



**STRESS  
ENGINEERING  
SERVICES INC.** an employee-owned company

MATERIALS ENGINEERING  
AND METALLURGY

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## Metallurgical Laboratory Services

### Third-Party Forensic Investigations

Our Houston metallurgical laboratory conducts independent, third-party forensic metallurgical investigations for attorneys, expert witnesses, insurance companies, government officials, equipment manufacturers and owners. We utilize our first-class facility, specialized equipment and highly trained personnel to conduct efficient, cost-effective investigations for clients.

Our team includes many licensed professional engineers who often serve as expert witnesses for forensic investigations. We also frequently perform independent, third-party investigations under the direction of outside experts retained by our clients or their attorneys. As an independent, third party laboratory, we provide laboratory services to experts who may not have the number of technicians or full range of lab capabilities that we provide.

A comprehensive team of metallurgists and metallurgical technicians make it possible to work on multiple tasks in parallel; greatly increasing the speed of a failure investigation and conserving the valuable time of our clients, their experts and attorneys. We assume custody of and maintains the chain of evidence when needed and makes professional photographers available to take high quality photographs, reducing the time required for the experts to take their own.

The metallurgical laboratory is well equipped to handle large equipment (such as piping and pressure vessels used in oil and gas, chemical processing, utility and other heavy industries), as well as the most delicate of components, including medical devices and consumer products. We provide a full complement of engineering services such as finite element analysis, fracture mechanics, stress and fatigue analysis, vibration analysis, electrical engineering, corrosion testing, pressure vessel engineering, plant engineering and many more.

## Metallurgical Laboratory Resources

### Personnel

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- Staff laboratory photographer/videographer
- Five skilled metallurgical technicians
- Shipping/receiving staff trained in forensic traceability requirements
- Scanning electron microscope operator
- Supervision by a licensed professional metallurgical engineers for expert witnesses (when required) and project management





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## Equipment

- 10-ton overhead crane, forklifts and other lifting equipment
- Nikon DSLR cameras, lighting, backgrounds, and other photographic equipment required to fully document a sample and provide report-quality photographs
- Three Stereomicroscopes
- Basic machine shop equipment, including vertical band saw, cutting torch, surface grinder, diamond saw, pneumatic cut-off tools, portable band and abrasive saws, and abrasive blasting cabinet
- Magnetic particle and liquid penetrant test equipment\*
- Hardness testers—Brinell, Rockwell, Vickers, Knoop, etc.
- Dimensional measuring equipment, including a coordinate measuring machine
- Acoustic emission inspection equipment
- Complete metallographic laboratory, including metallography by replication, and 10X to 1000X metallographs
- Rigaku Miniflex 600 powder X-ray diffractometer
- Large chamber Tescan scanning electron microscope, with light element energy-dispersive spectroscopy, variable pressure chamber, secondary and backscatter detectors, electron backscatter diffraction capabilities, with and remote viewing
- Portable X-ray fluorescence spectroscopy spectrometer for alloy identification. Portable optical emission spectroscopy spectrometer available upon request
- Reprorubber™ molding compounds and other specialized equipment supplies for failure investigations

## Space

- Over 10,000 square feet of clean, well-lit, climate-controlled, indoor lab space. Portion serviced by overhead crane.
- Outdoor storage area
- Short-term, limited access evidence storage room
- Long-term storage facility (offsite)
- Conference room for use by the participants
- Other services, provided by outside vendors on upon request by outside vendors
- Standardized mechanical testing and optical emission spectroscopy (offsite)
- Full polymer testing services (SES facility in Mason, Ohio)
- Contract radiography (offsite)
- Ultrasonic inspection, including phased array



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**For More Information,  
Contact Us Today:**

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