

EDUCATION

1998 **Bachelor of Science in Mechanical Engineering**
University of Missouri

EXPERIENCE

2014
to Present **Engineering Design & Testing Corporation**
Overland Park, Kansas

Consulting Engineer

Consultation in the origin and cause and damage assessment of mechanical systems and components. Includes specialized consulting in the areas of mechanical systems, equipment specification, centrifugal compressor testing and design, vehicle mechanical and electrical systems, gearbox analysis and design. Investigation and analysis of mechanical fractures of materials and components. Investigation of cause and extent of building envelope damage, with experience in water infiltration, moisture intrusion, hail/wind damage, and long-term deterioration. Assessment of fire damage related to mechanical equipment. Preparation of repair and/or replace cost estimates.

2011
to 2014 **Innovative Standards, Inc.**
Lenexa, Kansas

Vice President of Operations, Director of Engineering

Design and construction of electromechanical products for consumer use. Design of power transmission systems, aluminum castings, steel and aluminum weldments, and development of enclosures to provide compliance with Consumer Fire Regulations. Design of product chassis electrical including wiring harness design, development of control systems and specification of electrical components including direct drive motors, gear motors, linear actuators, proximity switches. Cost analysis of products and supply chain development.

2008
to 2011 **Shuttlewagon Inc./ Nordco**
Grandview, Missouri

Product Development Engineer, Engineering Lead

Design, testing and construction of on/off rail vehicle. Development of high-capacity vehicle compressor drive systems, hydraulic manifolds, Tier 4 diesel engine implementation and test cell development, as well as axle, transmission, driveshaft and torque converter evaluation and specification. Also responsible for chassis electrical harness design and management of Printed Circuit Board (PCB) development for use in off-highway equipment. Vehicle electrical design, including incorporation of SAE J1939 CAN bus systems. Design and Finite Element Analysis (FEA) of heavy steel weldments.

2005
to 2008

**Eskridge Inc.
Olathe, Kansas**

Project Engineer, Product Engineer

Design, testing and manufacture of planetary gear drives and multi-disc shaft brakes. Development and detailed analysis/prediction of gear life. Gearbox design also including finite element analysis of transmission cases, gear shafts and gear carriers. Implementation of carburized steel, through-hardened steel, gray iron, ductile iron and austempered ductile iron components, both cast and forged. Analysis of failed components including damage resulting from heat treat deficiencies, metallurgical composition issues, or overload conditions.

1998
to 2004

**Accessible Technologies, Inc.
Lenexa, Kansas**

Product Development Engineer, Product Manager

Centrifugal compressor design for automotive and industrial applications. Compressor gear and shaft design, gear case design, impeller design, and design of compressor covers. Product validation including operation in SAE J1723 supercharger test cell. Compressor implementation including engine dynamometer testing as well as in field use. Additional product development responsibilities included the development of air-to-air and air-to-liquid heat exchangers. Design of thermal formed and roto-molded plastic components.

Experience - Legal Consultation (partial list)

Commercial/Industrial Equipment | Aurora, Nebraska

Consultation regarding grain elevator explosion resulting in multi-million-dollar loss – conduct on-site and laboratory examination, provide engineering opinion regarding cause of explosion

Commercial Property - Equipment | Tulsa, Oklahoma

Consultation regarding Origin and Cause of Escalator Fire resulting in multi-million-dollar loss – conduct on-site examination, provide engineering opinion regarding cause of fire

Commercial Property - Equipment | Keokuk, Iowa

Consultation regarding Hydrogen Compressor explosion – conduct on-site examination, provide engineering opinion regarding cause of explosion and scope of damage

Commercial Equipment - Conveyor | Osage City, Kansas

Consultation regarding conveyor system involved in personal injury – conduct investigation including review of applicable codes and provide engineering opinion regarding the cause of the injury

Above-ground storage tank | Watertown, SD

Consultation regarding cause of Jet Fuel Storage Tank implosion/collapse – conduct on-site examination and review of plans and specifications, provide engineering opinion regarding cause of tank collapse

Commercial Construction – HVAC | Kansas City, Missouri

Consultation and Deposition Testimony regarding cause of moisture/condensation and HVAC comfort issues in High-Rise office building following conversion to combined commercial/residential – conduct on-site examination, review contract drawings and construction specifications, examine building and HVAC systems and provide technical opinion regarding the cause of humidity/comfort issues

Commercial Construction – HVAC | Independence, Missouri

Consultation and Deposition Testimony regarding cause of HVAC control system and comfort issues in office building – conduct on-site examination, review contracts, drawings and specifications, examine building and HVAC systems and provide technical opinion regarding the cause of control system and comfort issues

Commercial Construction – HVAC | Norton, Kansas

Consultation regarding HVAC installation in public school building – conduct on-site examination, review contracts, drawings and specifications, examine building and HVAC system and provide technical opinion regarding the HVAC installation and deficiencies of as-built system relative to intended design

Commercial Construction – Dental | Overland Park, Kansas

Consultation, examination, functional testing and provide engineering opinion regarding deficiencies in performance/defects in construction of underground dental vacuum system

Commercial Construction – Fire Sprinkler | Rogers, Arkansas

Consultation regarding fire sprinkler piping – conduct on-site examination, review construction drawings, review applicable building code and provide engineering opinion regarding the cause of involuntary water discharge from piping

Commercial Construction – Plumbing | Kansas City, Missouri

Consultation and Deposition Testimony regarding domestic water piping in college dormitory – conduct on-site examination, review construction drawings, review applicable building code and provide engineering opinion regarding the cause of involuntary water discharge from piping

Commercial Construction – Plumbing | Wichita, Kansas

Consultation and Deposition Testimony regarding domestic water piping in medical building – conduct on-site examination, review construction drawings, review applicable building code and provide engineering opinion regarding the cause of involuntary water discharge from piping

Commercial Construction – Plumbing | Tahlequah, Oklahoma

Consultation regarding domestic water piping in medical laboratory – conduct on-site and laboratory examinations, provide engineering opinion regarding the cause of involuntary water discharge

Residential Construction | Lawrence, Kansas

Consultation regarding cause of moisture/condensation – conduct on-site examination, provide engineering opinion regarding cause of moisture/condensation

Residential Construction/HVAC | Pittsburg, Kansas

Review contract drawings and construction specifications, examine residence and HVAC system and provide technical opinion regarding the cause of humidity/comfort issues

Residential Fire | Austin, Texas

Review contracts and construction specifications, examine fireplace and related remodeling activities, review applicable building code, manufacturer and industry standards and provide engineering opinion regarding the cause of the fire

Riding Mower | Clearmont, Missouri

Consultation regarding riding lawnmower involved in personal injury – conduct examination and provide engineering opinion regarding cause and design factors contributing to the incident

Cargo/Equipment Damage – Mobile Genset | Novi, MI

Root cause analysis and scope of damage assessment to mobile genset damaged in transit

Commercial Construction Site – Telescoping Boom lift | Springfield, Missouri

Telescoping boom lift – examine overturned lift involved in fatality and provide technical opinion regarding the cause of incident

Commercial Trucking | Kansas City, Missouri | Consultation and Deposition testimony regarding wheel fire and tire explosion resulting in personal injury – conduct investigation and provide engineering opinion regarding the cause of the fire

Commercial Trucking | Kansas City, Missouri

Consultation regarding separated tractor trailer wheel – conduct investigation and provide engineering opinion regarding the cause of the separation

Automotive | Kansas City, Missouri

Consultation regarding passenger vehicle involved in personal injury – conduct review of video footage, accident reports and documentation/investigation of site. Provide engineering analysis of incident

Automotive | Blue Springs, Missouri

Consultation regarding passenger vehicle involved in fatality – conduct review of video footage, facts and information and provide engineering analysis of incident

Field Experience and Consulting Activity – (partial list)

3.4MW Wind Turbine Gearbox (Illinois) | Root cause analysis and scope of damage assessment

1.5MW Wind Turbine Gearbox (South Dakota) | Root cause analysis and scope of damage assessment

1.5MW Wind Turbine Gearbox (Kansas) - Root cause analysis and scope of damage assessment

Commercial Power Generation | Determined root cause of sudden malfunction of GE Jenbacher 24-cylinder turbocharged internal combustion engine driver for 4.0 MW generator set; Root cause analysis and scope of damage assessment

Municipal Power Generation | Determined root cause of sudden malfunction of Wartsila lean-burn gas engine driver for 8.4MW generator set; Root cause analysis and scope of damage assessment

Municipal Power Generation | Determined root cause of sudden malfunction of Fairbanks Morse 12-cylinder diesel engine driver for 400kw generator set; Root cause analysis and scope of damage assessment

Mining Facility - Field erected cooling tower (Green River, Wyoming) | Consultation regarding the evaluation of the damage scope, replacement cost and development of timeline for construction of replacement cooling tower

Rum Distillery Explosion (St. Croix, USVI) | Scope of Damage Assessment – piping, distillation column and related equipment, repair cost estimation and review

Industrial Equipment (North Dakota) | Consultation regarding the evaluation of the damage scope and repairability of a diffusion tower (sugar beet processing facility)

Medical Manufacturing Equipment/Facility (North Carolina) | Consultation regarding the evaluation of the damage scope, repair/replacement cost (>\$30M) and development of timeline for period of restoration for manufacturing machinery and equipment large manufacturing facility following flood event

Manufacturing Facility (Tampa, FL) | Hurricane Damage, Consultation regarding the evaluation of the damage scope and replacement cost

REGISTRATIONS and CERTIFICATIONS

Registered Professional Engineer in Arizona (#73645)

Registered Professional Engineer in Arkansas (#16541)

Registered Professional Engineer in Colorado (#PE.0049810)

Registered Professional Engineer in Florida (#PE99451)

Registered Professional Engineer in Illinois (#62.067853)

Registered Professional Engineer in Indiana (#PE12100716)

Registered Professional Engineer in Iowa (#22692)

Registered Professional Engineer in Kansas (#24284)

Registered Professional Engineer in Kentucky (#39021)

Registered Professional Engineer in Louisiana (#45522)

Registered Professional Engineer in Michigan (#6201309307)

Registered Professional Engineer in Minnesota (#52946)

Registered Professional Engineer in Missouri (#2012018136)

Registered Professional Engineer in Nebraska (#E-15509)

Registered Professional Engineer in New York (#98735)

Registered Professional Engineer in North Carolina (#51501)

Registered Professional Engineer in North Dakota (#PE-29793)

Registered Professional Engineer in Ohio (#PE.85884)

Registered Professional Engineer in Oklahoma (#27858)

Registered Professional Engineer in South Dakota (#12823)

Registered Professional Engineer in Texas (#119810)

Registered Professional Engineer in United States Virgin Islands (#0-51760-1B)

Registered Professional Engineer in Utah (#14312136-2202)

Registered Professional Engineer in Wisconsin (#E-44332)

Registered Professional Engineer in Wyoming (#19886)

National Council of Examiners for Engineering and Surveying (#13-265-21)

PROFESSIONAL ORGANIZATIONS

American Society of Mechanical Engineers (ASME)

ASM Failure Analysis Society

ASM International

National Association of Fire Investigators (NAFI)

National Fire Protection Association (NFPA)

Society of Automotive Engineers (SAE)

PUBLICATIONS

"The Role of Lubricants in Wind Turbine Gearbox Applications" POWER Magazine, July 1, 2025,
<https://www.powermag.com/the-role-of-lubricants-in-wind-turbine-gearbox-applications/>

"Motorsports – Hard Work, Fun, Education or "All of the Above"" The Stress Point, Engineering Design and Testing, June 15, 2023, <https://www.edtengineers.com/blog-post/motorsports-hard-work-fun-education-or-all-above>

"Common Arc Welding Processes" The Stress Point, Engineering Design and Testing, May 18, 2022,
<https://www.edtengineers.com/blog-post/common-arc-welding-processes>

"Centrifugal Compressors – Simultaneously Simple and Complex" The Stress Point, Engineering Design and Testing, December 28, 2021, <https://www.edtengineers.com/blog-post/centrifugal-compressors>

"Gensets" The Stress Point, Engineering Design and Testing, February 18, 2021,
<https://www.edtengineers.com/blog-post/gensets>

"SEM: An Invaluable Tool in Failure Analysis" with Richard L. Ellsworth, ASM Advanced Materials & Processes, Volume 177, No. 6, September 2019

"DMM Tech; Wiring Basics" Dirt Modified Magazine, July 2014

"Block Party; The build of a 1000+ hp Power Adder Small-Block" Fastest Street Car Magazine, June 2008

"Be Green and Go Fast; E85: Fuel or Fad" Fastest Street Car Magazine, October 2007 (Co-Authoring by Jake Amatisto)

"Tubular: A Look at Headers, Their Design and Theory" Fastest Street Car Magazine, April 2007

"Manifold Mania; To Fab or Not to Fab" Fastest Street Car Magazine, December 2006

"Secrets Revealed; Comp Cams: Inside Cam Development" Fastest Street Car Magazine, September 2006

PATENTS

6,474,318 "Air induction system having inlet valve"

6,571,780 "Air induction system having inlet valve"

- 6,691,685 "Air induction system having inlet valve"
- 6,786,044 "Air induction system having inlet valve"
- 7,107,962 "Carburetor hat for forced induction system"
- 11,879,478 "Centrifugal supercharger transmission case"

PRESENTATIONS

- 2023 Presentation Given: "*Impact of Data and Video in Auto Cases*," NASP 2023 Fall Conference, November 7, 2023, Colorado Springs, Colorado
- 2023 Presentation Given: "*Agricultural Equipment Fires*," Arkansas IAAI 2023 Fall Conference, October 5-6, 2023, Harrison, Arkansas
- 2022 Presentation Given: "*Forensic Engineering and its Application to Truck and Heavy Equipment Claims*," 2022 National Truck and Heavy Equipment Claims Conference (NTHECC), October 1, 2022, San Antonio, Texas
- 2021 Presentation Given: "*Large Internal Combustion Engine (Genset) Main Bearing Failure After Rebuild*," 2021 ASM IMAT (International Materials Applications and Technologies) Conference, September 15, 2021, St. Louis, Missouri
- 2016 Presentation Given: "*Drag Racing/High-Performance Rollover and Crash Protection Structures and Their Evolution from WWII to Present*," 2016 ASM MS&T (Materials Science and Technologies) Conference, October 26, 2016, Salt Lake City, Utah

CONTINUING EDUCATION (partial list)

- 2026 OSHA 10-Hour General Industry Safety Course
- 2026 Effective Investigation and Testimony
- 2026 NFPA 1033 and Your Career 2025
- 2025 The Scientific Method for Fire and Explosion Investigation
- 2023 Electric & Hybrid Vehicle Fires
- 2021 Thermal Performance of Field Erected Cooling Towers
Package Cooling Tower Design & Selection
Cold Weather Operation of Cooling Towers
- 2020 Ball Bearing Design & Application
- 2019 Wood Framing for Residential Construction
- 2018 International Symposium on Fire Investigation Science and Technology
- 2016 International Symposium on Fire Investigation Science and Technology
- 2015 Investigation of Gas and Electric Appliance Fires
Fire, Arson & Explosion Investigation, NAFI
Principles of Failure Analysis, ASM International
- 2014 OSHA 29 FR 1910.146 Confined Space Certification