



2355 Polaris Lane North, Ste. 120
Plymouth, MN 55447

HERNÁN MERCADO-CORUJO, P.E., IAAI-CFI, CFEI, CVFI
PRINCIPAL & SENIOR DIRECTOR

AUTO / MARINE GROUP

hmercado@engsys.com

Hernán Mercado-Corujo is a professional mechanical engineer specializing in the engineering analysis of vehicle Product Liability issues and thermal events, specifically, the origin, cause, and spread of fires and explosions. He provides consulting and expert witness testimony for clients nationally.

Hernán has investigated fires and explosions in a wide variety of applications, including motor vehicles, recreational products, agricultural / farming / construction equipment, and property, including fires aboard a cargo ship. He has experience with fuel system components, fuel-fed vehicle fires, and alternative fuel systems (LPG, CNG, hybrid, EVs, etc.).

Likewise, Hernán has investigated hundreds of vehicle incidents related to recalls, alleged defects, unintended movement/acceleration, airbag non-deployments, component failures, loss of control, ADAS technologies, etc. His experience with hands-on testing and in-depth knowledge of strength, durability, fatigue, and overall vehicle reliability qualifies him to perform Root Cause Failure Analysis and Crash Reconstruction on a variety of machines, vehicles, and automotive systems.

Prior to working at ESi, Hernán provided forensic engineering services at Crane Engineering and held engineering positions at Honda R&D Americas and Eaton Corporation – Automotive group. He is bilingual in English and Spanish.

Areas of Specialization

Agricultural/Farming Equipment Failure Analysis

Automotive Design and Manufacturing

Automotive Systems & Technology

Construction Equipment Failure Analysis

Products Liability

Recreational Products Failure Analysis

Vehicle Crash Reconstruction including passenger and commercial vehicles, motorcycles, bicycles, pedestrians, golf carts, etc.

Vehicle Fire Origin and Cause Investigation and Analysis

Education

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

B.S. Mechanical Engineering, Massachusetts Institute of Technology, MA, 1999

Licenses/Certifications

State of Minnesota..... P.E. License 51642

State of Ohio P.E. License 70561

State of Texas P.E. License 135434
State of Wisconsin P.E. License 43576-6
Commonwealth of Puerto Rico.....P.E. License 20012
IAAI Certified Fire Investigator (IAAI-CFI)
Certified Fire and Explosion Investigator (CFEI)
Certified Vehicle Fire Investigator (CVFI)

Professional Affiliations/Honors

Society of Automotive Engineers (SAE)

Member, Motor Vehicle Fire Investigation Task Force

National Association of Fire Investigators (NAFI)

International Association of Arson Investigators (IAAI-Member)

International Association of Arson Investigators (IAAI-MN chapter)

American Society of Mechanical Engineers (ASME)

Society of Hispanic Professional Engineers (SHPE)

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

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

National GEM Consortium Fellow, Georgia Tech, 1999

Reinhold Rudenberg Memorial Prize for Outstanding Thesis, MIT, 1999

Positions Held

Engineering Systems Inc., Plymouth, Minnesota

Principal & Senior Director, Auto / Marine Group, 2024 – Present

Senior Managing Consultant & Director, Automotive Technology, 2022-2023

Senior Managing Consultant & Director, Thermal, 2021-2022

Senior Managing Consultant, 2020 – 2021

Senior Consultant, 2019 – 2020

Crane Engineering, Plymouth, Minnesota

Vehicle Technology Manager 2015-2018

Mechanical Engineer, 2013-2018

Honda R&D Americas, Inc., Raymond, OH

Senior Engineer II, 2013

Senior Engineer I, 2010-2013

Engineer III, 2004-2010

Eaton Corporation, Southfield, MI

Product Engineer, 2001-2004

Continuing Education

Advanced Driver Assistance Systems (ADAS) for the Crash Reconstructionist

Northwestern University Center for Public Safety, 2025

Restraint Systems Operation

I-CAR, 2024

Event Data Recorder Update and Analysis

Ruth Consulting, 2023

Safety Belt Examinations (VoD), Institute of Police Technology and Management

University of North Florida, 2022

Traffic Signal Timing Records Interpretation & Analysis, Traffic Signal Academy

University of Tennessee, 2020

Traffic Crash Reconstruction for the Forensic Engineer, Northwestern University

Center for Public Safety, 2019

Crash Data Retrieval (CDR) Technician, Northwestern University

Center for Public Safety, 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

Publications/Presentations

“e-Mobility: Fire Investigations from Small (e-scooters) to Large (EVs)”, **H. Mercado-Corujo**, H. Fetter,
presented at Combined Claims Conference
Garden Grove, CA, May 2024.

“An Introduction to Hybrid & Electric Vehicle Fires: Investigation & Analysis”, **H. Mercado-Corujo**
presented at the IAAI International Training Conference, Las Vegas
NV, April 2024.

“Understanding Airbag Non-Deployment Claims: Case Studies,” **H. Mercado-Corujo** & J. van Poppel,
presented at the ABA Motor Vehicle Product Liability Litigation Conference, Scottsdale, AZ,
April 2023

“Advanced Fire Investigation”, **H. Mercado-Corujo**, presented at AEM Product Safety & Compliance
Seminar, Lincolnshire, IL, April 2022

- "Hybrid and Electric Vehicle Fires", **H. Mercado-Corujo**, presented at DRI Strictly Automotive, Washington, DC, September 2021
- "Effective Vehicle Testing to Convey Vehicle Technology and Dynamic Behavior: A Case Study," **H. Mercado-Corujo**, presented at the Emerging Issues in Motor Vehicle Product Liability Litigation Conference, San Diego, CA, April 2019
- "Cutting Edge Tools and Techniques in Investigating and Reconstructing Crashes," **H. Mercado-Corujo**, presented at the Emerging Issues in Motor Vehicle Product Liability Litigation Conference, Phoenix, AZ, April 2018
- "Failure Modes and Effects Analysis in New Product Development," **H. Mercado-Corujo**, presented at the ASME Symposium, MN Section, Plymouth, MN, March 2017
- "Bringing Things Full Cycle – How to Approach Bicycle Crash Investigations from Every Perspective Amid Rising Use," **H. Mercado-Corujo**, Flores, L., Loyd, A., CLM Magazine, January 2017
- "¿Qué? Speaking your Client's Language in Forensic Investigations – Literalmente," **H. Mercado-Corujo**, Subrogator, Fall 2016
- "Large Loss Incidents in Industrial Settings: Tools and Techniques for Site Management and Root Cause Analysis," **H. Mercado-Corujo**, presented at the 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," **H. Mercado-Corujo**, presented at the Farmers Mutual Hail – Adjuster's School, Story City, IA, 2014
- "Frequency & Amplitude Dependent Bushing Model Implementation in Full-Vehicle Simulation," **H. Mercado-Corujo**, presented at the 6th European Altair Technology Conference, Turin, Italy, 2013
- "Enhancement of Multi-Body Simulation Data Sharing," Yoshimoto, H., Pearce, K., Rodrick, T., Slabach, B., Gagliano, C., **H. Mercado-Corujo**, Tener, D., Honda R&D Technical Review, April 2012
- "Full-Vehicle Multibody Simulations on Virtual Roads – The Challenges of Success," **H. Mercado-Corujo**, presented at the 5th European HyperWorks Technology Conference, Bonn, Germany, 2011
- "Utilization of MotionView for Automotive Strength and Durability Analysis," **H. Mercado-Corujo**, 2009 SAE World Congress and Exhibition, paper number 2009-01-1196
- "Utilization of MotionView for Automotive Strength and Durability Analysis – Application and Correlation," **H. Mercado-Corujo**, presented at the SAE 2009 World Congress, Detroit, MI, 2009
- "Customization of MotionView for Automotive Strength and Durability Analysis," **H. Mercado-Corujo**, presented at the 2008 Americas HyperWorks Technology Conference, Novi, MI, 2008

- “Thermo-Mechanical Analysis of Water-Cooled Brakes,” **H. Mercado-Corujo**, presented at the 2004 International ANSYS Conference, Pittsburgh, PA, 2004
- “Development and Application of a Press-Pin/PTH Reliability Model,” Kulkarni, A., Iannuzzelli, R., Seyedi, J., **H. Mercado-Corujo**, Conference Proceeding and Journal Volume 15-3, SMTA Journal of Surface Mount Technology, 2002
- “Thermal Finite Element Analysis of X9 and X29 X-Ray Ring Crotch Radiation Absorbers,” Lynch, D., **H. Mercado-Corujo**, BNL-66762, KC0204011, Energy Citation Database, 1999

Instructor / Evaluator

- Faculty – Performed controlled burn of lithium-ion battery-powered ride-on toy car as part of live burn demonstrations for DRI's Fire Science and Strictly Automotive Seminars at the Washington DC Fire & EMS Training Academy. Led training sessions and discussed findings at conference, August 2023.
- Invited Speaker, 2023 Annual MNIAAI Spring Conference – Taught 2-hour tested lecture on “Introduction to Hybrid and Electric Vehicle Fires - Investigation and Analysis”, March 2023.
- Faculty – Performed controlled burns of passenger vehicle seats as part of live burn demonstrations for DRI's Fire Science and Strictly Automotive Seminars at the Maryland Fire and Rescue Institute. Led training sessions and discussed findings at conference, September 2021.
- Guest Lecturer, Products Liability Seminar, LAW 6227, University of Minnesota. Discussed the role of experts / engineers in Products Liability cases utilizing real-life case studies. Session included post-baccalaureate, LL.M. students, October 2018, March 2020 & March 2021.
- 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.
- University of Minnesota Solar Vehicle Project – performed Crashworthiness and Roadworthiness evaluation for EOS (2015) and EOS II (2017, 2019) vehicles prior to World Solar Challenge.