

Premier Asset Life Optimization and Engineering Solutions

Engineering Excellence Spanning Four Decades

SYSTEMS/COMPONENTS

Reactor/Pressure Vessels
& Internals

Turbine-Generator

HRSGs, Boilers,
Attemperators

High Energy Piping

Critical Structures (Dams,
Bridges, Buildings)

BOP Systems
(Buried Pipelines, Tanks,
Heat Exchangers, etc.)

DISCIPLINES

Fitness for Service &
Remaining Life

Reliability & Integrity
Programs

Life Extension & License
Renewal

Regulatory Compliance

Safety/Risk Analysis

Advanced NDE (PAUT,
GWT, AE, ILI, etc.)

Equipment Qualification

Software Solutions

Metallurgical Evaluation

Cycle Chemistry

Corrosion Engineering

Nuclear Fuel Analysis

Concrete Evaluation

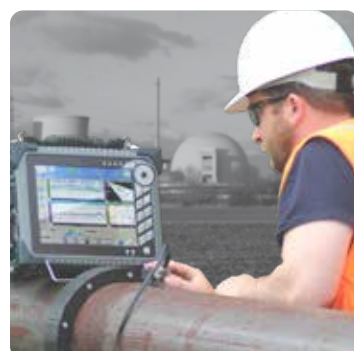
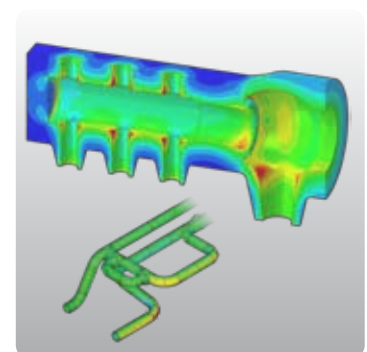
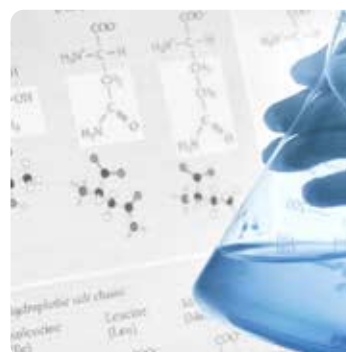
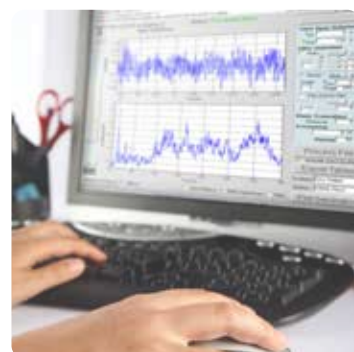
Impact & Blast Loading

Vibration Testing &
Analysis

Cathodic Protection

Specialty Instrumentation

Remote Monitoring





ABOUT US

Structural Integrity Associates, Inc. (SI) is a leading engineering and consulting firm dedicated to the identification, analysis, prevention, and control of structural and mechanical failures – in short, asset lifecycle management. The company was founded in 1983 and maintains several offices across the US, with headquarters in Charlotte, NC.

Our history is one of innovation, emphasizing creative multi-disciplinary approaches to component evaluation along with development of sophisticated engineering and inspection tools, resulting in a unique blend of technical expertise with cutting-edge technologies.

SI is a responsive resource available when you need actionable answers to the most challenging issues. Our experience includes engineering, metallurgy, fabrication, data interpretation, regulatory compliance, product research, tool development, and Non-Destructive Evaluation (NDE) in the nuclear, energy and critical infrastructure industries, using the latest technology, deep technical expertise, and cutting-edge analysis.



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NUCLEAR POWER

Nuclear power is a special and unique technology, and the effort required to operate and maintain an existing plant, extend its operating license, or design, license, and construct a new plant necessitates specialized expertise. Reactor operators and suppliers rely on engineering support, inspections, monitoring systems, customized software, and specific training to execute their strategic objectives, which are ideally sourced from an engineering partner with decades of innovative responses to industry experience.

Structural Integrity has provided expert engineering services to both domestic and international nuclear plant operators and suppliers since our inception in 1983. We have supported every U.S. nuclear operator, and dozens more internationally, to address emergent challenges, improve performance, minimize technical and financial risk, and provide justification for extended operation.



Learn More

Engineered solutions to extend plant life, reduce operating costs, and optimize new plant design

- **ASSET MANAGEMENT PROGRAMS:** Regulatory and code-based material integrity programs, coupling sophisticated analysis and decades of expertise with cutting-edge digital solutions.
- **PLANT SUSTAINABILITY:** Supporting all aspects of License Renewal, from application through implementation.
- **INTEGRITY ASSESSMENT FOR CRITICAL SYSTEMS, STRUCTURES, AND COMPONENTS:** Expertly engineered solutions to maintain reliable operation, focused on extending useful life of existing assets and/or optimizing replacement windows.
- **ADVANCED EXAMINATIONS:** Leveraging nondestructive examination (NDE) and engineering analysis to achieve best-in-class performance and maximum value from inspection campaigns.
- **CHEMISTRY & EQUIPMENT:** Expert chemistry program assessment and equipment upgrades to enhance asset life and improve operational performance.
- **FUEL TECHNOLOGY:** Expert nuclear fuel performance engineering and licensing, plus program development for advanced fuel and new reactors.
- **ADVANCED REACTOR SERVICES:** Support for design, licensing, and construction of next-generation reactor technologies, including code expertise, testing and validation, and regulatory engagement.



ENERGY SERVICES GROUP

Structural Integrity (SI) is uniquely positioned to help power and process plant owners and operators meet the lifecycle challenges of their equipment, such as turbines, piping, boilers, HRSGs, and pressure vessels. Our engineering, materials science, and condition assessment expertise is backed by over thirty years of tackling some of the biggest industry challenges, including seam welded piping, dissimilar metal welds, turbine bore cracking, and creep strength enhanced ferritic steels (e.g., Grade 91). Our success is rooted in an integrated, multidisciplinary approach that combines engineering analysis, advanced nondestructive examination, and materials evaluation combined with state-of-the-art digital systems to provide targeted and scalable asset lifecycle management solutions for fossil plant owners and operators.



Learn More

Maintaining plant safety and reliability with proven asset life cycle services

- **RELIABILITY AND INTEGRITY PROGRAMS:** We support the development and implementation of programs that maximize safety and reliability while minimizing cost to meet regulatory requirements or internal goals.
- **FAILURE ANALYSIS:** Our in-field metallurgists and lab engineers assess failures and damage to identify the mechanism and provide recommendations to avoid future failures.
- **ROOT CAUSE INVESTIGATIONS:** We investigate failures of equipment and identify the cause to avoid repeat failures, back insurance claims, and support litigation.
- **ADVANCED INSPECTION:** We can quickly deploy to execute inspection & engineering assessments leveraging advanced Non-Destructive Evaluation (NDE).
- **FITNESS-FOR-SERVICE EVALUATIONS:** We leverage proprietary material properties and algorithms to make run/repair/replace decisions and provide critical defect sizes to guide the disposition of NDE results.
- **PRESSURIZED SYSTEM INTEGRITY:** Our team provides fully integrated engineering solutions for pressure vessels, piping, and fittings.
- **REMOTE MONITORING AND DIAGNOSTICS:** SIIQ™ is a turnkey online monitoring solution that uses real-time data, condition assessments, and operating trends to intelligently reduce O&M costs, reduce outage durations, and maximize component life.
- **DATA MANAGEMENT:** SI's PlantTrack™ software and database manages data from inspections, analysis, investigations, and design to support integrity management programs of plant equipment.

PIPELINE INTEGRITY COMPLIANCE

As the Oil & Gas industry rapidly evolves, Structural Integrity (SI) continues to deliver innovative long-term solutions to meet the challenges of a dynamic and complex regulatory environment. With decades of specialized industry experience, we understand the pipeline industry and its complexity. SI is committed to assisting clients in maintaining safe, reliable, and efficient operations of gas transmission, gas distribution, and hazardous liquid pipelines.

Solutions to ensure the safe and reliable operation of pipeline infrastructure

- **INTEGRITY MANAGEMENT:** Implementing proven program methodologies and documented compliance practices to ensure robust Transmission Integrity Management Programs and Distribution Integrity Management Programs.
- **REGULATORY CONSULTING:** Ensuring compliance with current pipeline safety regulations, benchmarking against industry best practices, and making recommendations for continuous improvement to your company's related programs and procedures.
- **MAOP RECONFIRMATION:** Offering extensive experience developing and implementing MAOP Reconfirmation Plans.
- **MATERIAL VERIFICATION:** Helping operators develop and apply their MV programs with robust procedures and tools, including field experts and laboratory services.
- **PREDICTED FAILURE PRESSURE & ENGINEERING CRITICAL ASSESSMENT (ECA):** Providing training, expertise and specialized applications to analyze defects and anomalies in accordance with regulatory requirements. Additionally, we have specialized expertise and experience applying ECA to support MAOP Reconfirmation and other needs.
- **IN-LINE AND DIRECT INSPECTION SUPPORT:** Supporting clients in successful implementation of ILI tool runs from start to finish with ILI planning (including tool selection), analysis and prioritization of ILI results, dig selection, in-ditch examination, verification, and run acceptance.
- **NON-DESTRUCTIVE EVALUATION (NDE):** Maintaining multiple full-time senior Level II and Level III team leads and have pioneered revolutionary NDE technologies to assess the condition of pipelines and pipeline facilities.
- **CORROSION & METALLURGICAL ENGINEERING:** Leveraging NACE certified Corrosion Control and Cathodic Protection experts to solve existing corrosion problems and ensure robust corrosion control programs.



[Learn More](#)





CRITICAL INFRASTRUCTURE

From buildings to bridges — highways to hydro plants — critical infrastructure must be reliable and built to last. Whether you need design expertise on the front end of a construction project, an accurate remaining useful life assessment, or actionable knowledge of the consequences of an extreme event, Structural Integrity (SI) offers creative solutions to high-stakes infrastructure issues. With decades of experience and unmatched engineering expertise, we make integrity the foundation of every project.



Learn More

Effective, innovative, and efficient structural solutions for complex problems

- **STRUCTURAL ASSESSMENT & DESIGN:** SI's engineers combine practical expertise, innovative approaches, and advanced modeling techniques to provide optimal results, from initial design through end of life.
- **CONCRETE MODELING:** SI's best-in-class models accurately predict concrete degradation over time, maximizing safety and minimizing risk for life extension of key structures (e.g., dams, buildings, nuclear containments, etc.).
- **COMPLEX LOADINGS:** SI applies advanced tools and deep expertise to realistically assess nonlinear loads such as soil/fluid interactions, blast and shock, and impact. We are the global leader in aircraft impact assessment for nuclear safeguards and other critical applications.
- **EQUIPMENT QUALIFICATION:** SI's TRU Compliance division provides seismic, wind, and blast compliance solutions to support energy, healthcare, military, and other pivotal facilities.

www.trucompliance.com



By Structural Integrity Associates, Inc.

NONDESTRUCTIVE EVALUATION & INSTRUMENTATION (NDE&I)

Critical Operability and Asset Management Decisions Are Made Using NDE Results



Innovation has always been part of the Structural Integrity (SI) core values. Our NDE&I group provides high-quality, innovative NDE and Instrumentation solutions integrated with SI's engineering capabilities and delivered by highly skilled and experienced NDE professionals. In addition to field resources, our NDE&I group

includes a dedicated group of engineers and researchers with advanced degrees and over 50 years of combined experience in developing and applying NDE and monitoring technologies. Recent developments include our SIPECT™ dynamic pulsed eddy current technology, our LATITUDE™ non-mechanized encoding technology, and our SIQ™ wireless sensor monitoring system.

We stay on the cutting edge, directly assisting our clients in developing, evaluating, and applying unique solutions for unique problems. We can help leverage the latest technology and engineering practices to minimize costs and solve tough problems.

SERVICES & SOLUTIONS

- Field NDE Services
 - In-Service Examinations
 - Weld Acceptance Examinations
 - Nuclear ASME Section XI Examinations
 - Turbine & Generator Examinations
 - Pressure Vessel Examinations
 - Piping & Tank Examinations
 - Automated & Robotic Examinations
- Instrumentation & Monitoring
- NDE Laboratory Services
- NDE Training
- NDE Research & Development
- NDE Modeling & Simulation
- Custom NDE Solutions

TECHNOLOGIES:

- Ultrasonic Testing
 - Phased Array UT (PAUT)
 - Full Matrix Capture PAUT
 - Time of Flight Diffraction (TOFD)
- Eddy Current Testing
 - Eddy Current Array (ECA)
 - SI Pulsed Eddy Current (SIPEC)
- Magnetic Particle Inspections
- Guided Wave Testing (GWT)
 - Long-Range GWT
 - Short-Range GWT
 - Guided Wave Monitoring
- Acoustic Emission Testing
- Installed Sensors



[Learn More](#)

METALLURGICAL LABORATORY

Comprehensive metallurgical laboratory services to support client material issues

For any situation involving material property characterization, Structural Integrity has an experienced group of materials specialists and a full-service metallurgical testing laboratory that can help. We can perform any number of chemical, mechanical, or specially designed tests to address specific circumstances or in-service degradation, including failure analysis, condition assessment, NDE verification, and on-site activities.

- **PRECISION ACCURACY:** Structural Integrity's Material Science team has decades of experience in performing materials analyses related to power and industrial systems and components.
- **INTEGRATED SUPPORT:** Our materials services are enhanced by our broader corporate experience related to power plants and general industry.
- **VALUABLE INSIGHTS:** We provide value in the form of meaningful recommendations on serviceability, operational improvement, material selection, and failure avoidance.



[Learn More](#)



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