



TRANSPORTATION

## Railroad Services

From complexity to clarity  
*Technical expertise* you can trust

### RESEARCH AND DEVELOPMENT

- Material and Component Failure Analysis
- Design Optimization
- Third Party Inspections
- Train Dynamics and Simulations
- Root Cause Analysis
- Non-Destructive Testing and Inspection
- Animation/Visualization Service

### RISK MANAGEMENT

- Rail Incident Rapid Response Team
- Accident Reconstruction
- On-Site Investigation
- Evidence Preservation
- Facility Audit Programs
- Pre-Loss Assessments
- Standards and Regulatory Guidance
- Claims Investigations
- Derailment Prevention and Cause Analysis

### TESTING

- Components Physical Testing and Validation
- Proof Load and Life Cycle Testing
- Instrumentation and Over the Road Analysis of Vehicles
- Fixed Testing of in Track Assets

The rail industry turns to ESi for trusted support, leveraging our consultants' decades of experience in leadership and technical roles across the sector. We partner with Class 1 railroads as well as shortline and regional operators, delivering targeted expertise in forensic investigation, lab services, and risk management.

We partner closely with our clients, providing critical insights used to improve equipment performance, elevate safety, and extend the lifecycle of rail equipment. Our in-house lab services extend our clients' own research and testing capabilities, and include over the road testing, component failure analysis, component testing, materials analysis, and railway maintenance assessments.



Engineering Systems Inc.  
[www.engsys.com](http://www.engsys.com)

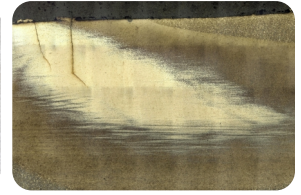
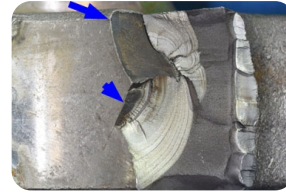
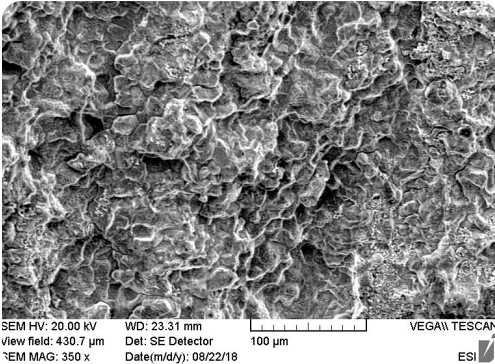
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### Root Cause Analysis

- Our facility is a comprehensive metallurgical testing laboratory, fully equipped with an in-house machine shop and advanced laboratory capabilities.
- Our multidisciplinary team investigates derailments and component failures with precision and scientific rigor.
- Fracture mechanics and material analysis are applied to identify crack initiation and propagation, aiding in root cause determination.
- Clear, data-driven reports and visualizations support decision-making and risk mitigation.



### Research & Development

- Development of custom testing protocols, instrumentation and simulation models tailored to railroad applications.
- Ongoing R&D initiatives to improve safety, reliability, and performance across rolling stock and infrastructure with industry leaders.
- Collaboration with clients to explore new technologies, materials, and failure prevention strategies.
- Demonstrated expertise in freight railroads, strong industry knowledge, and a history of effective collaboration.

### Grade Crossing Collision Investigations (GCCl)

- Accident/Incident Go-Team and On-Site Investigations.
- FRA Regulations Compliance.
- Operating Practices Development/Validity/Operations Testing.

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