

ENGINEER: MECHANICAL

EDUCATION

1999 **Bachelor of Science in Mechanical Engineering**
Clemson University, Clemson, South Carolina

EXPERIENCE

January 2016 **Engineering Design & Testing Corp.**
to Present **Columbia, South Carolina / Seattle-Tacoma, Washington**

Consulting Engineer, District Engineering Manager, Board of Directors

Root cause investigation and analysis of mechanical failure, and fracture of components and materials. Specialized consulting in the areas of rotational power equipment, ship-board mechanical and environmental systems, industrial combustion systems, gas turbines, boilers, chillers, fuel systems, explosions, waste gas handling and processing, spray drying equipment and processes, stamping dies, military grade sonar and radar equipment, control circuits, motor controls and drives, and low voltage electrical distribution equipment. Piping flow control evaluation of steam, ventilation, pumping, gravity-driven systems, and refrigeration and HVAC systems.

April 2013 **Project Integration, Inc.**
to December 2015 **Spartanburg, South Carolina**

Project Engineering Manager

Design of industrial waste gas handling systems including afterburners, natural gas and oxygen piping systems, ventilation systems, evaporative cooler systems, baghouses, NOx reduction systems, and scrubbers. Created P&ID layouts, specified components, and designed and authored functional and detailed control procedures. Extensive experience with natural gas and oil burners for various applications including boilers and furnaces. Designed pressure vessels to customer specifications. Designed non-pressure vessels for multiple purposes. Designed high, medium and low-pressure steam piping systems for boiler upgrades including control valves, traps, condensate handling and flash tank components. Designed baghouses, including pulsed air systems for bag clearing. Developed concept and designed pneumatic transfer system. Designed equipment to integrate weigh hopper, mixer, and dispenser from different sources for bucket and bag filling of a dry masonry product. Designed system for capturing and storing ammonia from an industrial process.

May 2006 **Schneider Electric**
to April 2013 **Seneca, South Carolina**

Staff Engineer

Designed motor control centers, low voltage switchboards/switchgear, and panelboards. Designed, built and tested breaker operator mechanisms, buss systems, plug-in jaws, cast copper conductors, and equipment structural systems using finite element analyses, mechanics and dynamics, and material selection. Modeled motor control center structures for use in handling restraints as well as seismic event performance. Designed test procedures for seismic compliance testing as well as short circuit and withstand testing. Designed bracing for components to provide compliance with required standard tests. Performed thermal and fluid analyses on ventilation systems

used in motor control center units. Evaluated plating used on copper and aluminum conductors for heat transfer, useful life, corrosion, and durability.

May 2004
to May 2006

GE Gas Turbines
Greenville, South Carolina

Design Engineer

Design of gas turbine blades (buckets), nozzles, and cases. Performed useful life calculations for turbine buckets for crack propagation, creep elongation and rupture, corrosion, startup cycling, and material property variances. Evaluated turbine and compressor rotor components for wear and surface characteristics. Troubleshot field turbines with regard to unexpected combustion and aerodynamic phenomena. Performed multiple finite element analyses of hot gas path components to understand load and heat effects as well as welding, machining, and traumatic episodic events and their effects on performance and life. Analyzed turbine shell vs. turbine rotor component clearances during startup, shutdown, and loaded conditions, and provided design options and oversight. Oversaw complete turbine system assessment, restoration, and preservation of turbines that had experienced environmental attack in shipment.

May 2000
to May 2004

Schneider Electric
Seneca, South Carolina

Manufacturing Engineer

Developed processes, provided engineering support for multiple production lines, represented assembly and fabrication on new product development teams, employed statistical process control and process capability strategies for sheet metal and formed copper parts. Designed, built, and tested new structural enhancements to IBC seismic requirements. Designed: fixtures, lifting mechanisms, class A stamping dies, conveyor systems, tilting/positioning mechanisms, and sheet metal parts for use in fabrication and assembly. Machined, fabricated, welded and assembled multiple parts and assemblies.

June 1999
to May 2000

Norfolk Southern Railroad
Bellevue, Ohio

Locomotive Repair Shop Supervisor

Analyzed locomotive systems for malfunction including diesel engines, turbo chargers, air compressors, traction motors, generators, wheel slip controls, dynamic brakes, and air brakes.

July 1986
to July 1995

United States Navy
Charleston, South Carolina

Submarine Sonar Supervisor/Technician

Troubleshot and repaired multiple analog and digital electrical sonar systems. Expert of: doppler data target motion analysis, and operations compartment ship's hydraulic, air, electrical, water, and waste systems. Performed the duties of chief of the watch and brig maintenance supervisor.

REGISTRATIONS and CERTIFICATIONS

Registered Professional Engineer in Alaska (#123865)

Registered Professional Engineer in Colorado (#PE.0056581)

Registered Professional Engineer in Florida (#104502)

Registered Professional Engineer in Georgia (#PE 056196)
Registered Professional Engineer in Hawaii (#PE-18768)
Registered Professional Engineer in Idaho (#16832)
Registered Professional Engineer in Montana (#41077)
Registered Professional Engineer in North Carolina (#062158)
Registered Professional Engineer in Oregon (#91206PE)
Registered Professional Engineer in South Carolina (#23176)
Registered Professional Engineer in Utah (#10469390-2202)
Registered Professional Engineer in Washington (#53458)
Registered Professional Engineer in Wyoming (#PE 17777)

PROFESSIONAL ORGANIZATIONS

American Society of Mechanical Engineers (ASME)
ASM International
National Association of Fire Investigators (NAFI)
National Fire Protection Association (NFPA)

PRESENTATIONS

Process Capability: The Effects on Design, presentation to executives with Schneider Electric, Nashville, Tennessee (2011)
Tolerance Analysis Basics, tolerance analyses subject matter expert with Schneider Electric, Seneca, South Carolina (2007)
Industrial Plant Process Controls, technical course, Orlando, FL (2018)
Welding processes, methods, controls, and potential failure modes, technical course, Savannah, GA (2020)

PATENTS

Mohr, P., Nowak, D., Fernandez, E., Arnett, M., Williams, D., and Collado, C., United States Patent: 7,771,171 B2. Systems for preventing wear on turbine blade tip shrouds. Issued August 10, 2010.

CONTINUING EDUCATION

2024 *Confined Space Certification* – Online OSHA Course
 Welding Safety- Online OSHA Course
 Basic workpiece materials – Online Mitsubishi Materials Corporation
 A Simple Way to Look at Three Phase Power – Online Decatur Professional Course
 How Things Break; Fatigue - Online Decatur Professional Course
 Electrical Forensics Engineering - Online Decatur Professional Course
 3-D Printing Principles, Processes, and Applications - Online Decatur Professional Course

-
- 2023 *Verification and Validation of Subsea Oil and Gas Equipment* - Charlotte, North Carolina
Greases and Oils: Preventing Lubrication Related Issues - Charlotte, North Carolina
Heating, Air Conditioning and Ventilation Systems, What Could Possibly Go Wrong - Charlotte, North Carolina
- 2022 *Essentials of ASME B31.3 Process Piping Code* – ASME Online
Mathematical Modeling of Enclosure Fires - Virtual Fife, Washington
Circuit Breakers, Different Breaker Types and Maintenance Requirements for Reliability - Virtual Fife, Washington
Wildland Urban Interface & Mitigation Strategies - Virtual Fife, Washington
Hydraulic Systems and Components - Virtual Fife, Washington
Rotating Equipment Failure Modes - Virtual Fife, Washington
- 2021 *Power Factor and Correction Considerations* - Virtual Fife, Washington
Finite Element Analysis and Its Use in Legal Consulting - Virtual Fife, Washington
Fire Alarm Systems - Virtual Fife, Washington
Failure Analysis of Threaded Fasteners - Virtual Fife, Washington
Photovoltaics & Energy Storage - Virtual Fife, Washington
- 2020 *Welding processes, methods, controls, and potential failure modes*, Savannah, Georgia (Instructor)
Fluid Systems: Work Controls and Testing – Savannah, Georgia
Understanding the Impact of Power Quality Problems – Savannah, Georgia
- 2019 *Interdisciplinary Investigations*, Columbia, South Carolina
Quantitative Measurement of LP and Natural Gas Systems, Columbia, South Carolina
Subchapter M: A Brief Overview of EDT as a Third-Party Organization, Columbia, South Carolina
- 2018 *Basic Fatigue Analysis*, Columbia, South Carolina
Industrial Plant Process Controls, Columbia, South Carolina (Instructor)
Metallurgy for the Non-Metallurgist and Its Use in Root Cause/Damage Assessments, Columbia, South Carolina
Methods of Equipment Protection, Columbia, South Carolina
- 2017 *Engineering Analysis of Failure: Determination of Cause in a Legal Environment*, Columbia, South Carolina
Large Loss Report Writing, Columbia, South Carolina
- 2016 *International Fire, Arson and Explosion Investigation Training Program*, Sarasota, Florida
Cold Regions Engineering, Seattle, Washington
Investigation of Gas and Electric Appliance Fires, Seattle, Washington
Keys to Unlocking a Closed Insured, Columbia South Carolina
Large Loss Forum-Engineering Economics: ACV Definitions and Calculations, Columbia, South Carolina
Power System Protection and Fault Analysis, Columbia, South Carolina
- 2014 *Piping/Pressure Vessels*, ASME, Greenville, South Carolina
-

-
- 2013 *Steam Trap Selection and Operation*, Charlotte, North Carolina
- 2010 *Fracture Mechanics Approach to Life Prediction*, ASME, Orlando, Florida
 Shock and Vibration Analysis, ASME, Chicago, Illinois
 Power Systems Conference, Schneider Electric, Chicago, Illinois
- 2007 *Seismic Design*, ASME, Charleston, South Carolina
- 2006 *Fracture Mechanics*, ASME, Chicago, Illinois
- 2004 *Design for Six Sigma*, General Electric Corp., Greenville, South Carolina
 Investment Casting Design, PCC Airfoils, Minerva, Ohio

DEPOSITIONS / TESTIMONY

September 11, 2020 Deposition, Regional Transportation District v. Legacy Mechanical, Inc. and Short-Elliott-Hendrickson, Inc., Case 2019CV33339, District Court, City of Denver, Colorado