
CURRICULUM VITAE

GARY E. KILPATRICK AND ASSOCIATES, P.A.

GARY E. KILPATRICK, P.E., NSPE

President and Chief Engineering Officer

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EDUCATION

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

Mitchell Community College 1985: Associate in Science Degree - College Transfer Curriculum

PROFESSIONAL DEVELOPMENT

Dale Carnegie Course: Public Speaking and Public Relations (1980)

Midlands Technical Community College: Train The Trainer (1996)

Chesapeake Consulting: Constraint Management Applications (1998)

Mesa Consulting Group Incorporated: Six Sigma (2000)

University of North Carolina: Introduction To Forensic Engineering (2002)

Motorcycle Safety Foundation(Motorcyclist for over 20 years): Advanced Rider's Training (2002)

Forsyth Technical Community College: Pro-Engineer 2001 CAD Software Training (2003)

North Carolina State University: ISO 9001: 2000 Internal Quality Auditing (2005)

National Academy of Forensic Engineers: Seminars January (2005, 2006)

OSHA General Industry Safety Certification (2006)

Collision Safety Institute: Automotive Crash Research Testing & Training (2006)

Collision Safety Institute: Vetronix Crash Data Retrieval System Download and Analysis Certification

(2006)

ATV Safety Institute - ATV Rider Course: ATV Rider Certification (2007)

iWitness Close Range Photogrammetry (2008)

LICENSURE AND CERTIFICATION

- North Carolina Board of Examiners for Engineers and Surveyors
Professional Engineer License Number (027030)
Professional Corporation License Number (C-2279)
- Florida Board of Professional Engineers
Professional Engineer License Number (66186)
- South Carolina Board of Registration for Professional Engineers and Land Surveyors
Professional Engineer License Number (25937)
- Georgia State Board of Registration for Engineers and Surveyors
Professional Engineer License Number (PE032652)
- Louisiana Professional Engineering and Land Surveying Board
Professional Engineer License Number (33528)
- Tennessee Architect and Engineering Board
Professional Engineer License Number (00111899)

Temporary licensure permits or permanent licenses can be obtained in other states and jurisdictions.

PROFESSIONAL ASSOCIATIONS

- National Society of Professional Engineers (1999)
- Professional Engineers of North Carolina (1999)
- American Society of Mechanical Engineers (2002)

- National Academy of Forensic Engineers - correspondent (2002)
 - National Association of Professional Accident Reconstruction Specialists (2003)
 - Society of Automotive Engineers (2008)
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OFFICES HELD

- 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 Governor, Programs Chairman (2008-2009)
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TEACHING EXPERIENCE

- Mathematics Teacher For Koyo Corporation (1996-1997)
Taught basic math to potential hourly employees for the purposes of screening for future employment. Created math text and testing materials for classroom use.
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PRESENTATIONS

- Society of Manufacturing Engineers – Subject Forensic Engineering (2004)
 - Professional Engineers of North Carolina – Subject Forensic Engineering (2007)
 - 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)
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WRITING EXPERIENCE

- Operation, training and maintenance manuals for various companies
 - ISO 9001: 1994; ISO 9001: 2000 documentation for various companies
 - Forensic Engineering Rule 26 Reports
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FORENSIC ENGINEERING CASE WORK LITIGATION EXPERIENCE

- Traffic Accident Reconstructions
 - All Terrain Vehicle(ATV) Accident Reconstructions
 - Industrial Accident Reconstructions
 - Product Liability Investigations
 - »Motor Vehicles
 - »All Terrain Vehicles(ATVs)
 - »Motorcycles
 - »Industrial Process Equipment
 - »Scaffolds
 - »Ladders
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WORK EXPERIENCE

6/02 to
present

GARY E. KILPATRICK AND ASSOCIATES, P.A., JAMESTOWN, NC Forensic Engineering: Accident Reconstruction, Product Liability Investigation

(Forensic Engineering Case Work History Available Upon Request)

- Traffic Accident Investigation and Forensic Engineering Reconstruction:
Product Liability for Defective Automotive Components.
- Motorcycle Accident Investigation and Forensic Engineering Reconstruction:
Product Liability for Defective Motorcycle Components.
- All Terrain Vehicles (ATV) Accident Investigation and Forensic Engineering Reconstruction.
Product Liability for Defective ATV Components.
Landscape Evaluation and Analysis.
- Water Craft Accident Investigation and Forensic Engineering Reconstruction.
- Industrial Accident Investigation and Forensic Engineering Reconstruction:
All OSHA 29CFR 1910,1926,1928 Regulation and ANSI, ASME, ISO Standards For
Machine Design Guarding, Accident Prevention Signage, Industrial Safety Requirements,
Machine Lockout/Tagout Systems Requirements OSHA 29CFR1910.147.
USDA and Hygiene Requirements For The Design of Meat and Poultry Processing
Equipment.

Slip and Fall Hazards Analysis.

Product Liability for Defective Machinery and Components.

- Product Liability Investigation:

Home and Industrial Tools, Appliances and Equipment, Gymnasium Strength Training Equipment, Playground Equipment, Home and Office Furniture, Power Tools, Hand Tools, Lawn Mowers, Powered Yard Machines, Industrial Machinery and Equipment, Home and Industrial Appliances, Motor Vehicles, All Terrain Vehicles(ATVs), Motorcycles, Water Craft.

- **General Industry Contract and Consulting Engineering**

→Project Management.

→Process and Manufacturing Engineering.

→Process Design.

→Machine, Tool and Die Design.

→Quality Systems Management ISO 9001:2000.

→OSHA 29CFR1910 General Industry Safety and Hazardous Waste Requirements.

→Machine and Process Guarding and Workplace Safety.

→Machine and Equipment Troubleshooting.

7/01 to

6/02

SPHERION, GREENSBORO, NORTH CAROLINA

Process Verification-Validation(Contract Engineering)

Provided engineering services to Bristol Myers Squibb, a manufacturer of ostomy, wound care products and pharmaceuticals.

1) Assisted in the modification and retrofit of production machinery for ostomy pouch manufacturing. Created and implemented process validation protocols 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.

2) 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.

3) Designed and installed a protective cover for a 15 watt class 4 marking laser to meet OSHA 29CFR1920, 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/Manufacturing 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.

1) 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, 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.

2) Established and led cross-functional teams for Centers of Excellence throughout the corporation. Established and led Six Sigma, QIP, CIW and Kaizen 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.

3) Coordinated and relocated a complete roll forming line from Ohio to North Carolina.

- 4) Redesigned blanking press die tooling for 75 ton Minster OBI strut pre-notch punch presses. Implemented SMED. Installed safety blocks required by OSHA 29CFR1910. Installed a coolant spray system to add lubricity to a formally dry punching operation. 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%.
 - 5) 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 OSHA 29CFR1910 requirements.
 - 6) Redesigned Flexibar assembly tooling to eliminate scrap and customer claims and achieved a yearly cost savings of \$20,000.
 - 7) Designed and supervised the installation of a chemical containment area for the storage of acids, bases and oxidizers per OSHA 29CFR1910 hazardous material regulations.
 - 8) 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 by designing and building it in-house. Was guarded to meet OSHA 29CFR1910 regulations.
 - 9) Trained operators on how to setup and use a spot welder to increase quality and production.
 - 10) Managed projects and key hourly personnel to expedite and facilitate project work phases to closure. Involved in hands-on maintenance of process and material handling equipment.
 - 11) Managed spare parts and tooling inventories for two separate facilities.
 - 12) 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. Assisted in creating and implemented an OSHA 29CFR1910.147 compliant Lock-Out/Tag-Out system for the facility.
 - 13) 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.
- (Due to a 90 mile commute to work one way and rising fuel prices, resigned position to accept new contract position with Spherion)

2/98 to
7/99

GKN AUTOMOTIVE, ROXBORO, NORTH CAROLINA

Mechanical/Manufacturing 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. Used Microsoft computer software extensively.

- 1) 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.
- 2) Extensively utilized a Six Sigma based statistical process and quality control system (SPC) for all assembly cells in department. Documented and tracked all project time lines, cost, cost savings, downtime reduction and process improvements.
- 3) Created and controlled line documentation such as process flow mapping, work instructions, quality standards instructions, tooling specifications, tooling layouts, control plans and SPC documents.
- 4) Designed and built special ergonomic assembly tooling and fixturing that met OSHA 29CFR1910 regulations for continuous improvement and new program launches. 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.
- 5) 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.

6) Managed the installation of new assembly cells for new program launches. Equipment met 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.

7) Heavily involved in hands-on maintenance of process and material handling equipment.
(Due to a definite layoff, resigned position to seek other employment)

5/97 to
1/98

COPELAND CORPORATION, HARTSELLE, ALABAMA

Mechanical/Manufacturing Engineer

Manufacturer of residential HVAC refrigeration compressors. 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.

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

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

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

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

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

2/95 to
5/97

KOYO BEARINGS, ORANGEBURG, SOUTH CAROLINA

Mechanical/Manufacturing Engineer

Manufacturer of high performance automotive wheel bearings. Responsibilities included expediting and managing cost reduction, and continuous improvement projects, integration of OSHA 29CFR1910 safety requirements for turning, grinding and assembly of SAE1055 and SAE 52100 steel bearing inner and outer rings.

1) Utilized Japanese philosophies of Kaizen, Poka Yoke, Zero Defects, Brainstorming, Waste Elimination, 5-S, FMEA, ergonomic lean manufacturing and Kan Ban material control systems.

2) ISO9002 certification was awarded to Koyo during May of 1996. Was heavily involved with documentation development for certification.

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

4) Traveled to Osaka, Japan to prove off 6.5 million dollars of capital equipment including CNC Murata MW series and LE type Miyano two axis turning centers, Koyo and Toyo shoe type centerless grinders and assorted automated assembly machines. Performed floor lay out and supervised equipment installation upon arrival. Created work instructions, quality standards instructions, tooling specifications and tooling layouts for processes.

5) 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.

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

7) Modified CNC programs to reduce cycle time and increase tool life.

8) 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.

9) Authored company math textbook and taught mathematics in classroom format for testing and screening potential full-time hourly employees.

(Resigned position to accept new position with Copeland Corporation)

8/94 to
1/95

DML INDUSTRIAL PRODUCTS, HICKORY, NORTH CAROLINA
Mechanical/Manufacturing Engineer

Manufacturer of high speed steel tooling for the wood and metal working industry.

1) Responsibilities included expediting and managing capital projects; cost reduction; and continuous improvement and ergonomic integration of OSHA 29CFR1910 safety requirements for manufacturing high speed steel tooling.

2) 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 steels drill bits. Designed, built and installed a 60 foot structural steel overhead monorail crane for lifting furnace payloads in excess of 2,000 pounds. Crane and equipment met the requirements of OSHA 29CFR1910 regulations. Created written operation and setup manuals for this operation.

3) 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. 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.

4) 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.

5) Created bid packages for capital equipment quotation, cost justifications, and appropriations requests. Coordinated maintenance activities for process and material handling equipment with maintenance manager. Company out of business.

(Due to definite layoff and plant closure, accepted new position with Koyo Corporation)

1/94 to
5/94

CONTROLS SOUTHEAST, INCORPORATED, CHARLOTTE, NC
Mechanical Engineer (Temporary Position)

assembly

1) Was under temporary assignment to assist in the planning, design, manufacture and

of a testing apparatus to run experiments and gather transient heat transfer data in the form of Temperature vs. Time in order to generate temperature 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.

2) After testing and data collection was completed, a detailed scientific report was written and submitted to the company management for their future use.

(Contract assignment was completed)

10/93 to
12/93

FISHBURNE INTERNATIONAL, HENDERSONVILLE, NC
Draftsman (Temporary Position)

Modified engineering drawings for existing products.

(Contract assignment was completed)

12/92 to
4/93

FOXCROFT TEMPORARIES, STATESVILLE, NORTH CAROLINA
Draftsman (Temporary Position)

Created detailed instrument drawings for a client company.

(Contract assignment was completed)

4/92 to
10/92

B&W NUCLEAR TECHNOLOGIES, LYNCHBURG, VIRGINIA
Tool Design Engineer

Manufacturer of nuclear fueled electric power generation facilities. Responsibilities included managing cost reduction and continuous improvement project and integration of OSHA 29CFR1910 and NRC safety regulations for manufacturing Uranium 235 commercial nuclear reactor fuel assemblies.

1) 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.

2) Performed detailed design load analysis for all fuel assembly lifting fixtures. Fixtures met OSHA 29CFR1910 and NRC regulations.

3) Performed safety audits and design load calculations on personnel lifts and related safety equipment. All tooling design was performed using Personal Designer 3-D modeling CAD software.

(Position was eliminated. Further layoffs and downsizing continued)

4/91 to
6/91

MORRIS AND ASSOCIATES, GARNER, NORTH CAROLINA
Assistant Engineer

Responsibilities included modified engineering hand drawings for existing products.
(Position was eliminated)

9/81 to
12/90

Enrolled in college classes for bachelor of science degree program in mechanical engineering. Worked part-time and full-time to pay for all college expenses.

11/78 to
4/83

CLARK EQUIPMENT, STATESVILLE NORTH CAROLINA
Machinist and Assembly Technician (Per-College Work Experience)

Manufacturer of heavy off-road earth moving machines and forklifts.

1) Assembled drive steer and road grader axles on both a moving assembly line and fixed bench. Ergonomically modified assembly bench cell layout and increased assembly production from 5 Gallion axles per shift to 10 Gallion axles per shift. Was commended by plant manager for production increase.

2) Setup and operated high production high precision metal cutting machine tools including CNC and NC vertical and horizontal multiaxis turret lathes, machining centers, broaches etc.

3) Set up and operated OD, ID and surface grinders using both resinoid and vitrified bonded grinding wheels.

4) Set up and operated milling machines, transfer lines, multispindle drill presses, gear shapers and shavers, spline rollers, boring machines.

5) Assisted heat treatment department in heat treating spur and spiral bevel ring and pinon gears, shafts and spindles using methods of oil quenching and induction hardening.

6) Performed plant wide material handling responsibilities by driving forklifts to load machine cells with pallets of component parts and also distribute materials throughout the facility.

7) Enrolled at Mitchell Community College evenings part-time for college transfer courses. Company out of business.

8) Was licensed as a forklift operator. Operated forklifts to carry production materials to work stations.

(Resigned position to pursue full-time college studies in mechanical engineering)

7/78 to
11/78

BERNHARDT FURNITURE COMPANY, STATESVILLE, NC
Machine Operator (Pre-College Work Experience)

Manufacturer of home wood furniture.

1) 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.

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

2) 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.

1) Shipping clerk. Loaded and unloaded tractor trailer trucks using hand trucks and fork lifts. Operated dock levelers to allow trucks access to shipping and receiving. Also operated various wood working machines and machined wood furniture components to print specifications.

(Resigned position to accept new position with Beautymaid Mills)