



**Professional Analysis
and Consulting, Inc.**

Mechanical Engineering



To accurately explain the root cause of an accident or failure, we evaluate the mechanical design, manufacturing processes, assembly or installation, and possible human interaction. Our approach analyzes engineering and physics theories as they apply to the situation, which encompasses material selection, loading, stresses, vibration, fatigue, corrosion, kinematics and dynamics, thermodynamics and fluid flow.

Vehicle level experience includes commercial vehicles, automobiles, RVs, motorcycles, buses, railroad, agricultural, and construction equipment. Non-vehicle related projects have involved medical, athletic, and wheelchair accessibility equipment, forklifts, elevators, wind energy systems, lawn equipment, bicycles, plumbing, consumer products, and other mechanical systems.

Our projects have involved product liability, accident investigation / reconstruction, patent litigation, manufacturing, design analysis, and product testing. We are supported by skilled on-site field investigators, inspection facilities, laboratory services, proficient evidence management, and scene documentation.

Services

- Product liability litigation
- Component failure analysis and testing
- Product design analysis and performance evaluation
- Accident investigation/reconstruction, including Crash Data Recovery (“black box”)
- System simulation
- Manufacturing process evaluation
- Insurance claim investigation
- Intellectual Property investigation
- Materials compliance testing and analysis
- On-site scene and laboratory based inspections
- Evidence collection, preservation and management
- Aerial (Drone / UAS) inspections and laser scanning for accident scene documentation



Practice Area Leaders

Mechanical Engineering

Timothy M. Hicks, P.E. - Principal Engineer, Mechanical



Mr. Hicks performs investigations and failure analysis from a mechanical engineering perspective. He is certified for the Bosch Crash Data Retrieval System (“Black Box”). His projects have involved accident investigation and reconstruction, design analysis, product liability, intellectual property, manufacturing, fire cause and origin, and testing. His vehicle experience includes commercial vehicles, automobiles, RVs, motorcycles, buses, railroad, agricultural, and construction equipment. Non-vehicle related projects have involved medical, athletic, and wheelchair accessibility equipment, forklifts, elevators, wind energy systems, lawn equipment, bicycles, plumbing, consumer products, and other mechanical systems.

James F. Lane, P.E. – Senior Engineer, Materials / Metallurgical



Mr. Lane has over 25 years of consulting experience in materials engineering, failure analysis and engineering investigations, including litigation support. His focus has been on metallurgy, property/structure relationships, stress states and corrosion of both ferrous and non-ferrous materials from across a broad range of industries. He has expertise in the determination of root cause and problem resolution, and extensive experience designing and conducting field and laboratory testing. His background also extends to the areas of materials characterization, fractography, metallography and mechanical testing.

John W. Kidd – Director, Field Services



Mr. Kidd has extensive accident investigation experience focusing on field inspections, scene documentation, and laboratory inspection coordination. In addition to laser scanning, he incorporates the UAS technology into investigations, including photographic and video collection, editing, and measurement verification. He holds an FAA Airman Certification for Remote Pilots for Small Unmanned Aircraft Systems and is also an FAA licensed private pilot. He has in-depth experience in firearm safety, firearm storage, and operational procedures, coordinating testing for California Department of Justice standards and requirements. He also directs our evidence collection, documentation, storage and management.