



BICYCLE FORENSICS & ANALYSIS

ESi has a depth of scientific and engineering expertise to determine the cause of bicycle accidents, component failures, and rider injuries. Bring us onboard to anticipate, evaluate, and correct design deficiencies before they become issues.

A COLLABORATIVE TEAM APPROACH

ESi applies a multidisciplinary approach that allows us to support any type of bicycle accident or design issue. Our team of engineers, scientists, and regulatory experts span dozens of engineering specializations with a breadth of technical knowledge, hands-on expertise, and courtroom experience required to execute projects from start to finish. Our work covers all manner of engagements, from a component failure or design issue to a significant rider injury.

ADVANCED TECHNOLOGY AND STATE-OF-THE-ART FACILITIES

ESi utilizes state-of-the-art instrumentation and facilities to offer testing services including chemical, mechanical, and metallurgical analysis, nondestructive testing, specialized test design, and performance evaluation.

ACCIDENT RECONSTRUCTION

From initial on-site documentation and evidence preservation to retrieving and analyzing data, testing, report preparation, and litigation support, our bicycle team has the experience you need for accident investigation and reconstruction services.

With decades of experience, our experts have earned a reputation for conducting detailed inspections and investigations with the accessibility to travel anywhere in the U.S. or internationally.

MATERIALS INVESTIGATION

ESi brings component and product expertise in the testing and analysis of different materials including metal alloys, composites, and polymers. We serve clients within the biking industries and evaluate material issues related to product or equipment design, manufacture, or performance.

HUMAN FACTORS AND BIOMECHANICS

Our human factors team pairs engineering skill with a deep understanding of how physical and mental factors contribute to performance in various settings. Our work includes injury investigation, distraction, visibility, crash avoidance, safety, warnings and instructions, product liability, and premises liability.



ESi

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Engineering Consulting and Forensic Investigation



BICYCLE FORENSICS & ANALYSIS

CONTACT US



R. Matthew Brach, Ph.D., P.E.
Senior Managing Consultant
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Dr. Brach has analyzed and reconstructed crashes that involve bicycles, motorcycles, commercial vehicles, light vehicles, pedestrians, off-road vehicles, and locomotives and trains.

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Dustin A. Turnquist, M.S., P.E., CFEI
Senior Consultant

Mr. Turnquist is a metallurgist and mechanical engineer with over 20 years of technical experience in engineering investigations, failure analyses, and testing.

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Katie B. Zakutansky
Staff Consultant

Ms. Zakutansky is a biomechanical engineer; she works closely with the recreational industries in analysis, injury causation, accident investigation, and human motion analysis.

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KEY CAPABILITIES

- Accident Investigation, Analysis and Reconstruction
- Analysis of Reliability Data
- Bicycle Design Analysis
- Bicycle Performance Analysis
- Commercial Product Design, Testing and Analysis
- Corrosion Evaluation
- Design Optimization
- Destructive and Nondestructive Testing
- Fatigue and Fracture Mechanics
- Helmet Analysis
- Human Error Analysis
- Human Kinetic (Force) Analysis
- Human Motion Analysis
- Injury Causation Analysis
- Manufacturing Technology
- Materials Analysis
- Materials Failure Analysis
- Mechanical Testing
- Metallurgical Failure Analysis
- Metallography Evaluations
- Microstructure Evaluations
- Perception, Vision and Conspicuity Analysis
- Probabilistic Risk Assessments
- Production Validation and Optimization
- Reliability Modeling and Simulation
- Reliability Testing
- Sampling Plans and Data Collection
- Standards Compliance
- Statistical Analysis and Probability Modeling
- Statistics and Experiment Design
- Transportation Accident Analysis
- Usability Testing
- Warranty Analysis



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