

Engineering Services

MULTIDISCIPLINE ENGINEERING SOLUTIONS



A HIGHER LEVEL
OF RELIABILITY®



Reduce Risk & Failure

ENGINEERING & TESTING SERVICES

Acuren is one of North America's largest materials engineering and testing companies, with over 80 locations providing integrity management solutions. For over 40 years, Acuren has provided materials engineering and testing services. Professional engineers at Acuren encompass a range of disciplines including: materials, mechanical, civil/structural, welding, corrosion, chemical and more. Our staff of highly experienced professional engineers, scientists, and technologists serve clients in all industry and government sectors, in addition to providing expert opinion in legal and insurance cases. Engineers at Acuren provide more than just a report, they assess results to assist clients in making decisions affecting their equipment life and provide solutions to extend equipment life (specify repair options, corrosion avoidance, materials selection, and stress reduction). Acuren has the most advanced materials evaluation equipment, for both the laboratory and field applications. Our laboratories have extensive leading edge microscopy, mechanical testing, chemical analysis and photography equipment.

MINIMIZE OPERATIONAL RISKS AND OPTIMIZE ASSETS

WHY ACUREN?

- Acuren employs a cohesive team of engineers, scientists, technologists and technicians with expertise in a wide spectrum of engineering disciplines
- Advanced analysis techniques save clients time and money in avoided repairs, reduced business interruption and improved reliability
- Provide solutions to improve operation and extend life of fixed equipment
- Deepest pool of expertise and solutions in the market
- In-house experts across all disciplines available through our North American network, eliminating the need to outsource
- Rather than simply reporting results, we lead the industry by going a step further – we assist customers in interpreting results and designing solutions

GENERAL ENGINEERING SERVICES

- Finite element analysis
- Corrosion engineering
- Welding engineering
- Reverse engineering
- Product evaluation and conformance to specifications
- Asset integrity management
- Thermal analysis
- Failure analysis
- Project management
- Expert witness for legal or insurance
- Non-destructive examination programs
- Materials engineering and testing
- Materials selection and specification preparation



FAILURE ANALYSIS

We have performed failure analysis on a variety of equipment from industries including:

- Power generation
- Oil and gas refining
- Chemical processing
- Pulp and paper manufacturing
- Corrosion of tubing, process piping and tanks
- Pressure vessel and boiler failures
- Fastener failures
- Industrial machinery and process equipment failures
- Weld failures in structural components and railway tracks
- Engine failures and vehicle accidents
- Wire rope failures



FITNESS FOR SERVICE

Acuren is often called upon to assess a component's condition for continued service or determine the long-term feasibility of operation. Typical applications involve aged structures where documentation no longer exists, equipment is at the end of its design life cycle (i.e. thermally degraded boiler tubes), or where damage is observed on pressure vessels, pipelines, and boiler components. Such studies allow the client to:

- Avoid costly component replacements
- Avoid catastrophic failures
- Schedule inspection and maintenance
- Plan, repair or replacement of equipment
- Make safe and cost effective decisions
- Small scale hydrostatic burst/pressure tests up to 10,000 psi

WELDING ENGINEERING

More problems occur at welds than anywhere else in fabricated components. Our welding engineers are experts in welding technology, procedures, and code requirements for buildings, bridges, pipelines, heavy industrial machinery, railway tracks, boilers and pressure vessels, including relevant AWS, ASME, API and CSA codes and standards. Welding engineers aid in:

- Development of weld procedures
- Qualification of weld procedures and welders
- Evaluation and mechanical testing of welds
- Repair procedures for cracked and damaged fabrications
- Design and implementation of quality control methods
- Vendor surveillance
- Certified for AWS / CSA W178.2

CORROSION ENGINEERING

Acuren corrosion engineers specialize in metallurgy, chemistry, industrial processes and are supported by fully equipped corrosion laboratories.

- Testing of materials in simulated services
- Specialized field apparatus including potentiostats for short/long term testing of tanks, piping and pressure vessels
- Materials selection for specific environments

FIELD SERVICES

Our engineers and technologists provide field engineering services in the following areas:

- Field examination of failed components
- Fire damage assessment
- Forensic investigations
- Stain gauging and stress analysis
- Equipment condition assessment
- In-situ field metallography
- On-site chemical analysis: optical emission spectroscopy (OES), and positive material identification (PMI) via x-ray fluorescence (XRF)
- Macro and microhardness testing
- Ferrite testing
- Laser mapping



QUALITY ASSURANCE & VISUAL INSPECTION

Our engineers develop and review quality assurance systems and our visual inspectors monitor manufacturing, fabrication, and erection to ensure clients receive products which confirm to quality standards and specifications.

- Steel mill site inspection of structural, pipelines and tubular products
- Vendor surveillance and audits
- Monitoring test procedures, loading and shipping practices
- Bridge surveillance

FRACTURE MECHANICS

Materials that contain flaws, cracks or other discontinuities increase the risk of premature failure. Fracture mechanics recognize these factors with inherent material properties and provide methods for testing to assess the probability of fracture. Acuren engineers can perform critical assessments of structural components, pressure vessels, and other equipment to determine the acceptable flaw sizes for specific conditions.

MATERIALS ANALYSIS

Our advanced materials testing laboratories test metals and non-metallic materials for their chemical composition, mechanical properties, and microstructure with state-of-the-art preparation and analytical equipment.

- Metallography and stereo microscopy
- Macro and microhardness testing
- Chemical analysis
- Scanning electron microscopy
- Professional-grade photography
- Various non-destructive testing methods
- Mechanical testing





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| West | 503.652.8878 |
| Midwest | 937.228.9729 |
| Gulf Coast | 281.228.0000 |
| Southeast | 919.875.8240 |
| Northeast | 724.228.2155 |



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|----------|--------------|
| Pacific | 604.275.3800 |
| Western | 780.440.2131 |
| Central | 905.825.8595 |
| Atlantic | 709.753.2100 |



www.acuren.com
engineering@acuren.com



BEYOND INSPECTION