

EDUCATION

- 2014 **Bachelor of Science, Mechanical Engineering**
Tennessee Tech University, Cookeville, Tennessee
- 2008 **Associates of Science, Heavy Equipment Dealers Service Technology**
South Georgia Technical College, Americus, Georgia

EXPERIENCE

- December 2018
to Present **Engineering Design & Testing Corp.**
Nashville, Tennessee
Consulting Mechanical Engineer
Engineering expert specializing in large loss, scope of damage, commercial and industrial facilities and manufacturing and processes: root cause analysis, including malfunctions involving machinery, equipment, heavy equipment, mechanical equipment, and systems, plumbing systems. Specialties include silo, tank, press, and bin/container failures including fire/explosion origin and cause, corrosion analysis, ruptures, collapses, and other failure modes. Analysis of heating, ventilation, and air conditioning (HVAC) systems and associated equipment including code analysis. Cost analysis related to equipment, machinery, industrial/commercial repairs, and HVAC/mechanical systems. Fire and explosion origin and cause analysis. Investigation of product defects relating to consumer products, equipment, and machinery, including subrogation.
- June 2018
to December 2018 **Harpeth Park Engineering**
Franklin, Tennessee
Mechanical Consulting Engineer
Provided consulting services for mechanical, plumbing, and fire protection engineering to residential, commercial, and industrial projects. Mechanical and Plumbing Engineer-of-Record for new construction, renovation, and design-build projects. Provided code-compliant and cost-effective engineered solutions for commercial offices, restaurants, multi-family, assisted living facilities, and retail.
- March 2014
to June 2018 **Gresham Schelton Engineering**
Franklin, Tennessee
Engineer-in-Training
Provided mechanical and plumbing systems design under supervision of Engineer-of-Record. Conducted building heating and cooling load calculations, assisted with selecting mechanical and plumbing equipment required and generated construction documents.

March 2010
to June 2011

**Oak Ridge National Laboratory
Oak Ridge, Tennessee**

Mechanical Engineering Intern

Worked under supervision in the Energy and Transportation Science Division's ZEBR Alliance Home Project. Installed and maintained data acquisition, controls, and occupancy simulation for residential research projects. Generate sample reports from collected data.

June 2006
to August 2007

**Thompson Machinery Caterpillar
LaVergne, Tennessee**

Student in ThinkBig Program

Performed heavy equipment repairs under supervision. Manufacturer-directed program. Conducted field repairs, rebuilt engines, hydraulics, machine shop exposure including welding.

EXPERIENCE

Forensic Engineering Investigations (partial list)

Grain Storage Bin Fire and Collapse – Peoria, Illinois

Investigate to determine the fire origin and cause with large grain storage bin at ethanol processing facility. Investigation included root cause failure analysis, scope evaluation, and coordination with demolition teams, evidence preservation, etc.

Industrial Printing Press – Nicholasville, Kentucky

Investigate industrial printing press fire event. Evaluate scope of damage/value of loss to press equipment and electrical distribution equipment.

Industrial Dust Collector/Baghouse Fire/Explosion – Troy, Michigan

Determine origin and cause of fire/explosion involving dust collector; evaluate scope of damage/repairs to dust collector and various equipment.

Dump Truck Evaluation – Nashville, Tennessee

Evaluate and perform operational testing involving dump truck which was involved in multiple injuries.

Zinc Oxide Facility – Dickson, Tennessee

Evaluate scope of damage and repairs as a result of improper product flow/fire with zinc oxide manufacturing process.

Fire in on-highway Tractor/Trailer – Charleston, Tennessee

Determine origin and cause of fire involving a tractor/trailer. Cause of fire determined to be frictional heating caused by a bearing malfunction within the driver steering wheel hub.

Tornado Damage to 3-Story Conveyor System – Nashville, Tennessee

Determine scope of damage to conveyor equipment damaged by a severe tornado that hit the facility housing the equipment. Oversee construction of temporary structure installed to protect equipment from further damage during building demolition and reconstruction. Evaluate repairs required to restore damaged conveyor equipment to minimize business interruption.

Tornado Damage to 36 Powered Industrial Trucks (Forklifts) – Nashville, Tennessee

Determine scope of damage to forklifts hit by a tornado. Evaluate and conduct operational testing on each forklift. Provide cost analysis of repair/replacement for each forklift.

Aluminum Extrusion Press – Roscoe, Illinois

Evaluate main cylinder barrel fractures and scope of repairs with 4,000-ton extrusion press.

Plastics Injection Molding Press – Parkman, Ohio

Determine cause of malfunction and evaluate scope of repairs/replacement with 750-ton injection molding press; malfunction resulted in damage to equipment.

Tractor Rollover — Cookeville, Tennessee

Evaluate tractor after rollover event which resulted in fatality.

Plastics Extrusion Machine – Annandale, Minnesota

Determine cause of malfunction and evaluate scope of repairs/replacement with single-screw extruder; malfunction resulted in damage to equipment.

Commercial Pollution Control Unit – Nashville, Tennessee

Determine origin and cause of fire involving pollution control unit installed in a restaurant located in a high-rise structure. Cause of fire from improper maintenance checks resulting in electrical fault.

Industrial Conveyor Sander – Southfield, Michigan

Determine origin and cause of fire event involving industrial conveyor sander explosion/fire which resulted in injured personnel. Evaluate scope of damage/value of loss with equipment.

Auto Industry Float Glass System – Nashville, Tennessee

Determine cause of damage to mechanical equipment associated with float glass system. Float glass furnace components damaged from loss of cooling water; loss of cooling water was the result of power interruption to the facility. Determine scope of damage to the furnace equipment.

Commercial Conveyor Oven – Cookeville, Tennessee

Determine cause of explosion that took place within conveyor oven. Cause of explosion was from improper diagnostic and safety procedures on the part of repair contractor.

Case Tractor – Paragould, Arkansas

Determine origin and cause of fire event involving large Case farm tractor.

Flour Storage/Handling Silo System — Lebanon, Tennessee

Determine origin and cause of fire involving dehumidifier. Cause of fire was from improper installation/design with fluidizing process.

Mechanical Ventilation Unit Fire — Spring Hill, Tennessee

Determine root cause of fire in HVAC unit. Cause of fire was from high resistance connection with heater controls.

Soot Damage/Propane Sampling — Gainesboro, Tennessee

Determine cause of soot damage and retrieve LP Propane sample for testing from two residences.

Paper Mill Pulp Tank Collapse — Prattville, Alabama

Determine root cause of pulp storage tank collapse.

CNC Plasma Table Explosion — Memphis, Tennessee

Determine cause of explosion with industrial CNC plasma cutting system.

HVAC Condensate Drainage Evaluation — Charlotte, North Carolina

Evaluate HVAC system and determine failure points of installation. Improper drainage p-trap had been installed resulting in moisture buildup.

Fire Department Breathing Air Tank Filling System — Livingston, Tennessee

Determine cause of malfunction in air compressor used to fill breathing air tanks for fire department.

Multiple Roof-Mounted HVAC Units — Clarksville, Indiana

Determine scope of damage to multiple roof-mounted HVAC units from hail. Obtain and review repair estimates.

Design and Construction (partial list)**Illume Townhomes — Nashville, Tennessee**

Designed mechanical and plumbing systems for a new, 5-story multi-family housing facility.

Little Rey Restaurant — Atlanta, Georgia

Designed mechanical and plumbing systems for restaurant including kitchen hood and grease removal systems.

East Park Office Building — Brentwood, Tennessee

Designed Mechanical Engineer-In-Charge. providing assistance and documentation for 225-ton chilled water retrofit.

608 Main/Austin Peay Dormitory — Clarksville, Tennessee

Mechanical and Plumbing Engineer In Charge for a new 5-story dorm facility on Austin Peay University campus.

Deer Run Camps & Retreats Auditorium — Thompson Station, Tennessee

Provided mechanical and plumbing systems design and documents for a new auditorium facility (occupancy to be approx. 500); challenging aspects of design included commercial kitchen, 1-phase power, and heat pump/electric heat only.

DuraAuto Aluminum Anodizing Plant Addition — Lawrenceburg, Tennessee

Provided mechanical and plumbing systems design for a new anodizing facility addition to an existing industrial complex.

Mechanical Experience with Heavy Machinery (partial list)**Waste Management D8 Dozers — Nashville, Tennessee**

Field repair and replacement of tracks and track shoes on D8 dozer operating in landfill. Additional dozer work included troubleshooting dozer failures after dozer was driven through large quantities of raw fiberglass.

Crawler Loader Engine Removal — Nashville, Tennessee

Removal of diesel engine in CAT 963 crawler loader in the field.

CAT 826 Landfill Compactor — Nashville, Tennessee

Field removal of cab on landfill compactor to diagnose electrical problems.

“Spec-Shop” Repairs — LaVergne, Tennessee

Complete disassembly/reassembly of individual heavy equipment components including CAT 3406 diesel engine, large wheel loader hydraulic cylinders, hydraulic hammers, large wheel/tire assemblies. Assisted with engine dyno testing after rebuilds.

REGISTRATIONS and CERTIFICATIONS

Registered Professional Engineer in Alabama (#50428)
Registered Professional Engineer in Arkansas (#18706)
Registered Professional Engineer in D.C. (#PE40002266)
Registered Professional Engineer in Florida (#88267)
Registered Professional Engineer in Georgia (#PE045538)
Registered Professional Engineer in Illinois (#062.071087)
Registered Professional Engineer in Indiana (#PE11900037)
Registered Professional Engineer in Kentucky (#34357)
Registered Professional Engineer in Louisiana (#45001)
Registered Professional Engineer in Massachusetts (#56451)
Registered Professional Engineer in Michigan (#6201309019)
Registered Professional Engineer in Minnesota (#59867)
Registered Professional Engineer in Mississippi (#29734)
Registered Professional Engineer in Missouri (#2019002241)
Registered Professional Engineer in New Jersey (#24GE05691800)
Registered Professional Engineer in North Carolina (#049088)
Registered Professional Engineer in Ohio (#86459)
Registered Professional Engineer in Pennsylvania (#PE095058)
Registered Professional Engineer in Tennessee (#121010)
Registered Professional Engineer in Texas (#144341)
Registered Professional Engineer in Virginia (#69071)
Registered Professional Engineer in West Virginia (#26584)
NAFI Certified Fire and Explosions Investigator (#23887-13744)
NAFI Certified Vehicle Fire Investigator (#23887-13744V)
National Council of Examiners for Engineering and Surveying NCEES Record (#1518397)
OSHA Permit-Required Confined Space Entry (#112296)
FAA Part 107 Remote Pilot License Commercial Drone Operation (#4414014)

PROFESSIONAL ORGANIZATIONS

American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)
American Society of Mechanical Engineers (ASME)
Materials Engineering Institute, ASM International
National Association of Fire Investigators (NAFI)
National Fire Protection Association (NFPA)
International Code Council (ICC)

PUBLICATIONS

- Condensate Drainage*, [EDT Blog Post](#), (A publication of Engineering Design & Testing Corp.), March 21, 2019
- How to Extend the Life of Your HVAC Equipment – This Summer and Beyond (Part 1)*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), June 6, 2019
- How to Extend the Life of Your HVAC Equipment – This Summer and Beyond (Part 2)*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), June 12, 2019
- How to Extend the Life of Your HVAC Equipment – This Summer and Beyond (Part 3)*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), June 20, 2019
- Air Infiltration & Leakage (Part 1)*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), September 19, 2019
- Air Infiltration & Leakage (Part 2)*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), September 26, 2019
- Plasma Cutting Machine Explosion*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), May 13, 2020
- Large Tractor Fire*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), September 29, 2021
- Drone Use with Loss Investigations*, [EDT Blog Post](#), (A publication of EDT Engineering Design & Testing Corp.), May 23, 2022

PRESENTATIONS

- “Water Heating: Thermal Expansion to Explosion”* - EDT Engineering Design & Testing Corp., March 2019
- “Hydraulic Systems and Components - Overview”* - EDT Engineering Design & Testing Corp., Feb 2022
- “Large Loss, Root Cause and Scope: Challenges, Strategies and More”* - EDT Feb 2024

CONTINUING EDUCATION

- 2024 *“Sexual Harassment Prevention Training”* – EZ-PDH
- “Ethics for Professional Engineers”* – EZ-PDH
- “Solar Installation Fires”* - EDT
- “Selected Topics on Vehicle Fire Investigations”* - EDT
- “Large Loss, Root Cause and Scope: Challenges”* - EDT
- “The ABCs of Batteries”* – EDT
- “Failure Analysis of Common Plastics”* - EDT
- “Appliance Investigations”* – EDT
- “Indiana-Statutes, Rules, and Ethics for Professional Engineers”* – EZ-PDH
- 2023 *“LAPELS – Professional Ethics Webinar”* - LAPELS
- “Fire Investigation Processes – Back to Basics”* - EDT
- “Large Loss Assignments – Case Studies”* - EDT
- “Transformer Losses: Cause and Cost”* - EDT
- “Verification and Validation of Subsea Oil and Gas Equipment”* – EDT
- “Greases and Oils: Preventing Lubrication Related Issues”* - EDT

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- "Water Damage Assessment of Electrical System Components"* - EDT
- 2022 *"Underground Cable Design Considerations and Failure Analysis"* - EDT
"Circuit Breakers – Different Breaker Types and Maintenance Requirements for Reliability" - EDT
"Technical Issues Regarding Premise Liability" - EDT
"Hydraulic Systems and Components - Overview" - EDT
"Rotating Equipment Failure Modes" - EDT
"Investigating Internal Combustion Engine Failures" - EDT
"Ethics I for Professional Engineers" - Ryan K. Malone
"Sexual Harassment Prevention Training" - Raymond Bosek
"Laws and Rules for Professional Engineers of Indiana for 2022 Renewal" - Ryan K. Malone
"Non-destructive Examination (NDE) Applied to Pressure Vessel Evaluations" - Ryan K. Malone
"Florida PE 2022 – 2023 – Laws & Rules" - Mark Rossaw
- 2021 *"Fire Investigations & NFPA 921: An Education for Engineers"* - EDT
"Damage Assessments in Telecommunications Networks" - EDT
"Part 1 'Power Factor and Power Factor Correction Considerations from a Utility and User Perspective – A Utility Perspective'" - EDT
"Part 2 'Power Factor and Power Factor Correction Considerations from a Utility and User Perspective – A Utility Perspective'" - EDT
"Florida Laws and Rules for Professional Engineers"- EZ-PDH
"Fire Alarm Systems" - EDT
"Failure Analysis of Threaded Fasteners" - EDT
"Missouri Spring/Summer 2021 Newsletter", Missouri APEPLSPLA
"Grounding and Bonding of Electrical Systems" - PDHNow
- 2020 *"Analysis of Cross-Linked Polyethylene"* - EDT
"Back to Basics: Fire Science with a Spark" - EDT
"Welding Processes, Techniques, Standards, Inspections and Failure Modes" - EDT
"Understanding Smart Home Networks" - EDT
"Understanding the Impact Power Quality Problems – Defining Voltage Surges and Sags" - EDT
"Engineering Laws, Rules and Ethics for Indiana/Professional Engineers", CEDengineering.com
"Louisiana Professionalism and Ethics" - Louisiana LAPELS
"Louisiana Laws and Rules" - Louisiana LAPELS
"ASHRAE Standard 62.1" - Trane.com
- 2019 *"A Brief Review of Polymers: Characterization and Failure Analysis"* - EDT
"Building Your Practice – Means & Methods for Success" - EDT
"Construction Engineering: A Focus on the Use of Cranes in Construction Operations" - EDT
"Quantitative Measurement of LP and Natural Gas Systems" - EDT
"Interdisciplinary Investigations" - EDT
"Vehicle Fires" - EDT
Investigation of Gas and Electric Appliance Fires, Fire Findings
National Association of Fire Investigators CFEI Training Program, NAFI
National Association of Fire Investigators CFVI Training Program, NAFI
Ethics I for Professional Engineers, PDHNow
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