ATRONA – 5271 Zenith Parkway – Loves Park, IL 611111 – Phone 815-229-8620

Areas of Expertise

Metallurgical Engineering and Failure Analysis

- Material Science
- Manufacturing
- Processing – Special Processes
- Material Selection
- Heat Treat of Ferrous Materials
- Welding Metallurgy
- Testing of Materials
- Polymers

Formal Education

B.S. Metallurgical Engineering
University of Illinois, Urbana- Champaign (UIUC)
Member of the board 2004 to 2014 UIUC – Alumni
Selected as first recipient of Alumni of the Year UIUC 2004

Currently

Since 1999 to present time:
Work with various sectors of the industry on various projects including formal comprehensive and root cause failure analyses of various materials, designs, products, and processes. These sectors include but not limited to: Automotive industry, Aerospace industry, Oil and Gas industry, Off highway industry, Pressure vessel industry, Medical industry, Food industry, Utilities, Kitchen products, and other industries. Conducted and assisted in conducting well over 1,500 failure analyses in the past 20 years. These failure analyses included various types of failures such as: Brittle and ductile failures, fatigue failures, weld failures, overload failures, shock failures, products failures, corrosion failures, design failures, coating failures, many and other failures related to materials, processing, field, abuse, and application.

Successfully assisted different insurance firms and law firms with claims made for and against them. Analyses and assistance consisted of initial consultations, introductory meetings, representation, writing of test protocols, chain of custody procedures, and conducting the actual analysis. Wrote various opinions and reports related to claims through metallurgical opinions and through failure analyses. Testified on behalf of clients in court and through depositions. Many of those claims and projects were multimillion dollar claims.

Founder/Owner/President/Principal Metallurgical Engineer/Technical Director, ATRONA Test Labs, Inc. ATRONA is a fully accredited Metallurgical, Materials, Polymers, Dimensional, Mechanical, and nondestructive testing laboratory. Speaker / author on the subject of metallurgy, materials, welding, heat treat, and failure analysis.

Author “Metallurgy and Heat Treatment, the Pocket Book” named by Heat Treat Magazine as one of the top 10 most popular books on the subject, guest speaker at SAE, ASM International, QS, and other functions. Served as technical expert witness on various topics in metallurgy and failure analysis. Trained / educated over 1,000 engineers, managers, and operators in the field of metallurgy, materials, welding metallurgy, and heat treatment over the last 20 years. Served on the alumni association board at the University of Illinois at Urbana-Champaign, College of Material Science and Engineering for 10 years. Currently Principal Metallurgical Engineer and President of ATRONA Test Labs, Inc. Manage the entire lab and involved with various lab activities and procedures. Manage all technical staff and department managers. Routinely engaged in consulting with various customers and industries on metallurgical and materials topics including special processes such as heat treat, welding, and plating. Regarded as a metallurgical expert on materials, failure analysis and special processes including heat treat procedures.

Other Work Experience

Rockford Powertrain, Inc.

Manager, Product Engineering and Chief Metallurgist.
Management review and control. Provide management review and control over product engineering including product development, maintenance/support of current products, and solutions to customer technical problems. Manage the technical expertise within the product engineering department over a wide range of products to effectively meet company performance requirements. Review technical concepts of major projects and ensure they are correctly aligned with marketing proposals. Focuses on managerial concerns of the project such as cost, completion date and resource allocation. Assure effectiveness of the product engineering group in capturing and retaining selected business opportunities by superior project management of product development / application solutions and the ongoing support and refinement of those solutions for continued customer satisfaction.

Provide material, process, welding, and heat treat metallurgical support for Operations, Quality, and Engineering. Support Operations and Manufacturing Engineering in: a) standardization and documentation of heat treat operations, procedures, calibration, and reporting. b) Manufacturing process evaluation and refinement. c) Establishing and conducting a formal documented training program of heat treat personnel. d) Establishing and conducting a formal documented heat treat audit procedure. Support Engineering and Quality Assurance in: a) Technical support for design on new and existing products. b) Failure analysis. c) Sample evaluations, including preparation of test specimens and formal report documentation. Provide vendor evaluation and interface with customers. Position had 10 direct reports ranging from engineering services supervisor with his own 10 design drafters to an associate product engineer. In the product engineering group there are 4 principal engineers, 1 sr. Project engineer, 2 project engineers, 1 associate engineer, and 1 materials manager.

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Plant Metallurgist / Environmental Manager
Arrow Gear Company, Downers Grove, IL

Provided quality assurance and process control feedback to production line through metallography, chemical analysis, destructive and non-destructive testing. Assisted in coordinating and scheduling of all heat treatment jobs. Departmental output consistently surpassed production goals. Designed training programs for heat treat operators, laboratory technicians, and inspectors. Approved all new processes, materials, and heat treat equipment. Provided vendor evaluation, formal certification, and interfaced
with customers to support heat treat and other departments. Supervised the metallurgical laboratory and heat treat operations along with heat treat quality inspection.

Material Researcher
USA-CERL, US Army Corps of Engineers, Champaign, IL, Materials and Engineering Division.
Supported and assisted a team of metallurgists responsible for research analysis development and testing of systems and procedures related to military and base engineering. Applied standard data analysis techniques to engineering tasks. Performed data reduction and mathematical analyses. Participated in field surveys and the reduction and analysis of field data. Performed physical and chemical analysis on raw material and liquid samples for compliance with government specifications, as well as all associated technical reports. Conducted corrosion analysis and testing of underground pipes for military and civilian applications.

Achievements
Activities/Honors

- Author, Metallurgy & Heat Treatment, the Pocket Book
- Member of the Board, University of Illinois (UIUC), Material Science and Engineering department
- Nominated to serve as Technical Advisor for ASM International
- First Recipient of Alumni of the year award by University of Illinois (UIUC) Material Science and Engineering College
- Author, over 500 comprehensive failure analysis reports. Some over 300 pages long
- Recipient of ASM International appreciation award
- Recipient of SAE appreciation award
- Author, Welding Metallurgy Seminar Booklet
- Author, Metallurgy & Heat Treatment Seminar Booklet
- Author of well over 250 engineering specifications

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- Conducted over 50 Seminars on various subjects including:
  - Metallurgy and Heat Treatment
  - Failure Analysis
  - Welding Metallurgy
  - Testing of Materials & Quality Control
- Guest Speaker at ASM and SAE
- Active member (ASTM, ASM)
- Served on Metallurgy Committee for AGMA

Assisted by Team Members:

Samuel Rappaport - B.S. Material Science & Engineering
University of Illinois, Urbana- Champaign (UIUC)
Conducts failure analysis and metallurgical testing. Consults with customers on various metallurgical and materials subjects.

Ryan Oliver – B.S. Metallurgical Engineering
University of Wisconsin – Maddison
Conducts failure analysis and metallurgical testing. Consults with customers on various metallurgical and materials subjects.

Francisco Rodriguez – B.S. Chemistry
Rockford University
Conducts failure analysis, metallurgical testing, and polymer testing and analysis. Consults with customers on various metallurgical and materials subjects.

Randy Ebert – B.S. Chemistry
Rockford University
Conducts failure analysis, metallurgical testing, and polymer testing and analysis. Consults with customers on various metallurgical and materials subjects.

Matt Strack - Class room and Hands on training – 11 years' experience
Failure Analyst
Conducts failure analysis and metallurgical testing. Consults with customers on various metallurgical and materials subjects.

Steve Hertig - Class room and Hands on training – 10 years' experience
Senior Mechanical Testing Tech
Conducts mechanical and custom testing. Consults with customers on various mechanical testing topics.

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ATRONA Test Labs Capabilities:

ATRONA is a leader and well known in the industry for its failure analysis and problem solving expertise and abilities. Our current staff totals 22 and we perform all testing required under one roof without the need to outsource. Our laboratories consist of the following:

- Experts in failure analysis and metallurgy
- Fully accredited to ISO/IEC 17025 international testing
- Currently compliant with and seeking Aerospace NADCAP accreditation
- Three (3) degreed metallurgists
- Three (3) degreed chemists and material scientists
- Various technicians totaling 12
- Administrative staff totaling 5
- Metrology staff totaling 3
- Three (3) level 2 non destructive testing staff
- Approximately 25,000 square feet of laboratory facilities
- Metallurgical Testing Lab
- Scanning Electron Microscopy lab
- Polymer Testing Lab
- Mechanical Testing Lab
- Chemical Testing Lab
- Non Destructive Testing Lab
- Calibration and Measurements Testing Lab
- Full Machine Shop for Sample Preparation
- Latest Technology in most testing labs
- Training Center to house 50 students
- Two (2) scanning electron microscopes
- Five (5) metallographs with image analysis
- Six (6) hardness Testers all scales
- Three (3) microhardness testers equipped with mapping - 8 specimen analysis
- Three (3) stereoscopes
- Various bore scopes and ultrasonic tester
- Various state of the art metallography and prep equipment
- Fully equipped polymer lab with FT-IR, TGA, TMA, DSC, Gas Chromatography
- Six (6) Tensile and Compression Testers
- Two (2) Charpy Impact Testers
- Two MPI Machines
- Heat Treat Furnace
- Sixteen (16) cut off machines
- Various custom test machines and equipment