



Dwayne Toscano

MASc PEng

Project Engineer

contact

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📍 Vancouver

expertise

Failure Analysis

Collision Reconstruction

Dwayne Toscano is a part of MEA's Failure Analysis group in Vancouver, investigating the role of defects and mechanical failures in a variety of cases. He is also an experienced collision reconstruction engineer, and has worked on accidents involving vehicle dynamics, vehicle-to-vehicle impacts and pedestrian impacts. Dwayne manages our metallurgy and testing capabilities in BC.

Dwayne is a registered professional engineer with Engineers and Geoscientists British Columbia. He holds a Master's degree in Applied Science from the University of Waterloo and a Bachelor's of Applied Science and Engineering from the University of Toronto. Prior to joining MEA, Dwayne worked as a collision reconstruction engineer focused on mechanical assessments, vehicle teardowns, and EDR data analysis. "I was specializing in mechanical failures, so I decided to go back to school to gain a better understanding of the nature and causes for unexpected failures", he recalls of the time he made the decision to pursue a Master's degree.

He spent the following years in the University of Waterloo's research lab, studying the loading behavior of next-generation materials in fatigue-critical automotive applications – he has published 6 peer-reviewed papers based on his work.

"I constantly seek to understand the world around me," explains Dwayne. "Learning is a passion, it has led me to become a forensic engineer and a researcher, and is still my driving force. As each MEA file brings a new challenge, I see them as opportunities to test, learn and grow. I am inspired by the possibility that our work and our research could uncover new ways to improve safety."

education

Master of Applied Science, Mechanical Engineering, University of Waterloo, ON, 2018

Bachelor of Applied Science and Engineering, Mechanical Engineering, University of Toronto, ON, 2013

professional status

Registered Professional Engineer, Association of Professional Engineers and Geoscientists of British Columbia, License No. 50554

Certified Fire and Explosion Investigator (CFEI), National Association of Fire Investigators, 2022

Level 1 X-Ray Fluorescence Operator, Natural Resources Canada, 2020

professional associations

National Association of Fire Investigators (NAFI), since 2022

Society of Automotive Engineers (SAE), since 2020

professional experience

MEA Forensic Engineers and Scientists

Project Engineer, 2019 to present

Conduct technical investigations of mechanical and material failures related to product, property, transportation, and equipment losses including water escapes, fuel oil escapes and fires. Employing scientific failure analysis tools to isolate root and contributing causes related to defective use, maintenance, inspections, manufacture, or design. Engineering work includes evidence and site examinations, non-destructive and destructive testing, statics and stress analysis, metallurgical analysis, and materials characterization for various metallic, plastic and composite components. Conduct routine experiments to test hypotheses of failure modes and failure sequences for components, products, and machinery relative to reported conditions or applicable standards and codes. Ongoing research involves metallography and scientific analysis (scanning electron microscopy, SEM/EDS).

University of Waterloo, Renault-Nissan-Mitsubishi Alliance

Research Associate, 2018-2019

Developed a FE model of Flow Drill Screw (FDS) joints for body-in-white (BIW) simulations to be used with RUPP approach for fatigue life predictions of joined components.

University of Waterloo, Ford Motor Company, Multimatic Inc.

MASc Researcher, 2015-2018

Characterized the quasi-static and cyclic behaviour of AZ31B Mg alloy for use in a fatigue-critical front lower control arm (FLCA) for a high-volume passenger vehicle. The aim of this research was to achieve lower curb weight and therefore improved fuel economy.

Kodsi Forensic Engineering

Crash Reconstructionist, 2013-2015

Analyzed single/multi- vehicle collisions, pedestrian impacts, visibility assessments and mechanical failures. Performed 300+ MVA investigations, 120+ vehicle examinations including EDR imaging and 30+ mechanical inspections. Executed complex multi-vehicle simulations using PC-Crash along with EDR data analyses to quantify the avoidability of a collision for the involved parties. Conducted advanced investigations using SEM and chemical analysis on components of interest including: wheels, tie-rods and master cylinders. Drafted engineering reports on findings along with rebuttals of other expert reports. Served as an in-court technical advisor in a criminal litigation case.

Kraft Foods Inc. / Mondelez International

Engineering Intern, 2011-2012

Responsible for reducing material usage and improving packaging efficiency: developed packaging prototypes to test the

feasibility of proposed changes versus current packaging; conducted load analysis for pallet-scale shipping units to identify possible issues associated with overloading or buckling during warehousing; performed small-scale CCD experiments to determine optimal settings for test variables such as film thickness, dwell time and sealing temperature. The optimal results from the small scale tests were taken to full-scale production tests including pilot runs.

awards

Ontario Graduate Scholarship, 2017

President's Graduate Scholarship, 2017

Paul Niessen-Teck Award, 2017

publications

The Effect of Using the Same Tire Friction for Both Vehicles in Impact Speed Reconstructions

Effect of temperature on the hot deformation behavior of AZ80 magnesium alloy

Characterization of closed-die forged AZ31B under pure axial and pure shear loading

On the load multiaxiality effect on the cyclic behaviour of magnesium alloys

Multiaxial cyclic response of low temperature closed-die forged AZ31B Mg alloy

Influence of low temperature forging on microstructure and low cycle fatigue behavior of cast AZ31B Mg alloy

Effect of forging on the low cycle fatigue behavior of cast AZ31B alloy

Effect of forging on microstructure, texture, and uniaxial properties of cast AZ31B alloy

Effect of forging on microstructure, texture and compression behavior of extruded AZ31B

lectures & presentations

September 10, 2024 – Forensic Failure Analysis – Property Claims. Lake Okanagan Insurance Society Conference (LOIS), Kelowna, BC.

August 17, 2023 – Failure Analysis Webinar. MEA Forensic, Virtual.

training and professional development

May 9-13, 2022 – Certified Fire and Explosion Investigator Training Program, International Association of Arson Investigators (IAAI), Grimsby, ON.

March 22–25, 2021 – iNPUT-ACE Video Evidence Symposium 2021, Online.

May 2020 – X-Ray Fluorescence Operator – Level 1, Natural Resources Canada, Vancouver, BC.

August 2019 – PC Crash 12.0, MEA Forensic, Seattle, WA.

June 2019 – CDR Operator Certification, Collision Safety Institute, Everett, WA.
