CURRICULUM VITAE

THE KILPATRICK GROUP, PA

GARY E. KILPATRICK, P.E., DFE, PENC FELLOW
Certified Diplomate Forensics Engineer (NAFE)
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(Updated 01/04/2025)

EDUCATION

North Carolina State University 1990:
Bachelor of Science Degree in Mechanical Design Engineering with a minor in Speech Communications.

Mitchell College 1985
Associate in Science Degree – College Transfer Courses.

HONORS/AWARDS

North Carolina State University MAE Hall of Fame: Inducted 2013.

National Academy of Forensic Engineers: Inducted August 13th 2013 as a Board Certified Diplomat in Forensic Engineering.

Professional Engineers of North Carolina: Conferred on 05/08/2023 The Designation of Fellow.

PROFESSIONAL TRAINING AND DEVELOPMENT

Public Speaking and Communications:
Dale Carnegie Course: Public Speaking and Public Relations. Certificate (1980).
Mitchell Community College and North Carolina State University Public Speaking Courses. Degrees (1985-1990).
Midlands Technical Community College: Train The Trainer. Certificate (1996).

University of North Carolina Charlotte: Introduction To Forensic Engineering;
Instructor: Dr. David T. Young, P.E.; Certificate (2002).

General Industry and OSHA Safety:
Modern Machine Shop Technology (1979).
Chesapeake Consulting: Constraint Management Applications. Certificate (1998).
Mesa Consulting Group Incorporated: Six Sigma. Certificate (2000).
North Carolina State University: ISO 9001: 2000 Internal Quality Auditing. Certificate (2005).
Forsyth Technical Community College: Pro-Engineer 2001 CAD Software Training. Certificate (2003).
Guilford Technical Community College: General Contractor's Licensing Preporation Course including OSHA 29 CFR 1910 General Industry Regulations and OSHA 29 CFR1926. Certificate (2006).
Measuring and Improving Boiler Efficiency – Advanced. Certificate (2007).
OSHA 29 CFR 1926 Construction Industry Regulations and Major Hazard and Prevention Strategies. Certificate (2010).
OSHA Industrial Accident Investigation. Certificate (2010).
Combined Heat and Power – Utilities Power Generation. Certificate (2017).
Chiller Plant Optimization. Certificate (2017).

DOT Hazardous Material Transportation Requlations 49CFR 100-185 Training and Certification. (2018)
Southeastern OSHA Training Institute/North Carolina State Univeristy 29 CFR 1910 General Industry Regulations (30 Hour OSHA Refresher Course 2023).

Forklift Operations, Forklift Safety, Forklift Maintenance and Forklift Troubleshooting:
»Worked for the Clark Equipment Company who invented the Forklift, Frontend Loader and BobCat and also designed and manufactured heavy earth moving machines and was the main competitor with Caterpillar. Machined, heat-treated and assembled complete drive train units and their components for Rough Terrain Forlifts and Rough Terrain Telescopicing Boom Cranes.
»Have over 1000+ hours of experience in the day-to-day forklift operations over a five year period from 1978 through 1983 which included material handling operations. Have inspection and operational experience with sitdown forklifts, standup narrow aisle reach forkilfts and electric and manual pallet jacks,. Always have a current up-to-date forklift operators certification for sitdown, stand up narrow isle forklifts, telehandlers and electric pallet jacks as well as the inspection of forklifts. Knowledgeble of forklift operations, forklift load center, forklift physics, telehandler forklift load charts, forklift safety and forklift inspections.
»OSHA Certifications on 29CFR1910 and 1926 (Powered Industrial Trucks 29CFR1910.178).
»ANSI/ITSDF B56 Standards Industrial Truck Standards Development Foundation.
»Forlkift Operation and Safety Certification (2014).
»Forlkift Operation and Safety Certification (2018).
»Forlkift Standup Electric Narrow Aisle Reach Forklift Train-The-Trainer Certification (2021).
»Forlkift Sit-Down Electric/Gasoline/LNG Forklift Train-The-Trainer Certification (2021).
»Pallet Jack Operation and Safety Certification (2021).
»Safe Handling and Maintenance of Forklift Batteries (2021).
»Telehandler Forklift Train-The-Trainer Certification (2021).
»Forklift Maintenance Certification (2021).
»Forklift Safety Certification..Better To Be Safe Than Sorry (2021).
»Forklift Troubleshooting and Technical Training (2022).

OSHA PPE General Industry and Construction Regulations:
»29CFR1910.132; 29CFR1910.133; 29CFR1910.134; 29CFR1910.135; 29CFR1910.136; 29CFR1910.137; 29CFR1910.138; 29CFR1910.139; 29CFR1910.140. 29CFR1910 Subpart Appendix A, B, C, D.; 29CFR1926.28 (a &b); 29CFR1926 Subpart E Personal Protective and Life Saving Equipment; 29CFR1926.95 – 107.

Cranes Operations and Operator Safety:
»Worked for the Clark Equipment Company who invented the Forklift, BobCat and also designed and manufactured heavy earth moving machines and was the main competitor with Caterpillar. Machined, heat-treated and assembled complete drive train units and their components for Rough Terrain Telehandler Forlifts and Rough Terrain Telescopicing Boom Cranes.
»Certified Overhead Bridge Crane Operator (2024).
Bridge Crane Inspector's Certification Training by Crane Tech. (2024).
Bridge Crane Operator's Certification Training and Train The Trainer Certification by Crane Tech (2024).
»Crane Safe LLC and Tier One Crane Load Charts, Inspections and Operators Training:
General Construction Crane Knowledge…Types of Cranes/Crane Carrier/Crane Superstructure/Critcal Lifts/Lift Plans/Dedicated Spotters/Crane Hand Signals/Crane Gantry/Jib a.k.a Fly/Winch Hoist Drum Flange Requirements/Types of Booms/Upper and Lower Load Block/Luffing/Slewing/Boom Mast/Crane Operational Aids/Outriggers/Pendants/Crane Controls/Load Moment Indicator/Crane Data Loggers/Boom Angle Indicator/Anti-Two Block Detection Systems/Crane Stability/Crane Work Areas/Lift Radius/Counter Weight System/Reeving/Wire Rope Design Factors and Replacement Requirements/Sheave Size Requirements/Wire Rope Becket/Rigging/Crane Physics/Crane Control/Range Diagrams/Crane Load Charts/Gross Lift Capacity/Net Lift Capacity/Crane Safety/Qualified Person/Compatent Person/Crane Testing/Crane Maintenance Requirements/Crane Inspection Requriements and Records/Crane Team Responsibilities/Personnel Lifting Requirements//Crane Operation Near High Voltage Powerlines and Burried Powerline/Crane Owner/Crane User/Lift Director/Assembly-Disassembly Director/Site Supervisor/Crane Operator.

Crane OSHA Regulations/Crane ASME and SAE Standards (2024).
Crane Load Charts and Exams (2024 and 2025)
Coming Up: Crane Field Operators Training (Hands-On Crane Operations…2025)

Crane Standards (ASME):

»ASME B30.1 Jacks, Industrial Rollers, Air Casters, Hydraulic Gantries.
»ASME B30.2 Overhead and Gantry Cranes Top Running Bridge, Single or Multiple Girder Top Running Trolly Hoist.
»ASME B30.3 Tower Cranes.
»ASME B30.4 Portable and Pedestal Cranes.
»ASME B30.5 Mobile and Locomotive Cranes.
»ASME B30.6 Derricks.
»ASME B30.7 Winches.
»ASME B30.8 Floating Cranes and Floating Derricks.
»ASME B30. 9 Slings.
»ASME B30.10 Hooks.
»ASME B30.11 Monorails and Underhung Cranes.
»ASME B30.12 Handling Loads Suspended From Rotocraft.
»ASME B30.13 Storage and Retrival (S/R) Machines and Associated Equipment.
»ASME B30.14 Side Boom Tractors.
»ASME B30.15 Mobile Hydraulic Cranes.
»ASME B30.16 Overhead Underhung and Stationary Hoist.
»ASME B30.17 Cranes and Monorails with Underhung Trolley or Bridge.
»ASME B30.18 Stacker Cranes.
»ASME B30.19 Cableways.
»ASME B30.20 Below The Hook Lifting Devices.
»ASME B30.21 Lever Hoist.
»ASME B30.22 Articulating Boom Cranes.
»ASME B30.23 Personnel Lifting Systems.
»ASME B30.24 Container Cranes.
»ASME B30.25 Scrap and Material Handlers.
»ASME B30.26 Rigging Hardware.
»ASME B30.27 Material Placement Systems.
»ASME B30.28 Balance Lifting Units.
»ASME B30.29 Self-Erecting Tower Cranes.
»ASME B30.30 Ropes.
»ASME B30.31 Self-Propelled, Towed or Remote Controlled Hydraulic Platform Transporters.
»ASME B30.32 Unmannned Aircraft Systems (UAS) Used In Inspection, Testing, Maintenance and Lifting Operations.

Crane OSHA Regulations:

»OSHA Regulations 29CFR1910.179 Overhead and Gantry Cranes.
»OSHA Regulations 1910.180 Crawler Locomotive and Truck Cranes,
»OSHA Regulations 29CFR1926.1427 (Cranes and Derricks in Construction - Operator Training, Certification and Evaluation).
»OSHA Regulations 29CFR1926.1430 (Cranes and Derricks in Construction).
»OSHA Regulations 29CFR1926.1400.
»OSHA 29CFR1926.550; 1400 (Cranes and Derricks in Construction).
»Canadian/Ontario OSHA Crane Regulations 851; 1060.

Crane Supporting Organizations:

»National Commission For The Certification of Crane Operators (NCCCO).
»Crane Institute of America.
»Specialized Carriers & Rigging Association.
»Association of Equipment Manufactures: Safety Manual For The Operation and Maintenance of Cranes.
»Naval Ships Technical Manual Chapter 589 Cranes.
»Mobile Power Crane and Excavator and Hydraulic Crane Standards No. 4.
»CSA Group National Standard of Canada CAN/CSA Z150.16 Safety Code on Mobile Cranes.
»CSA Group National Standard of Canada Z150.3

Mobile Elevating Work Platforms (MEWP):

»Groups A and B; Types 1,2 and 3 Machines.
»MEWP Operators Certification and Train-The-Trainer Certification (2021).
»ANSI/SAIA A92.24 Training Requirements for the Use, Operation, Testing and
»Maintenance of Mobile Elevating Work Platforms (MEWP) (2021).
. »Manual of Understanding and Responsibilities for MEWPs (2021).
»MEWP Maintenance Certification (2021).
»ANSI/CSA B354.7/B354.8 Mobile Elevating Work Platforms.

Amusement Park Ride Machines and Go-Karts:

Member of International Association of Amusement Parks and Attractions (IAAPA).
Attended the Operators Forum for the American With Disabilities Act.
ASTM F24 Committee Standards For Amusement Park Rides.

Gymnasium Strength Training Machines:

Active member of strength training gymnasiums since 1975.
Have an in-depth engineering knowledge of all types of gymnasium strength training machines, cardio exercise machines.
Use many types and brands of strength training machines for upper, middle and lower body muscle groups for upper, middle and lower body muscle groups and treadmills and cardio exercise machines.
Utilize free weights such as horizontal, incline and decline benches, military presses, leg-lifts, dumb-bells, keddle-bells, isometeric exercises and planking, pneumatic balls, foam rollers and cardio exercise machines.
Knowledgeable of maintenance, inspection, servicing of strength training machines while referring to operator, maintenance and parts manuals and safe use. Also knowledgeable of the ASTM and ISO for strength training equipment.

Tractor Trailer Driver's School Training:

Future Truckers of America; Asheboro, North Carolina (2018).
Full-Time Student; Four Week Class.
Road Tractor Training Vehicle: Volvo with sleeper Berth; 53 foot van and 53 foot flatbed trailers.
Tranmission: Eaton 8 speed with high/low range switch.
Graduation Datte: April 19, 2018.
Class A Commercial Drivers License North Carolina 3744851
Endorsements: Tanker, Hazardous Materials, Triples, School Buses and Passenger Buses.
Truck Pro: Commercial Tractor Trailer Truck Air Brake Seminar (2017).
The Smith Driving Systom (2018).
Injury Prevention For CMV Drivers (2024).

North Carolina Public School Bus and Passenger Bus Training:

Former Substitute/Part-Time School Bus Driver for the North Carolina/Guilford County Department of School Transportation.
Class A Commercial Drivers License North Carolina 3744851; Endorsements for Passenger and School Buses.
North Carolina School Bus and Passenger Bus Classes (2018).
School Bus Driver's Training (2018).
Emergency Drug Administration Training.
School Bus: Type C 2001 Thomas Built Bus Full-Size Bus 57 Student Capacity.
Brake System: Air Brakes.
Automatic Transmission.
Engine: 3126 Caterpillar Medium-size In-Line Six Cyliner Diesel Engine.
OSHA Regulations For School Bus Drivers.
School Bus Safety Expert.

Traffic Accident Reconstruction and Vehicle Product Defect and Failure Analyses:

North Carolina State University: Machine Design, Dynamics and Mechanics of Machines and Vehilces, Motor Vehicle Traffic Crash Reconstruction Sciences. BSME (1990).
Northwestern University Research in Traffic Accident Reconstruction (2003).

Institute For Police Techology and Management Research in Traffic Accident Reconstruction (2010).
National Academy of Forensic Engineers: Forensic Engineering Seminars (2005, 2006, 2012, 2014).
Collision Safety Institute: Automotive Crash Research Testing & Training. Certification (2006).
Collision Safety Institute: Bosch Diagnostics Crash Data Retrieval System Download and Analyses Training and Certification (2006).
iWitness Close Range Photogrammetry. Certificate (2008).
Insurance Institute for Highway Safety and Highway Loss Data Institute: Vehicle Crashing Test Comparisons and Ratings. Seminar (2011).
Chief Automotive Technologies: Vehicle Construction Technology and Trends. Seminar (2011).
ARC-CSI Vehicle Crash Conference Crash Data Retrieval Systems Summit Houston Texas. Certificate. Vehicle were crash tested at these summits. (2011, 2013).
Aras 360 HD/Reality 4 day Crash Simulation training Course. Certificate (2014).
Engineering Dynamics Corporation: Advanced Vehicle Dynamics and Crash Simulation 5 Day Course. Certification (2015).
ARC-CSI Boot Camp and Crash Conference; Crash Testing of Motor Vehilces. Certificate (2015).
ACTAR Examination Preparation Course (2015).
Northwestern University – Traffic Crash Investigation/At-Scene Investigation/Evidence Mapping (2015)
Northwestern University – Pedestrian Vehicle Crash Reconstruction (2016).
National Association of Professional Accident Reconstruction Specialist (NAPARS);
Crash Reconstruction Training (2020):

- »Motorcycle Crash Reconstruction
- »Motor Vehicle Rollover Anaiysis and Reconstruction
- »Motor Vehicle Crash Testing
- »Perception/Response Time Studies in Various Types of Motor Vehicle Crashe
- »Chip-Level Crash Data Recovery
- »Motor Vehicle Tires Tire Forensics Inspection and Tire Analyses – Instructor TJ Tennant
- »Using New Freightliner Electronic Control Module Engine Run Data

Crash Reconstruction Training (2021):

- »Crash Scene Mapping and Documentation
- »Critical Speed Yaw
- »CDR Updates
- »Conservation of Linear Momentum
- »Motor Vehicle Tires Tire Forensics Inspection and Tire Analyses
- »Crash Reconstruction Energy Methods
- »Motor Vehicle Crash Testing

Crash Reconstruction Training (2022):

- »Bendix Pro Brake System
- »Vehicle Spin Analysis
- »Vehicle Dynamics

Crash Reconstruction Training (2023):

- »Aerial Photogrammetry
- »Advanced Motorcycle Crash Reconstruction Training

World Reconstruction Expostion (WREX 2023…5 Days of Training) (2023):

- »A Historical Perspective on Technogy in Reconstruction Then and Now
- »The Future of Reconstcruion…Data Driven
- »Video Analysis in Collision Reconstcruion
- »Next Generation General Motors ACM-EDR's/ASCM's
- »Commercial Vehicle Collision Mitigation Systems
- »EDR Accuracy of Modern Vehicles
- »ATV Collision Investigation
- »Kawasaki Motorcycle EDR's
- »Outside Instructors of Various Reconstruction Technologies
- »Autopsy of Primus Biofidelic Crash Text Dummy
- »High Speed Testing of Forward Collision Warning and Advanced Driver Assisted Systems
- »Automobile Test Equipment for DTC's and Pre-Crash Data Sources
- »Working with GoPro and GPS Data
- »Crash Testing and Forward Collision Warning and Advanced Driver Assisted System Testing
- »Crash Data Analysis From Crash Testing and Forward Collision Warning and Advanced Driver Assisted System Testing Data Analysis

Commecial Tractor Trailer Truck Accident Reconstruction and Vehicle Product Defect and Failure Analyses:

SAE Tractor-Trailer Event data Recorder Symposium (2011).
North Carolina Commercial Drivers Licence (Class-A CDL) for Driving and Operating Commercial Tractor-Trailer Trucks License Number 3744851. Endorsements: Tanker, Triples, Passenger Bus, School Bus and Motorcycle.
DOT Hazardous Material Transportation 49CFR 100-185 Training and Certification (2018).
North Carolina School Bus Training; have Passenger and School Bus Endorsements (2018).
Northwestern University – Commerical Truck Crash Reconstructiion and Air Brake Systems (2016).
Truck Pro: Commercial Tractor Trailer Truck Air Brake Seminar (2017).
Northwestern University – Commerical Truck ECM Data Imaging and Analyses (2017).
Texas Association of Accident Reconstruction Specialist – Adavanced HVEDR Systems (2022).
DOT Hazardous Material Commercial Transportation Requlations 49CFR 100-185 Training and Certification. (2018).
Technology & Maintance Counsel Technicians Meeting on Air Brake Systems Presented By MERITOR and WABCO (2018).
Texas Association of Accident Reconstruction Specialist – Adanced Commercial Heavy Vehicle Event Data Recorder Systems (2022).

Motorcycle Riding and Training:

Avid motorcyclist for over 53 years riding both trail, motocross and street motorcycles.
Owned and operate 15 motorcycles to date.
Currently own and ride one street motorcycle: 2012 Harley-Davidson CVO Road Glide.
Dirt Bike Motocross Racing/Trail Riding: 1969 – 1974.
Motorcycle Safety Foundation: Advanced Rider's Training. Certification (2002).
Harley Owners Group: Chapter 3446 Group Riding Class. Certificate (2004).
Big Bear Choppers: How To Build a Custom Motorcycle (2009).
Bike Safe North Carolina – Instructed by the Cary Poilce Department in cooperation with the North Carolina Highway Patrol. Certificate (2013).

All-Terrain Vehicle (ATV) and Recreational Off-Highway Vehicle (ROV) Riders Training:

Owned and operated a 2007 Honda FourTrax TRX 420 TE/FE Rancher with Front Articulating Blade Attachment for Pushing Soil and Snow.
ATV Safety Institute - ATV Rider Course: ATV Rider Certification (2007).
Recreational Off-Highway Vehicle Association (ROHVA) Riders Certification (2018).

PROFESSIONAL ENGINEERING LICENSURE

- North Carolina Board of Examiners for Engineers and Surveyors
  Professional Engineer License Number (027030).
  Professional Corporation License Number (C-2279).
  Original Issue Date: 06/25/2001
- Florida Board of Professional Engineers
  Professional Engineer License Number (66186).
  Original Issue Date: 05/21/2007
- South Carolina Board of Registration for Professional Engineers and Land Surveyors
  Professional Engineer License Number (25937).
  Original Issue Date: 08/29/2007
- Georgia State Board of Registration for Engineers and Surveyors
  Professional Engineer License Number (PE032652).
  Original Issue Date: 12/14/2007
- Louisiana Professional Engineering and Land Surveying Board
  Professional Engineer License Number (33528).
  Original Issue Date: 11/27/2007
- Tennessee Architect and Engineering Board
  Professional Engineer License Number (00111899).
  Original Issue Date: 12/26/2007
- Virginia Board For Architechs, Professional Engineers and Land Surveyors
  Professional Engineer License Number (0402046851).
  Original Issue Date: 09/28/2009
- New Jersey Board of Examiners for Engineers and Surveyors
  Professional Engineer License Number (24GE04845900).

Original Issue Date: 02/02/2010

- Washington DC Board of Professional Engineers
  Professional Engineer License Number (PE905690).
  Original Issue Date: 05/27/2010
- West Virginia State Board of Professional Engineers
  Professional Engineer License Number (18874).
  Original Issue Date: 10/25/2010
- Mississippi Board of Licensure for Professional Engineers and Surveyors
  Professional Engineer License Number (20194LTD).
  Original Issue Date: 04/30/2011
- Maryland State Board of Professional Engineers.
  Professional Engineer License Number (43433)
  Original Issue Date: 03/27/2013
- Wisconsin State Board of Professional Engineers
  Professional Engineer License Number (48944-6)
  Original Issue Date: 12/29/2021
- Illinois Department of Financial and Professional Regulation
  Professional Engineer License Number (062.073761)
  Original Issue Date: 01/28/2022
- The University of the State of New York, Education Department
  Office of the Professions
  Professional Engineer License Number: 105580-01
  Original Issue Date: 02/07/2022
- Kentucky State Board of Licensure for Professional Engineers and Land Surveyors
  Commonwealth of Kentucky
  Professional Engineer License Number: 39017
  Original Issue Date: 07/10/2023
- Alabama State Board of Licensure for Professional Engineers and Land Surveyors
  Professional Engineer License Number: PE3638
  Original Issue Date: 01/18/2024

PROFESSIONAL SOCIETY MEMBERSHIPS

- American All-Terrain Vehicle Association (Since 2006).
- American Motorcyclist Association (Since 2006).
- American Society of Mechanical Engineers (Since 2002).
- Harley Owners Group (HOG) (Since 2001).
- International Association of Amusement Parks and Attractions (Since 2016).
- National Academy of Forensic Engineers (Since 2002).
- National Association of Professional Accident Reconstruction Specialists (Since 2003).
- National Society of Professional Engineers (Since 1999).
- Society of Automotive Engineers (Since 2008).

OFFICES HELD

- Member of NSPE/PENC since August 16th 1999.
- PENC Chapter Secretary (1999-2000).
- PENC Chapter President – North Piedmont Chapter (2002-2003).
- PENC Chapter Treasurer and Secretary (2003-2004).
- PENC Chapter Vice President, President Elect and Chapter Governor (2007-2008).
- PENC Chapter President, Chapter Govenor, Programs Chairman (2008-2009).
- PENC National Engineer's Week Chairman (2009-2011).
- PENC Programs Chairman (2009-2010).
- PENC Chapter Governer (2011-2012).
- PENC Director (2012 – 2015).
- PENC Mentorship Program (2020 - Present).
- Mathcounts Volunteer (Perpetual).

PUBLIC SPEAKING EXPERIENCE

- Dale Carnegie Course Public Speaking.

- College Public Speaking Classes.
- Industrial Classroom Teaching.
- Deposition and Court Trial Testimony.
- National Engineer's Week – Various Local Middle Schools.
- National Society of Professional Engineers Presentations.
- Society of Manufacturing Engineers Presentations.
- National Academy of Forensic Engineers Presentations.

PRESENTATIONS/TEACHING

- Mathematics Teacher For Koyo Corporation (1996-1997)

Taught basic math to potential hourly employees for the purposes of screening for future employment as machinist. Created math text and testing materials for classroom use.

- Society of Manufacturing Engineers – Subject Forensic Engineering (2004).
- Professional Engineers of North Carolina – Subject Forensic Engineering (2007, 2008, 2014, 2017).
- Raleigh-Wake County Paralegal Association – Subject Forensic Engineering (2007).
- Guilford County Paralegal Association – Subject Forensic Engineering (2007).
- Casualty Insurance Adjusters Various Chapters – Subject Forensic Engineering (2007).
- North Carolina Paralegal Association – Subject Forensic Engineering (2008).
- Local Middle Schools – National Engineer's Week – Subject Engineering Profession (2005-2009).
- North Carolina State University ASME Student Section. Subject Forensic Engineering (2009).
- Piedmont Community College – Subject Forensic Engineering (2009).
- National Engineer's Week – Subject Careers in Engineering and What Engineers Do (2004-2009).
- Professional Engineers of North Carolina – Subject NASA's Saturn V Moon Rocket (2010).
- IADA Conference – Vehicle Crash Data Retrieval and Traffic Accident Reconstruction (2011).
- National Academy of Forensic Engineers – ATV Accidents (2012, 2014).
- Professional Engineers of North Carolina – Motor Vehicle Crash Reconstruction (2017).
- Professional Engineers of North Carolina – Working as a Forensic Engineer (2023).

WRITING EXPERIENCE

- Industrial operation, training and maintenance manuals for various companies.
- ISO 9001: 1994; ISO 9001: 2000 documentation for various companies.
- Presentations.
- Forensic Engineering State and Federal Court Expert Reports.

TECHNICAL PAPERS AND PUBLICATIONS TO DATE

- The Physics of a Collision White Paper (2006).
- Product Design, Product Manufacturing and Product Quality Control White Paper (2012)
- Forensic Engineering Analysis of Hazards Associated with Operating an ATV by a Paraplegic (NAFE 2012).
- Forensic Engineering Analysis of an ATV Accident Involving Two Riders on a Type 1 ATV Designed for One Driver and No Passengers (NAFE 2013).

FORENSIC ENGINEERING CASE WORK LITIGATION EXPERIENCE TO DATE

Industrial Accident Investigation/Reconstruction:

- Industrial Accidents/OSHA Safety/Machine Gurading/Hazard Investigations/ Product Defect and Failure Analysis Investigations:
  - »All OSHA 29CFR1910, 1926 and 1928 Industry Safety Regulations and
  - »Applicable ANSI, ISO, ASME, UL, ASTM Standards.
  - »Workmans Comp Claims.
  - »Poultry Process Equipment Accidents FDA/cGMP.
  - »Complexor Take-Up Machine Accidents.
  - »Home Appliance Failures.
  - »Earth Moving Machines.

»Underground Mining Equipment.
»Farming Equipment and Tractor Accidents.
»Forage Harvester Accidents.
»Lawn Mower Accidents.
»Soil Aerator Accidents.
»Forklift Accidents – Sitdown, Standup Narrow Isle, Truck Mounted/Piggyback Forklifts and Telehandlers.
»Pallet Jack Accidents.
»Overhead Bridge Crane Accidents.
»Construction Crane Accidents.
»Mobile Crane Accidents and Component failures.
»Crane Speaderbar Lifting Test Waterbag Accidents.
»Mobile Elevating Work Platforms (MEWP) Including Man Articulating Boom Lifts and Man Scissor Lifts Accidents.
»Belt Conveyor Accidents.
»Overland Belt Conveyor Accidents.
»Power Cord Accidents.
»Hand Operated Tools.
»Staple Gun Accidents.
»Subtractive Machining Operator Safety and Practice.
»CNC Machine Program Coding for Component Production.
»CNC Multi-Axis Machining Centers.
»Machine Guarding.
»Shipping/Receiving/Loading Docks.
»Lockout/Tagout Requirements.
»Process Equipment Maintenance and Standards of Care.
»Product Defect and Failure Analyses.
»Product Safety Signs, Symbols, Warnings and Labeling.
»Many other types of industrial process equipment and standards of care.
»Powerline Cable Lifting Accidents.
»Machine Guarding Accidents.
»Fabric Rollup Machines Accidents.
»Scaffold Failures.
»Ladder Failures.
»Orchard Ladder Inspection Failure Accidents.
»Folding Bench Accidents.
»Belt Sanders Accidents
»Power Saw Accidents.
»Automatic Storage and Retrieval Systems (AS/RS)(AGV) Forklift Accidents.
»Ladder Accidents.
»Loading Dock Accidents - Dock Lift, Dock Leveler and Dock Plate Accidents.
»Power Plant Accident Investigations.
»Power Tool Accidents: Belt Sanders, Radial Miter Saws.
»Exercise Strength Training Equipment Accidents.
»Lawn Mower Accidents.
»Lawn Aerator Accidents.
»High Voltage Power Line Tower Structures Failure Accidents.
»Product Safety Signs, Symbols, Warnings and Labeling.
»ANSI Z535 Labeling Standards.
»Product Safety Information in Product Manuals, Instructions and Other Collateral Materials.
»Wood Working Machine Accidents.
»Abrasive Shotblaster Accidents.
»Motor Vehicle Coil Spring Compressors Accidents.
»Industrial Piping Systems.
»Electric Utility Cable Reel Machines.
»Solenoid Control Valve.
»Home Water Pipe Rupture.
»Pressure Washer Accidents.
»Coulking Gun Failure.
»Abrasive Shot Blasting Equipment Accidents.

»Warehouse Dock Leveler Accidents.
»Commercial Rug Hanger Failure.
»Industrial Trip and Fall Case – Drainage Pit
»Bushhog Accidents.
»Farming Chemical Warehouse Inspection.
»Exercise Equipment Failures.
»Poultry Processing Equipment Accidents.
»Power Generation Steam Pipe Valve Accident.
»Tractor Trailer Landing Gear Failure.
»Loading Dock Tractor-Trailer Separation Accidents.
»Automotive Hydraulic In-Ground Garage Jacks.

- **Forklift Industrial Accidents:**
  - »OSHA Regulations and Safety Pertaining to Forklifts 29CFR1910.178.
  - »Product Defect and Failure Analyese for Forklifts.
  - »Forklift Accidents – Sitdown, Standup Narrow Isle, Truck Mounted/Piggyback Forklifts and Telehandlers.
  - »Electric Pallet Jacks Accidents.
  - »Electric Walk-Behind Forklift Accidents.
  - »Electric Walkie Straddle Stacker Forklift Accidents.
  - »Forklift Safety and Proper Operation.

- **Crane Accidents:**
  - »Crane Speaderbar Lifting Test Waterbag Accident.
  - »Mobile Hydraulic Swing Cab Truck Crane a.k.a All Terrain Crane (AT)….
    …Counterweight Holding Cylinder Failure and Roll-Over Accident.
  - »Crawler Latice Boom Crane Accident/Boom Disassemly Death/Wrong Boom Pins.
  - »Grapple Loader Truck ….Stabilizer Foot Crush Accidents.
  - »Commercial Truck Mounted Crane Telescoping Boom a.k.a Boom Truck….
    ….Roll-Over Accident.

- **Mobile Elevating Work Platforms (MEWP) Including Articulating Boom Lifts and Scissor Lifts.**
  - »OSHA Regulations and Safety Pertaining to MEWPs.
  - »ANSI/SAIA A92 MEWP Standards.
  - »Product Defect and Failure Analyese for MEWPs.
  - »MEWP Accident Investigations.

Amusement Park Ride Machine Accidents

»ASTM F24 Standards for Amusement Park Rides.
»Product Defect and Failure Analyses.
»Go-Kart Crashes with Go-Kart Inspection.
»Samba Balloon Ride.
»X-Factory Ride.
»Musical Ferris Wheel.
»Watkins Swinger Amusement Park Ride.
»Chance Rock-N-Roll Ride.

Gymnasium Strength Training Machines

»Stair Climber Machine Failure.
»Strength Training Machine Injuries and Failures.
»Maintenance, Servicing and Care of Strength Training Machines.

Motor Vehicle Crash Reconstruction

Traffic Crash Reconstruction involving cars, light trucks, school buses, bicycles, heavy commercial trucks, motorcycles, bicycles and pedestrians.

»Criminal Capital and Felony Death By Motor Vehilce.
»School Bus Crash Reconstruction.
»School Bus Video Anaylsis.
»Pedestrian Crash Reconstruction.

»Product Defect and Failure Analyses.
»At-Scene Investigation and Evidence Mapping.
»Slow and High Velocity Collisions, Drag Factor, Skid Analyses, PDOF, ΔV, Closing Velocity, Conservation Linear and Angular Momentum, Conservation of Mechanical Energy, Crush Damage Analyses, Crush Energy, Critical Velocity and Circular Motion, Dynamic Weight.
»Vehicle Inspections.
»Cars and Pickup Truck Crash Reconstruction.
»Car/Light Truck Event Data Recorder (EDR) Report Imaging, Analysis and Interpretation.
»Commercial Tractor Trailer Truck Crash Reconstruction.
»Commercial Tractor-Trailer Truck Electronic Control Module (ECM) Operational Data Imaging , Analysis and Interpretation.
»49 CFR 40, 303, 325, 350-399 Federal Motor Carrier Safety Regulations.
»49CFR 100-185 DOT Hazardous Materials Regulations.
»Shift, Falls, Flips ,Vaults, Rollovers.
»Lamp Filament Analyses.
»Airbag Operation and Failure Analyses.
»Seat Belt Operation and Failure Analyses.
»Motor Vehicle Product Defect and Failure Analyses.
»Motor Vehicle Inspections.
»Vehicle Standards of Care.
»Engine Failure.
»Vehicle Crash Testing.
»Vehilce Braking and Skid Testing.
»Suspension System Failures.
»Vehicle Suspension and Handling Testing.
»Cars and Pickup Truck Crash Reconstruction.
»Car/Light Truck Event Data Recorder (EDR) Report Imaging, Analysis and Interpretation.
»Motorcycle and Bicycle Crash Reconstruction.
»Commercial Tractor Trailer Truck Crash Reconstruction.
»Commercial Tractor-Trailer Truck Electronic Control Module (ECM) Operational Data Imaging , Analysis and Interpretation.
»Commerical Vehicle Maintenance and Standards of Care.
»Commercial Heavy Truck Air Brake Systems.
»Commercial Trailer Inspection.
»49 CFR 40, 303, 325, 350-399 Federal Motor Carrier Safety Regulations.
»49CFR 100-185 DOT Hazardous Materials Regulations.
»Public School Bus Crash Reconstruction.
»Motor Vehicle Product Defect and Failure Analyses.
»Motor Vehicle Inspections.
»Vehicle Standards of Care.
»Vehicle Crash Testing.
»Vehilce Braking and Skid Testing.
»Vehicle Suspension and Handling Testing.
»Suspension System Failure Accidents.
»Coil Spring Compressor Accidents.
»Cement Truck Crash Accidents.
»Van Vehicle Seat Failures.
»Recreational Vehicle (RV) Inspections.
»Tractor Trailer Landing Gear Failure.
»Loading Dock Tractor-Trailer Separation Accidents.

Motorcycle and ATV/ROV/UTV Crash Reconstruction and Product Defect and Failure Analyses

»At-Scene Investigation and Evidence Mapping.
»Slow and High Velocity Collisions, Drag Factor, Skid Analyses, PDOF, ΔV, Closing

Velocity, Conservation Linear and Angular Momentum, Conservation of Mechanical Energy, Crush Damage Analyses, Crush Energy, Critical Velocity and Circular Motion, Dynamic Weight.
»Violation of Right Away Crashes.
»Crash Site Inpsections.
»Product Defect and Failure Analyses.
»Pedestrian Crash Reconstruction.
»Vehicle-Bicycle Crash Investigation.
»Shift, Falls, Flips ,Vaults, Rollovers.
»Dirt Bike Accidents.
»Tire Deflation Failures.
»Lamp Filament Analyses.
»Brakes Failures.
»Engine Failures.
»Engine Cylinder Head Failures.
»Engine Throttle Failures.
»Handlebar and Frontend Failures.
»Electrical Charging System Failure.
»All Terrain Vehicles (ATVs) /Recreational Off-Highway Vehicle (ROV)/Utility Vehicle (UTV) Crash Reconstruction.
»Recreational Off-Highway Vehicles (ROVs) Crash Reconstruction.
»ATV Throttle Failures.
»ATV and Utility Guy Wire Collsion Accidents.
»ATV Wheel Knuckle Failures.
»ATV Ball Joint Failures.
»ATV Recoil Starter/Compression Release Inspection.
»ATV Loading Ramp Accident and Analysis.
»(ATV) All Terrain Vehicles Crashes and Rollover Reconstruction.
»(ROV) Recreational Off-Highway Vehicles Crash and Rollover Reconstruction.
»Motorcycle Front Fork Failures.
»Motorcycle Front End Wobble.
»Motorcycle and ATV Inspections.
»Motorcycle and ATV Standards of Care.
»Motorcycle Crash Testing.
»Motorcycle Braking and Skid Testing.
»Motorcycle and ATV Suspension and Handling.
»Bicycle Component Failures.
»Motorcycle Tailbag Inspection.

WORK EXPERIENCE

06/02 to Present — **THE KILPATRICK GROUP, PA, JAMESTOWN, NC**

Provide forensic engineering services as an expert witness to law firms, public defenders and Insurance companies and testify under oath in depositions and trials in state and federal courts.

2/05 to 7/06 — **K&S TOOL AND MANUFACTURING COMPANY HIGH POINT, NC**

Quality Control, Process Engineering, Maintenance and Safety Manager

ISO 9001:2000 registered contract manufacturer of machined, formed, punched, fabricated, welded and assembled parts and subassemblies. CNC machined, formed and fabricated, welded and assembled component parts and subassemblies for client companies.

Managed the quality control department and had supervisory responsibilities. Responsible for the ISO quality system, quality manual and other similar documentation and files. Involved in APQP and PPAP for special customers. Made changes and updates to the quality system as needed. Acted as ISO management representative for the company. Organized and scheduled training sessions for company employees on matters of ISO 9001:2000 standards, OSHA safety, human factors and newly hired employees. Managed and performed monthly internal quality audits on quality system elements. Lead and motivated employees to quality check their product. Performed first article inspections with report documentation for both customers and

employees utilizing company measuring equipment. Created, followed up, closed and filed quality action plans, corrective action reports, preventive action reports, continuous improvement reports and other similar documentation. Also managed the maintenance program.
Assisted in the design of a bearing press machine for functionality, safety and human factors.
Managed and documented all maintenance activities and schedules. Hands-on from time to time.
Managed the installation of all purchased and incoming machinery.
Managed all facility related matters concerning building maintenance, HVAC and electric utilities.
Acted as resident company engineer in all engineering matters including plant engineering, machine and tool design and OSHA 29CFR1910 safety audits and OSHA regulations.
Was company Safety Manager. Created and distributed plant facility evacuation charts.
Performed safety audits on all plant facilities and equipment including kinetic energy punch presses, hydraulic presses, automatic laser cutting machines, vibratory media deburring and cleaning equipment; press brakes, automatic robotic welding machines, CNC machining centers (lathes) and hazardous chemicals including water based metal cutting coolants and petroleum based oils. Managed the distribution of MSDS and audited all MSDS books. When a safety issue was discovered, the safety issue was corrected.
Worked with the shipping/receiving department regarding the inspection and management of damaged containers and product that were received from domestic and over seas companies.
(Worked for K&S Tool temporarily to earn capital funds for The Kilpatrick Group, PA.)

7/01 to 6/02

SPHERION GREENSBORO, NORTH CAROLINA
Process Verification-Validation Engineer (Contract Engineering)

Provided engineering services to Bristol Myers Squibb, a manufacturer of ostomy, wound care products and pharmaceuticals.
Assisted in the modification and retrofit of production machinery for ostomy pouch manufacturing. Created and implemented process validation protocals IQP, PQP, OQP and DOE and statistical methods with reports per FDA GHTF and cGMP guide lines for approval to launch MK4 ostomy pouch process into production.
Provided engineering support to a new prototype Digital Label Printing Line. Benchmarked the process, gathered downtime data, trouble-shooting of equipment designs, and made recommendations to engineering manager on how to improve uptime. Decreased downtime by 40%. Created written PM schedules and trouble-shooting guides.
Designed and installed a protective cover for a 15 watt class 4 marking laser to meet OSHA, ANSI and ISO safety requirements of a class 1 laser. (Contract assignment was completed)

10/99 to 04/01

ERICO INCORPORATED ABERDEEN, NORTH CAROLINA
Mechanical Design/Manufacturing/Process Engineer

ISO-9002 and UL Listed manufacturer of grounding, electrical and structural support systems for the residential and commercial construction industry. Utilized Microsoft computer software and AutoCad 14 extensively.
Expedited and managed capital and expense projects, cost reduction, continuous improvements integration of OSHA 29CFR1910 safety requirements for ergonomic and lean manufacturing which included spot welding, wire drawing, copper plating, rod straightening, rollforming, and kinetic energy punch presses and cut-to-length operations. Used Six Sigma, SPC, problem solving, root cause analysis techniques, lean manufacturing, PFMEA, DFMEA, APQP, QIP, CIW and Kaizen extensively.
Established and led cross-functional teams for Centers of Excellence throughout the corporation. Established and led Six Sigma, QIP, CIW and Kaisen teams to reduce downtime, increase productivity, train personnel in lean manufacturing techniques, equipment operation theory and preventive maintenance. Developed and implemented a Six Sigma based statistical process and quality control system (SPC) for all departmental processes. Documented and tracked all project time lines, cost, cost savings, downtime reduction and process improvements. Monitored production schedules, inventories, production issues, product scheduling, and scrap levels. Communicated with production scheduler and production manager concerning production runs and production concerns. Created and controlled line documentation such as process flow mapping, work instructions, quality standards instructions, tooling specifications, tooling layouts and control plans.

Coordinated and relocated a complete automated roll forming line from Ohio to the North Carolina facility.
Redesigned blanking press die tooling for 75 ton Minster OBI strut pre-notch punch presses. Implemented SMED. Installed safey blocks required by OSHA 29CFR1910. Installed a coolant spray system to add lubricity to a formally dry punching operation. Human factors studies were performed during the design process. These changes increased tool life three times and reduced replacement tooling cost achieving a total yearly cost savings of $100,000. As a result of these continuous improvement projects, reversed a negative $110,000 per month variance to a positive $40,000 per month variance and reduced setup time by 75%.
Designed and installed an enclosed in-process automated spraying system to apply a rust preventative to strut products to eliminate oxidation problems creating a superior product compared to the competition and met all OSHA 29CFR1910 safety requirements.
Redesigned Flexibar assembly tooling to eliminate scrap and customer claims and achieved a yearly cost savings of $20,000.
Designed and supervised the installation of a hazardous chemical containment area for the storage of acids, bases and oxidizers per OSHA 29CFR1910 hazardous material regulations.
Designed a 30 foot belt conveyor for strut operations with an ergonomic and easy-to-use automatic ejection mechanism to replace an existing manual conveyor and saved $8000.00 by designing and building it in-house. The conveyor was guarded to meet OSHA 29CFR1910 regulations. Human factors studies were performed during the design process.
Performed a complete design load and stress analysis on an existing in-house fabricated coil positioning hook per ASME B30.20 Below-The-Hook Lifting Device standard. This lifting device was used for transferring 6500 pound sheet metal rolls from pallet to process equipment. It was determined that the lifting device design had not been tested by a second party testing lab and did not have the ASME B30.20 required data plate. The lifting device was permanently removed from service and replaced with a commercially available coil positioning hook.
Trained operators on how to setup and use a spot welder to increase quality and production.
Managed projects and key hourly personnel to expedite and facilitate project work phases to completion. Involved in hands-on maintenance of process and material handling equipment.
Managed spare parts and tooling inventories for two separate facilities.
Member of the Safety Committee. Performed safety audits to enforce OSHA 29CFR1910 regulations of the facility, process, warehouse and material handling machinery and to assure ergonomic working conditions and the use of personal protective equipment. Reported findings to committee members with recommendations. Worked with the safety committee, created and implemented an OSHA 29CFR1910.147 compliant Lock-Out/Tag-Out system for the facility.
Redesigned floor layout for Flexibar process relocation. Redesigned floor layout of maintenance and tool room areas. Redesigned warehouse layout for relocation and steel coil storage and FIFO.
Investigated an accident involving a 75 ton Minster punch press and rollformer.
(Due to a 90 mile commute to work one way and rising fuel prices, resigned position to accept a contract engineering position with Spherion)

2/98 to 7/99

GKN AUTOMOTIVE ROXBORO, NORTH CAROLINA

Automotive Engineer/Mechanical Design/Manufacturing/Process Engineer

Manufacturer of automotive constant velocity half shaft assemblies. Responsibilities included expediting and managing capital projects, cost reduction, continuous improvement, ergonomic integration of OSHA 29CFR1910 safety requirements for the assembly of automotive constant velocity half shafts in a Tier 1, ISO9001 and QS9000 facility.
Utilized Japanese philosophies of Kaizen, Poka Yokes, Zero Defects, Brainstorming, Waste Elimination, 5-S, FMEA, lean manufacturing and Kan Ban material control systems. Used Six Sigma, problem solving and root cause analysis techniques extensively.
Extensively utilized a Six Sigma based statistical process and quality control system (SPC) for all assembly cells. Documented and tracked all project time lines, cost, cost savings, downtime reduction and process improvements.
Created and controlled line documentation such as process flow mapping, work instructions, quality standards instructions, tooling specifications, tooling layouts, control plans and SPC documents.
Designed and built special ergonomic assembly tooling and fixturing that met OSHA 29CFR1910 regulations for continuous improvement and new program launches. Human factors studies were performed in the design process. Monitored production schedules,

inventories, production issues, product scheduling, scrap levels and communicated with production coordinators concerning production runs and production concerns. Processed ECN's in department.

Was directly responsible for the hands-on repair and maintenance of assembly equipment, machine downtime tracking and improvement flashes across three shifts 24 hours per day. Coordinated maintenance activities with maintenance manager. Was directly responsible for ordering and inventories of all machine component maintenance items, new program, improvement design and replacement tooling. Facilitated and managed quality improvement processes and continuous improvement workshops with respect to each cell, it's operators and equipment.

Managed the installation of new assembly cells for new program launches. Inspected and assessed equipment to meet safety requirements of OSHA 29CFR1910 regulations. Performed machine capability studies, PSW, product master samples, tooling plans, control plans and documented changes for PPAP submission to customers. Created all line documentation for process production launches.

Heavily involved in hands-on maintenance of process and material handling equipment.

5/97 to 1/98

COPELAND CORPORATION HARTSELLE, ALABAMA

Mechanical Design/Manufacturing/Process Engineer

Manufacturer of residential HVAC refrigeration compressors. Manufacturing process machines included: CNC multi-axis machining centers, dial machines, milling machines, boring machines and assembly. Responsibilities included expediting and managing capital projects; cost reduction; continuous improvement; ergonomic integration of OSHA 29CFR1910 safety requirements for machining aluminum pistons and rods, cast iron cylinders blocks and heads.

Utilized Japanese philosophies of Kaizen, Poka Yokes, Zero Defects, Brainstorming, Waste Elimination, 5-S, FMEA, ergonomic lean manufacturing. Used Microsoft computer software extensively and AutoCAD for design purposes.

Redesigned a two machine 4-axis CNC work cell eliminating 3 operators saving $94,000 in direct labor cost. Human factors studies were performed in the design process. Assisted in the redesign of all compressor bodies for more efficient work holding. Redesigned CNC machining center work holding clamps to match the body redesign for scrap reduction. Processed ECN's in department for product design changes.

Heavily involved in hands-on maintenance of process equipment.

Created work instructions, machinery setup instructions and machinery operation parameters. Created bid packages for capital equipment quotation, cost justifications, appropriations requests. Coordinated maintenance activities with maintenance manager.

(Due to future marriage and relocation, resigned position to accept new position with GKN Automotive)

2/95 to 5/97

KOYO BEARINGS ORANGEBURG, SOUTH CAROLINA

Automotive Engineer/Mechanical Design/Manufacturing/Process Engineer

Manufacturer of high performance automotive wheel bearings. Manufacturing process machines included: CNC multi-axis machining centers, ID and OD surface grinders, drilling and tapping machines, heat-treatment and assembly. Responsibilities included expediting and managing cost reduction, and continuous improvement projects, integration of OSHA 29CFR1910 safety requirements for CNC turning (lathes), grinding and automatic assembly of SAE1055 and SAE 52100 steel bearing inner and outer rings.

Utilized Japanese philosophies of Kaizen, Poka Yoke, Zero Defects, Brainstorming, Waste Elimination, 5-S, FMEA, ergonomic lean manufacturing and Kan Ban material control systems. ISO9002 certification was awarded to Koyo during May of 1996. Was heavily involved with documentation development for certification.

Extensively utilized automated statistical process and quality control system (SPC) which was built into all manufacturing processes.

Traveled to Osaka, Japan to prove off $6,500,000 of capital equipment including completely automatic CNC Murata MW series and LE type Miyano two axis turning centers (lathes), Koyo and Toyo shoe type centerless grinders and plunge type forming grinders and automated assembly machines. Personally performed floor lay out and supervised equipment installation upon arrival. Assisted in the creation of work instructions, quality standards instructions, tooling specifications and tooling layouts for processes.

Performed continuous improvements of bearing manufacturing process through extensive carbide insert and grinding wheel testing. Saved Koyo $157,000 per year in tooling cost by changing metal cutting fluids and through carbide insert testing.
Heavily involved in hands-on maintenance of all automated process and material handling equipment.
Received classroom training on how to successfully write CNC coded programs utilizing the G,M,T,S,D,P,N codes to setup a multi-axis machining center for component part production.
Modified Machining CNC programs to reduce cycle time and increase tool life.
Redesigned the loading mechanism of an automatic ABS pulser ring assembly press for changing from an INA to FAG pulser ring meeting safety requirements of OSHA 29CFR1910 regulations.
Authored company math textbook and taught mathematics in classroom setting for testing and screening potential full-time hourly employees. (Resigned to accept new position)

8/94 to 1/95

DML INDUSTRIAL PRODUCTS HICKORY, NORTH CAROLINA

Mechanical Design/Manufacturing/Process Engineer

Manufacturer of high speed steel tooling for the wood and metal working industry.
Manufacturing process machines included: CNC multi-axis machining centers, drill flute grinders, centerless OD grinders, saw blade machining, carbide machining and adhesion and saw blade re-sharpening. Responsibilities included expediting and managing cost reduction, and continuous improvement projects, integration of OSHA 29CFR1910 safety requirements for CNC and NC turning and grinding operations. Responsibilities included expediting and managing capital projects, cost reduction, continuous improvements and ergonomic integration of OSHA 29CFR1910 safety requirements for manufacturing high speed steel tooling.
Designed, built and installed an ergonomic manufacturing process to support a Lindberg homo steam tempering furnace for applying a high temperature dark blue ferric oxide surface treatment for high speed steel drill bits. Designed, built and installed a 60 foot structural steel overhead monorail crane for lifting furnace payloads in excess of 2,000 pounds per ASME B30.11 standard. Crane and equipment met the requirements of OSHA 29CFR1910 crane regulations. Human factors studies were performed in the design process. Created written operation and setup manuals for this operation.
Assisted in the design of an ergonomic manufacturing cell to produce high speed steel S&D drill bits. Equipment included a Hertlein spiral flute grinder, two centerless grinders, a relief grinder, a Winslow drill pointer, tables and gravity conveyors. Human factors studies were performed during the design process. Created written operation and setup manuals for this cell. This cell eliminated three operators and saved DML $112,320 per year in direct labor cost. Also processed ECN's in department.
Performed grinding wheel tests on Hertlein spiral flute grinders to improve grinding wheel performance and life. Grinding wheels used and tested were made by Norton and Carborundum.
Installed a coolant recycling system to recycle used coolant. Created written operation and setup manuals for this system. This system saved DML $6,000 per year.
Created bid packages for capital equipment quotation, cost justifications, and appropriations requests.
Coordinated maintenance activities for process and material handling equipment with maintenance manager.
(Accepted new position with Koyo Corporation due to imminent layoff and plant closure)

1/94 to 5/94

CONTROLS SOUTHEAST INCORPORATED CHARLOTTE, NC

Mechanical Design Engineer (Temporary Contract Position)

Was under temporary assignment to assist the design engineering department in the planning, design, manufacture and assembly of a testing apparatus to run experiments and gather transient heat transfer data in the form of Temperarture vs. Time in order to generate temperarture tables and graphs for the analysis of data to determine the overall heat transfer coefficients and time transients of various heat transfer cements during startup heat flow. Was responsible for all testing and data collection.
After testing and data collection was completed, created a detailed scientific report and subitted it to the company management for their future use. (Contract assignemnet completed)

10/93 to

FISHBURNE INTERNATIONAL HENDERSONVILLE, NC

12/93 **Draftsman (Temporary Contract Position)**
Modified engineering drawings for existing products.

12/92 to 4/93 **FOXCROFT TEMPORARIES STATESVILLE, NORTH CAROLINA**
Draftsman (Temporary Contract Position)
Created detailed instrument drawings for existing products for a client company.

4/92 to 10/92 **B&W NUCLEAR TECHNOLOGIES LYNCHBURG, VIRGINIA**
Tool Design Engineer
Manufacturer of nuclear fueled electric power generation facilities. Responsibilities included the design of manufacturing tooling for Uranium 235 commercial nuclear reactor fuel assemblies. Managed cost reduction and continuous improvement projects and integration of OSHA 29CFR1910 and NRC safety regulations for manufacturing Uranium 235 commercial nuclear reactor fuel assemblies.
Developed tig spot welding jig and a spring compression leaf jig for assembling rod cluster control assemblies (RCCA). Reduced assembly time 30 minutes per unit, a 99% reduction in assembly time. Human factors studies were performed during the design process.
Performed detailed design load analysis for all fuel assembly lifting fixtures. It was determined through the analysis that fixtures met OSHA 29CFR1910 and NRC regulations.
Performed safety audits. Tested personal protective equipment human body harness and lanyard equipment used on personnel lifts. Determined that the lanyard design was dangerous and had it removed from service perminately. All tooling design was performed using Personal Designer 3-D modeling CAD software. (Layoff. Further layoffs and downsizing continued)

4/91 to 6/91 **MORRIS AND ASSOCIATES GARNER, NORTH CAROLINA**
Assistant Engineer
Manufacturer of poultry processing equipment. Responsibilities included modifying engineering hand drawings for existing products. (Resigned to seek other employment)

06/84 to 08/84 **VICKERS FLUID PUMPS**
College Summer Factory Employment: Machinist
Was employed by Vickers during a summer job while in college to machine component parts, assemble and test gear pumps. Operated OD grinders to precision grind the OD's of the gear shank and gear teeth. Operated an automated brush machine that polished the gear teeth sides. Worked in assembly to assemble gear pumps. Also operated a test stand to test the pumps for output pressure, function and break-in. Left Vickers to go back to attending college classes at the end of the summer. (Summer Position. Returned to university after summer break)

9/81 to 12/90 Enrolled in college classes for bachelor of science degree program in Mechanical Design Engineering curriculum. Worked part-time and full-time to pay for all college expenses.

11/78 to 4/83 **CLARK EQUIPMENT STATESVILLE NORTH CAROLINA**
Forklift and Crane Manufacturing/Machinist/Assembly Technician
(Per-College Automotive Work Experience)
Clark Equipment invented the forklift, the frontend loader, the Bobcat and was the main competitor to Caterpillar. Clark Equipment designed and manufactured forklifts, earthmoving machines and rough terrain mobile cranes. Manufacturing process machines included: CNC multi-axis machining centers, spur gear shapers, hypoid ring and pinion gear machining centers, axis shaft spline rollers, milling machines, boring machines, drilling and tapping machines, transfer machining lines and assembly. Assembled drive steer axles, differential gearing units and transmissions for rough terrain forklifts and rough terrain telescoping cranes. Also assembled road grader axle units. Bench tested large transmissions and differential units.
Ergonomically modified assembly bench cell layout and increased assembly production from 5 Gallion road grader axles per shift to 10 Gallion axles per shift. Was commended by plant manager for production increase. Human factors were taken into consideration during the assembly design project.

Setup and operated high production high precision automatic CNC operated and NC tape operated metal cutting multi-axis machining lathes including vertical and horizontal multiaxis turrent lathes, job shop lathes, broaches, multispindle drill presses and tapping machines, milling machines, transfer lines, shaft spline rollers, gear shapers and shavers, OD and ID surface grinders and boring machines.

Set up and operated OD, ID and surface grinders using resinoid and vitrified bonded grinding wheels. Grinding wheels were dressed using diamond dressers.

Assisted heat treatment department in heat treating rough terrain telescoping forklifts and rough terrain telescoping cranes spur and spiral bevel ring and pinon gears, shaft splines and spindles using methods of oil quenching and induction hardening.

Was a licensed forklift operator and accumulated well over 1000+ hours of hands-on day-to-day forklift operational experience with sitdown forklifts, narrow aisle standup forkilfts and electric pallet jacks. When required, performed plant wide material handling responsibilities by operating forklifts to load machine cells with pallets of component parts and also distributed materials throughout the facility.

Enrolled at Mitchell Community College evenings part-time for college transfer courses.

7/78 to 11/78 **BERNHARDT FURNITURE COMPANY STATESVILLE, NC**

Machine Operator (Pre-College Work Experience)

Manufacturer of home wood furniture.

Set up and operated various wood working machines and machined wood furniture components to print specifications. Machine types included turning and knife lathes, routers, shapers, sanders, boring machines and dove tail machines.

(Resign position to accept new position with Clark Equipment Company)

1/78 to 6/78 **BEAUTYMAID MILLS, STATESVILLE NORTH CAROLINA**

Machine Operator (Pre-College Work Experience)

Manufacturer of feminine textile products.

Setup and operated cloth handling machines to unfold and transfer cloth from one spool to another.

Unfolded rolls of cloth to be used for product manufacturing.

Operated electric knives to shear and cut several layers of cloth to the shapes of a paper patterns. (Resigned position to accept new position with Bernhardt Furniture Company)

6/75 to 1/78 **KEWAUNEE SCIENTIFIC FURNITURE CORPORATION STATESVILLE, NORTH CAROLINA**

Shipping Clerk (Pre-College Work Experience)

Manufacturer of scientific laboratory furniture.

Loaded and unloaded commercial tractor trailer trucks using hand trucks and pallet jacks.

Operated dock levelers to allow tractor trailer trucks access to shipping and receiving department. Also operated various wood working machines to machine wood furniture components to print specifications. (Resigned position to accept new position)