Anna J. Banks

Staff Consultant

Ms. Anna Banks is a Staff Consultant based in the Omaha, Nebraska office. She is a skilled metallurgical engineer with extensive experience in metallurgical analysis, quality engineering, and process optimization across the transportation, power, and manufacturing industries. She has developed deep technical expertise in material characterization, failure analysis, and metallurgical testing.

Anna is passionate about understanding how materials behave under demanding conditions and translating that knowledge into practical engineering solutions. Her technical skills span metallography, SEM analysis, mechanical testing, and adherence to industry standards such as International Organization for Standardization (ISO) and International Automotive Task Force (IATF).

Education

BS, Metallurgical and Materials Engineering. Colorado School of Mines. 2017

Languages

- English

Positions Held

Engineering Systems Inc., Omaha, Nebraska

- Staff Consultant, 2025 – Present

Lincoln Industries, Lincoln, Nebraska

- Customer Quality Engineer II, 2022-2025

Omaha Steel Castings Company, Wahoo, Nebraska

- Metallurgist, 2021-2022

Quest Integrity, Boulder, Colorado

- Metallurgical Engineer II, 2018-2021

Continuing Education

- Global Dimensioning & Tolerancing Course – 2021

Contact Information

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Areas of Specialization

- Failure Analysis & Root Cause Investigations
- Corrosion Analysis
- Mechanical Testing
- Metallurgical Condition Assessment
- Non-Destructive Testing & Inspection
- Quality Management Systems

Project Experience

Failure Analysis

- Power: In situ metallurgical replication of high energy pipe welds in coal power plants, in situ metallurgical replication and material characterization of penstocks at hydro-electric power plants, failure analysis of turbine blade packets, condition assessment and metallurgical evaluation used to determine remaining life in assets
- Process: failure analysis of various process piping components (heat exchangers, reformer tubes, storage tanks, coker tubes, pipe), ASME Boiler and Pressure Vessel Code
    - Damage mechanisms: high temperature hydrogen attack, stress corrosion cracking, fatigue, corrosion, graphitization, exfoliation corrosion, galvanic corrosion, microbiologically influence corrosion, fire damage, hydrogen embrittlement, weld failure, stress relaxation cracking, creep, bolt failures
- Pipeline: correlate data from in-line inspections to physical indications in material, characterization of flaws and material identification, API 5L

Rail Investigations

- Wheel failures: vertical split rim, shattered rim, rolling contact fatigue
- Bearing failures

Castings

- Carbon and stainless-steel sand castings and foundry operations
- Aluminum and zinc castings

Plating and Coatings

- Decorative nickel-chrome plating on heavy duty truck and motorsports components
- Hard chrome functional plating
- Anodizing
- Fluoropolymer coatings on heavy duty truck aluminum air intake components

Quality

- Advance Product Quality Planning and Production Part Approval Process
- IATF 1649 and ISO 9001
- Process documentation (Control Plan, Process Flow, Process Failure Mode and Effects Analysis)