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Engineering & Scientific Consulting

James Smith, P.E.

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Professional Profile

As a Professional Mechanical Engineer, Mr. Smith specializes in the failure analysis of mechanical systems, including industrial equipment, shop tools, and vehicle systems, as well as the investigation and analysis of vehicle accidents. He has over 20 years of experience in automotive testing and mechanical system failure evaluations.

Mr. Smith provides strategic guidance on the design and execution of full-scale vehicle crash and sled tests, quasi-static strength tests, and handling and stability demonstrations. He has conducted hundreds of experiments and has developed extensive knowledge and experience with various test methods and fixtures, instrumentation, and data acquisition techniques.

Mr. Smith is experienced with the investigation and analysis of motor vehicle accidents involving passenger automobiles, motorcycles, heavy trucks, forklifts, industrial vehicles, off road vehicles, and pedestrians. His research and publications include full-scale crash tests involving motorcycles, tractor-trailers, and passenger cars, full-scale rollover tests of sport utility vehicles and light trucks, full scale sled tests involving motorcycles and passenger cars, occupant kinematics and injury in motorcycle and automobile collisions, and the application of computer simulations to automotive collisions. His expertise includes the analysis of recorded sensor data stored in airbag control modules as well as the evaluation of human factors in vehicular accidents. Mr. Smith utilizes a variety of computer software and simulation tools in his failure and accident investigations.

Academic Credentials & Professional Honors

M.S., Mechanical Engineering, Arizona State University, 1994

B.S., Aerospace Engineering, Arizona State University, 1992

Sigma Gamma Tau

Allied Signal Fellowship recipient

Licenses and Certifications

Professional Engineer Mechanical, Arizona, #37367

Professional Affiliations

Society of Automotive Engineers (member)

National Society of Professional Engineers (member)

National Association of Professional Accident Reconstruction Specialists (member)

The American Society of Mechanical Engineers (member)

Publications

Smyth, B., Crosby, C.L., Bickhaus, R., Smith, J. et al., “Analysis of the Event Data Recorder Vehicle System Data of a GM Vehicle Intelligence Platform Airbag Control Module (SDM50),” SAE Technical Paper 2025-01-8714, 2025.

Mkandawire C, Imler S, Smith J. Obese forklift operator neck loads and back loads on a sit down lift truck during a sudden drop. ASME International Mechanical Engineering Congress & Exposition, IMECE2016 65169, Phoenix, AZ, 2016.

Ravi S, Smith J, Mkandawire C. Methods for evaluating occupant kinematics in forklift tipover demonstrations using occupants with high BMI values. ASME International Mechanical Engineering Congress & Exposition, IMECE2013 63366, San Diego, CA, 2013.

Smith J, Frank T, Bosch K, Fowler G, Carter J. Full-scale moving motorcycle into moving car crash testing for use in safety design and accident reconstruction. SAE Technical Paper Series, 2012-01-0103, SAE World Congress and Exhibition, Detroit, MI, April 2012.

Frank T, Smith J, Fowler G, Carter J, Bosch K. Simulating moving motorcycle to moving car crashes. SAE Technical Paper Series, 2012-01-0621, SAE World Congress and Exhibition, Detroit, MI, April 2012.

McGowan J, Bussone W, Raasch C, Smith J, Smedley J. Tractor-semitrailer driver and sleeping compartment occupant responses to low-speed impacts. SAE Technical Paper Series, 2012-01-0566, SAE World Congress and Exhibition, Detroit, MI, April 2012.

Rodowicz KA, Dupont K, Smedley J, Raasch C, Mkandawire C, Fittanto D, Bare C, Smith J. Passenger vehicle occupant response to low-speed impacts with a tractor-semitrailer. SAE Technical Paper Series, 2011-01-1125, SAE World Congress and Exhibition, Detroit, MI, April 2011.

Fittanto D, Bare C, Smith J, Mkandawire C. Passenger vehicle response to low-speed impacts involving a tractor-semitrailer. SAE Technical Paper Series, 2011-01-0291, SAE World Congress and Exhibition, Detroit, MI, April 2011.

Cuadrado J, Smyth B, Smith J, Digges K. Validation of sled tests for far-side occupant kinematics using Madymo. SAE Technical Paper Series, 2010-01-1160, SAE World Congress and Exhibition, Detroit, MI, April 2010.

Peterson DS, Smith JW. Comparison of vehicle measurement techniques. Collision Fall 2009; 4(2).

Frank TA, Smith JW, Hansen DC, Werner SM. Motorcycle rider trajectory in pitch-over brake applications and impacts. SAE Technical Paper Series, 2008-01-0164, SAE World Congress and Exhibition, Detroit, MI, April 2008.

Carter JW, Luepke P, Henry K, Germane G, Smith JW. Rollover dynamics: An exploration of the fundamentals. SAE Technical Paper Series, 2008-01-0172, SAE World Congress and Exhibition, Detroit, MI, April 2008.

Luepke P, Carter J, Henry K, Germane G, Smith JW. Rollover crash tests on dirt: An examination of rollover dynamics. SAE Technical Paper Series, 2008-01-0156, SAE World Congress and Exhibition, Detroit, MI, April 2008.

Smyth B, Smith JW. Developing a sled test from crash test data. SAE Technical Paper Series, 2007-01-0711, SAE World Congress and Exhibition, Detroit, MI, April 2007.

Larson S, Smith JW, Werner S, Fowler G. Vehicle rollover testing, methodologies in recreating rollover collisions. SAE Technical Paper Series, 2000-01-1641, SAE Automotive Dynamics and Stability Conference, Troy, MI, May 15-17, 2000.

Smith JW. Stabilizing controller design for the reference pressure regulator. Master's Thesis, Arizona State University, 1994.

Selected Invited Presentations

Smith JW. Automotive crash testing. Continuing Legal Education Seminar, Sanders & Parks, September 22, 2016.

Peterson D, Smith J. Getting answers with photogrammetry. Continuing Legal Education Seminar, Sanders & Parks, January 24, 2013.

Smith JW. Motorcycle accident reconstruction methods and recent advancements. Continuing Legal Education Seminar, Sanders & Parks, April 7, 2011.

Smith JW. Accident reconstruction and experts. Farmers Insurance Liability Zone Conference, September 25, 2007.

Smith JW. Developing a sled test from crash test data. Presentation for Toyota Motor Company, Torrance, CA, October 31, 2006.

Smith JW. Collecting evidence: A crash course in conducting inspections. Continuing Legal Education Seminar, Bowman and Brooke, August 5, 2005.

Smith JW. Gathering and preserving evidence for accident reconstruction. 16th Annual Update of Arizona Law 2005, Jones, Skelton & Hochuli, May 4, 2005.

Smith JW. Accident reconstruction. Continuing Legal Education Seminar, Jones, Skelton & Hochuli, January 25, 2005.

Smith JW. An introduction to engineering issues in automotive litigations. Continuing Legal Education

Seminar and Workshop, Hyundai Motor America, April 27-28, 2004.

Additional Education & Training

Crash Safety Research Center, Jeffrey W. Muttart, *Human Factors for Traffic Crash Reconstruction*, October 25-29, 2010.

T.E.A.M. Arizona Motorcyclist Training Centers, *Basic Rider Course* (Motorcycle Rider Skill Training Course), November 14-16, 2008.

Eos Systems Inc., *PhotoModeler Collision Investigation*, Phoenix, AZ, September 23-25, 2008.

Collision Safety Institute, *Crash Data Retrieval Data Analyst Course*, Phoenix, AZ, July 8-11, 2008.

Collision Safety Institute, *Crash Data Retrieval Technician Course*, Phoenix, AZ, July 7, 2008.

Exponent, *Forklift Operator's Training per OSHA 1910.178*, Phoenix, AZ, April 16, 2008.

Society of Automotive Engineers, *Vehicle Accident Reconstruction Methods Seminar,* Detroit, MI, April 3-4, 2006.

Engineering Dynamics Corporation, *HVE Forum,* San Francisco, CA, May 3-7, 2004.

Northwestern University Traffic Institute, *Traffic Accident Reconstruction I,* Chicago, IL, October 20-31, 2003.

National Instruments, *LabVIEW Hands-On Seminar,* Phoenix, AZ, March 27, 2003.

General Motors Service Technology Group, *Supplemental Inflatable Restraint Systems,* Phoenix, AZ, January 24, 1997.