire Safety Committee member and peer reviewer

American Society of Mechanical Engineers

National Fire Protection Association

International Association of Arson Investigators

National Association of Fire Investigators

International Code Council

Patents

“On-Board Brake Warning Device for Air Brake Equipped Vehicles,” U.S. Patent No. 5,892,437, issued April 6, 1999.

Publications

Website

“Motor Vehicle Fire Investigation,” a computer-based training resource for investigation of vehicle fires, www.vehiclefire.washington.edu, associated with the Washington State Transportation Center (TRAC) at the University of Washington, (with L.E. Shields), 2009 (updated 2020)

Publications

“Design Tradeoffs: The Social Costs of Vehicle Fire Protection,” Society of Automotive Engineers Paper No. 2012-01-0985, April 2012 (with T. Scott, L.E. Shields, and R.O. Zerbe).

“Computer Modeling of Factors Significant to Electronic Stability Control Effectiveness,” Society of Automotive Engineers Paper No. 2009-01-0455, April 2009 (with L.E. Shields).

“Use of ABS in Emergency Brake-and-Steer Maneuvers,” Society of Automotive Engineers Paper No. 2009-01-0449, April 2009 (with L.D. Metz).

“Evaluation of Risk Trade-offs in Passenger Compartment Fire Retardant Usage – a Case Study,” Society of Automotive Engineers Paper No. 2009-01-0014, April 2009 (with L.E. Shields, D. Staskal, R. Ray, and L. Birnbaum).

“A Comprehensive Review of Rollover Accidents Involving Vehicles Equipped with Electronic Stability Control (ESC) Systems,” Annals of Advances in Automotive Medicine, Association for the Advancement of Automotive Medicine, October 2008 (with J. Padmanaban, L.E. Shields, and V.E. Eyges).

“Vehicle Design for Fire Safety and Evaluation of Design Trade-Offs,” Society of Automotive Engineers Paper No. 2007-01-0879, April 2007 (with L.E. Shields and T. Thomas). Paper was also published in SAE Transactions - Journal of Passenger Cars (2007).

“Computer-Based Training in Vehicle Fire Investigation Part 1: Ignition Sources,” Society of Automotive Engineers Paper No. 2006-01-0547, April 2006 (with L.E. Shields). Paper was also published in SAE Transactions - Journal of Passenger Cars (2006).

“Computer-Based Training in Vehicle Fire Investigation Part 2: Fuel Sources and Burn Patterns,” Society of Automotive Engineers Paper No. 2006-01-0548, April 2006 (with L.E. Shields). Paper was also published in SAE Transactions - Journal of Passenger Cars (2006).

“Spark Ignition of Underhood Fluids,” Society of Automotive Engineers Paper No. 2005-01-1559, April 2005 (with L.E. Shields). Paper was also published in SAE Transactions - Journal of Passenger Cars (2005).

“An Overview of Studded and Studless Tire Traction and Safety,” Washington State Department of Transportation, in conjunction with the U.S. Department of Transportation Federal Highway Administration, Research Report No. WA-RD 551.1, 2002.

“Case Studies of Motor Vehicle Fires: Final Report,” US Department of Transportation, National Highway Transportation Safety Administration, January 2001 (with L.E. Shields, T.E. Angelos and R. Mann).

"Determination of Air Brake Adjustment from Air Pressure Data", Journal of Automobile Engineering, Vol 215 Part D, 21-29, 2001 (with L.D. Kandt and P.G. Reinhall).

“Field Investigation of Motor Vehicle Collision-Fires,” Society of Automotive Engineers Paper No. 1999-01-0088, March 1999 (with L.E. Shields and T.E. Angelos). Paper was also published in SAE Transactions - Journal of Passenger Cars (2000).

“Motor Vehicle Collision-Fire Analysis Methods and Results,” National Fire Protection Association, November 1998 (with L.E. Shields and T.E. Angelos).

"Safety Monitoring of Air Brake Systems On-Board Commercial Vehicles," Transportation Research Board/National Research Council, TRB Record No. 1560, presented at 75th Annual Meeting, Washington D.C., January 1996 (with P.G. Reinhall).

“Intelligent On-Board Safety Monitoring of Air Brake Systems,” Intelligent Transportation Society of America presented at Second World Congress on Intelligent Transport Systems, Yokohama, Japan, November, 1995 (with P.G. Reinhall).

"The Effect of Vibration on the Shipment of Palletized Products," Society of Automotive Engineers Paper No. 952640, November, 1995 (with P.G. Reinhall).

“Development of an Intelligent Air Brake Warning System for Commercial Vehicles,” from Emerging Concepts and Products for Intelligent Transportation Systems, Transportation Research Board/National Research Council, 1994 (with P.G. Reinhall).

“Western States Transparent Borders Project: Implementing Transparent Borders, Recommended Actions,” Final Report to Washington State Department of Transportation, in conjunction with the U.S. Department of Transportation Federal Highway Administration, 1993 (with M. Hallenbeck, J. Koehne, D. Rose and J. Leech).

"Development of an Internal Torque Reaction Jar Opening Device to Assist Older Persons," SBIR Phase I and Phase II Final Reports to the Department of Health and Human Services Administration on Aging (1988 and 1993).

"Free Edge Stress Calculations for NASA Optical Windows," Failure Analysis Associates Report, 1983 (with H.F. Wachob and S.W. Hopkins).

"The Design of a Rubber V-Belt Continuously Variable Transmission,” Master's Thesis, University of Wisconsin (1982).

"Survey and Evaluation of Playground Safety in Selected Madison Parks,” a safety study for the Madison Parks Commission, University of Wisconsin, 1980 (with S.M. Johnson).

Presentations, Invited Lectures, and Seminars

“Engineering and Human Factors Design Considerations in Product Liability,” 32nd Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2020).

“Rooting Out the Root Cause: Relating Failure to a Safer Product,” 31st Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2019).

“Motor Vehicle Fire Investigation,” a 4-day training seminar given to Maruti Suzuki India, Ltd., New Delhi, India (November 2018).

“Why Everything Matters – Design, Installation, Usage, Maintenance…,” 30th Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2018).

“Examining the Pitfalls in Mechanical Design and Human Behavior,” University of Washington Business School (May 2018).

“Forensic Engineering: How to be Right about What Went Wrong,” Mechanical Engineering Leadership Series Lecture, University of Washington (January 2018).

“Learning from Failure: An Engineering Perspective on Product Liability,” 29th Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2017).

“Gotchas in Product Liability: Case Studies in Failure,” 28th Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2016).

“Learning from Product Failures,” 26th Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2014).

“Success from Failure: What Went Wrong,” Mechanical Engineering Leadership Series Lecture, University of Washington (February 2014).

“Avoiding Pitfalls in Product Failure Investigations,” 25th Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2013).

“Why Design Matters,” 24th Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2012).

“Tools and Techniques to Avoid the Development of a Defective Product,” 23rd Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2011).

“Accident Site Management,” 22nd Annual Product Liability Conference, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2010).

“Avoiding the Development of a Defective Product,” 21st Annual Product Liability Forum, College of Engineering, Department of Engineering Professional Development, University of Wisconsin – Madison (September 2009).

“Computer-Based Training in Vehicle Fire Investigation,” Society of Automotive Engineers World Congress Meeting, Detroit, MI (2006).

“Investigation of Motor Vehicle Fires,” University of Washington Engineering Professional Programs, a two-day seminar, given at the University of Washington, Seattle (2000, 2002, 2006) and at Mercedes-Benz USA, Montvale, NJ (2001).

“Ethics in Forensic Engineering,” Seattle University MBA program, Bellevue, WA (2001).

“Case Studies in Motor Vehicle Fires,” 1998 Society of Automotive Engineers Government/Industry Meeting, Washington, D.C. (1998).

"Product Liability and its Role in Engineering Design," University of Washington Department of Mechanical Engineering, Seattle, WA (1994-2011).

"Nondestructive Methods in Failure Analysis," American Society for Nondestructive Testing, Richland, WA (1992).

"Accident Reconstruction and Computer Animation," Society of Automotive Engineers, Northern California Section, Berkeley, CA (1986).