Curriculum Vitae

Hernán Mercado-Corujo, P.E., CFEI, CVFI
Senior Consultant

Professional Practice

Hernán Mercado-Corujo is a licensed professional mechanical engineer with over 18 years of experience in the Automotive and Forensic engineering industries. He combines more than a decade of design/engineer/test experience at Eaton Automotive and Honda R&D with “in-the-field” forensic engineering practices for Root Cause Failure Analysis, Crash Reconstruction, and vehicle fire Origin & Cause investigations since 2013. His unique and extensive experience with hands-on testing and in-depth knowledge of strength, durability, fatigue, and overall vehicle reliability qualifies him to perform failure analysis on a variety of machines, vehicles, and automotive systems. Bilingual in English and Spanish.

Employment History

Senior Consultant – Crane Engineering / ESi

Plymouth, MN • January 2019 - Present

Mechanical Engineer – Crane Engineering

Plymouth, MN • 2013 - 2018

- Address claims of alleged product defects or malfunctions related to design, production, and recalls, among others. Most cases involve product liability litigation, personal injury, and/or insurance subrogation.
- Provide clients with expert consultation regarding complete vehicle reliability, motor vehicle and component testing, product evaluation and validation, product and standards research, as well as simulation-test correlation.
- Perform mechanical investigations on transportation vehicles, including passenger vehicles, light trucks, SUVs, bicycles, motorcycles, scooters, snowmobiles, PWCs, and agricultural equipment, among others.
- Perform fire origin and cause (O&C) investigations, focusing on motor vehicles (cars, ATVs, trucks, engines), agricultural/farming equipment (tractors, combines, skid steer), transportation/construction equipment (cranes, haulers), and machinery. Includes fires aboard

cargo ships / vessels. Experience with fuel system components, layout, fuel-fed vehicle fires, and alternative fuel systems (CNG, hybrid, etc.).

- Conduct root/cause failure analysis and investigations of individual components, engines, transmissions, chassis, and other vehicle systems. May include vehicle/component testing/instrumentation.
- Perform powertrain failure investigations and analysis. May involve collection and analysis of fluids.
- Crash reconstruction, including vehicle crash data retrieval and imaging via CDR tool, and data interpretation.
- Provide artifact/scene documentation, evidence preservation, incident/field investigations, expert reporting, and expert witness testimony. Experience with MAP21 whistleblower cases involving motor vehicle part suppliers.

Senior Engineer II – Honda R&D Americas, Inc.

Raymond, OH • 2010 - 2013

- Measurement and instrumentation of vehicle and component loads for strength and durability.
- Set component specifications based on measured loads and computer simulation, including bolted joints.
- Perform full vehicle multibody dynamics simulations of passenger cars and light trucks.
- Testing of dampers, struts, bushings, sway bars for component characterization.
- Lead development of 16MY Honda Pilot in areas of Durability, Quality, and Reliability.
- Lead team in acquiring 3D digital scans of proving grounds road data, including vehicle dynamics and reliability test courses.
- Competitor vehicle benchmark testing & driving evaluation activities.

Engineer III – Honda R&D Americas, Inc.

Raymond, OH • 2004 - 2010

- Perform finite element analysis and correlate to experimental data.
- Product verification and validation in terms of strength and durability, including aluminum welds.
- Hands-on laboratory testing and analysis of suspension assemblies, engine and sub-frame mount systems, wheel hubs and bearings, bolted joints, wheels, open-close systems for strength and durability, based on internal Honda requirements.
- Vehicle and track testing to acquire loads generated with low profile tires.
- Design and build equipment to perform hub durability and bearing drag measurements.
- Basic driver’s training at Transportation Research Center.

- Hands-on line training at assembly plant.
- Involved in Zenbara (vehicle teardown or dismantling) activities.

Product Engineer – Eaton Corporation

Southfield, MI • 2001 - 2004

- Perform finite element analysis and correlate to experimental data.
- Analyze powertrain components, including engine valves, lifters, air management systems (superchargers, compressors, and turbos).
- Perform failure and fatigue analysis, modal and harmonic analyses on powertrain components.
- Develop and execute reliability and performance test plans, procedures, and schedules to ensure compliance of product to customer requirements.
- Experience with impact response equipment, signal analyzers, laser vibrometers, and related electronic equipment.
- Experience as Mechanical Lead responsible for product design and project management.
- Product design includes bearing selection and critical speed analysis.

Professional Licenses

Registered Professional Engineer – Puerto Rico, Ohio, Minnesota, Texas and Wisconsin

Certified Fire and Explosion Investigator (CFEI)

Certified Vehicle Fire Investigator (CVFI)

Professional Affiliations and Honors

Society of Automotive Engineers (SAE)

National Association of Fire Investigators (NAFI)

American Society of Mechanical Engineers (ASME)

Society of Automotive Engineers (SAE) Vehicle Fire Investigation Task Force – Member

Society of Hispanic Professional Engineers (SHPE)

Recipient of Honda R&D “Annual Business and Technology Award” for 2011 Odyssey sliding door development

Excellence in Oral Presentation, SAE World Congress, Detroit, MI, 2009

Education

M.S. Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, 2001.

B.S. Mechanical Engineering, Massachusetts Institute for Technology, Cambridge, MA, 1999.

Continuing Studies

Traffic Crash Reconstruction for the Forensic Engineer, Northwestern University Center for Public Safety, Ann Arbor, MI, 2019.

Crash Data Retrieval (CDR) Technician, Northwestern University Center for Public Safety, Evanston, IL, 2017.

Alternative Fuel Vehicle Program, International Association of Arson Investigators, Grinnell, IA, 2017.

ATV RiderCourse, ATV Safety Institute, Silver Lake, MN, 2016.

Tire and Wheel Safety Issues, SAE, Troy, MI, 2015.

Applied Vehicle Dynamics, SAE, BMW Performance Driving School, Greer, SC, 2015.

Hazardous Waste Operations and Emergency Response (Hazwoper) 40-Hour Waste Site Worker Training (29 CFR, 1910.120), Minneapolis, MN, 2015.

Bicycle Repair and Maintenance Class, Park Tool School, Minneapolis, MN, 2014.

Traffic Skills 101, The League of American Bicyclists, Minneapolis, MN, 2014.

SolidWorks Flow Simulation, Symmetry Solutions, Brooklyn Park, MN, 2014.

Advanced Fire, Arson & Explosion Investigation Program, NAFI, Richmond, KY, 2014.

Snowmobile Safety Education Program, Minnesota Department of Natural Resources, Sherburne Co., MN, 2013.

Engine Failure Investigation and Analysis, SAE, Troy, MI, 2013.

Basic Fire and Arson Investigation, MNDPS, Willmar, MN, 2013.

Vehicle Fire, Arson & Explosion Investigation Science & Technology, NAFI, Lexington, KY, 2013.

Design and Analysis of Fasteners and Bolted Joints, EduPro, Raymond, OH, 2013.

Vehicle Dynamics for Passenger Cars and Light Trucks, SAE, Troy, MI, 2011.

Motorcycle Ohio Basic Rider Course, ODPS, Columbus, OH, 2007.

Languages

Bilingual – fluent in English and Spanish.

Publications

Mercado-Corujo, H., Flores, L., Loyd, A., *Bringing Things Full Cycle – How to Approach Bicycle Crash Investigations from Every Perspective Amid Rising Use*, CLM Magazine, January 2017.

Mercado-Corujo, H., *¿Qué? Speaking your Client's Language in Forensic Investigations - Literalmente*, Subrogator, Fall 2016.

Yoshimoto, H., Pearce, K., Rodrick, T., Slabach, B., Gagliano, C., Mercado-Corujo, H., Tener, D., *Enhancement of Multi-Body Simulation Data Sharing*, Honda R&D Technical Review, April 2012.

Mercado-Corujo, H., *Utilization of MotionView for Automotive Strength and Durability Analysis*, paper number 2009-01-1196, 2009 SAE World Congress and Exhibition, 2009.

Kulkarni, A., Iannuzzelli, R., Seyedi, J., Mercado-Corujo, H., *Development and Application of a Press-Pin/PTH Reliability Model*, Conference Proceeding and Journal Volume 15-3, SMTA Journal of Surface Mount Technology, 2002.

Lynch, D., Mercado-Corujo, H., *Thermal Finite Element Analysis of X9 and X29 X-Ray Ring Crotch Radiation Absorbers*, BNL-66762, KC0204011, Energy Citation Database, 1999.

Presentations

Effective Vehicle Testing to Convey Vehicle Technology and Dynamic Behavior: A Case Study, Emerging Issues in Motor Vehicle Product Liability Litigation Conference, San Diego, CA, April 2019.

Guest Lecturer, Products Liability Seminar, LAW 6227, University of Minnesota. Discussed the role of experts / engineers in Product Liability cases utilizing a real-life case study. Session included post-baccalaureate, LL.M. students, October 2018.

Cutting Edge Tools and Techniques in Investigating and Reconstructing Crashes, Emerging Issues in Motor Vehicle Product Liability Litigation Conference, Phoenix, AZ, April 2018.

Failure Modes and Effects Analysis in New Product Development, ASME Symposium, MN Section, Plymouth, MN, March 2017.

Passenger & Commercial Vehicle Fire Origin & Cause Investigations, 3-hour seminar at Professional College of Engineers & Surveyors of Puerto Rico (CIAPR), San Juan, PR, May 2016.

Large Loss Incidents in Industrial Settings: Tools and Techniques for Site Management and Root Cause Analysis, 27th Annual Product Liability Conference, Department of Engineering Professional Development, University of Wisconsin-Madison, WI, 2015.

Vehicle Technology Trends That Will Make a Difference: A Forensic Engineering Perspective, Farmers Mutual Hail – Adjuster's School, Story City, IA, 2014.

Frequency & Amplitude Dependent Bushing Model Implementation in Full-Vehicle Simulation, 6th European Altair Technology Conference, Turin, Italy, 2013.

Full-Vehicle Multibody Simulations on Virtual Roads – The Challenges of Success, 5th European HyperWorks Technology Conference, Bonn, Germany, 2011.

Utilization of MotionView for Automotive Strength and Durability Analysis – Application and Correlation, SAE 2009 World Congress, Detroit, MI, 2009.

Customization of MotionView for Automotive Strength and Durability Analysis, 2008 Americas HyperWorks Technology Conference, Novi, MI, 2008.

Thermo-Mechanical Analysis of Water-Cooled Brakes, 2004 International ANSYS Conference, Pittsburgh, PA, 2004.