

ENGINEER: MECHANICAL

KENNETH S. MARSHALL, P.E.
Engineering Design & Testing Corp.
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EDUCATION:

1998 Master in Business Administration
Cleveland State University, Cleveland, Ohio

1985 Bachelor of Science in Mechanical Engineering
University of Cincinnati, Cincinnati, Ohio

EXPERIENCE:

June 2007 to **Engineering Design & Testing Corp.**
Present **Cleveland, Ohio**

Consulting Engineer. Investigation of incidents involving industrial, commercial, and residential systems. Services provided include failure analysis, damage evaluation and assessment, mechanical design analysis, and origin and cause of fires.

May 1998 to **North American Manufacturing Co. – Guiding Systems Group**
June 2007 **Cleveland, Ohio**

Senior Project Engineer. Managed custom web and strip guiding equipment projects in the tire and rubber, converting and metals industries. Test and verify equipment. On-site project management and installation supervision.

Production Engineering Manager. Project scope review, work assignment, schedule and approval of design release for the board and CAD design group. Developed proposals and scope of work definitions.

Project Engineer. Performed engineering and design calculations and factory acceptance testing.

June 1985 to
May 1998

**The Lincoln Electric Company
Cleveland, Ohio**

Project/Plant Engineer. Design, fabrication and installation of high speed wire drawing and winding equipment. Facilities upgrades and building modifications to accommodate additional production equipment. Selection and installation of new and rebuilt equipment. Maintenance and modification of existing equipment, facilities and designs. Review of safety procedures and equipment on all projects.

Sept 1995 to
March 1996

**Lakeland Community College –
Mechanical Engineering Technology Department
Kirtland, Ohio**

Mechanical Engineering Technology Instructor.

Sept 1982 to
August 1984

**General Electric Company – Aircraft Engine Group
Cincinnati, Ohio**

Mechanical Engineering Co-op. Develop and test machining parameters for drill, mill and lathe cutting of high-temperature superalloys.

EXPERIENCE: LEGAL CONSULTATION (partial list)

Manufacturing Facility - Cleveland, Ohio. Expert testimony on cause and scope of damage to electro-mechanical systems as a result of water intrusion. Included review of industry standards.

Vehicular Sliding Gate – Toledo, Ohio. Expert testimony on condition and performance of the gate and cause of the fatal entrapment of child in the mechanism.

Hi-Rise Office Building – Indianapolis, Indiana. Expert testimony on cause and scope of damage to a roof-top chiller as a result of freeze damage.

Apartment Complex – Akron, Ohio. Evaluate failure modes for multiple PTAC units. Provide expert consultation regarding direct cause of failures being the end user's installation and operation of units in conflict with the manufacturer's instructions.

Trash Compactor – Chicago, Illinois. Evaluated trash compactor at joint examination and determined safety linkage malfunction as cause of crushing death of a homeless person. Provided expert consultation to counsel regarding after sale damage to compactor unit.

Coal Mine Equipment – West Virginia. Evaluate roof-bolter performance. Provide expert consultation regarding the performance of the unit and operator actions as cause of injuries.

EXPERIENCE: CAUSATION AND FIELD WORK (partial list)

Manufacturing Facility – Detroit, Michigan. Origin and cause of explosion in roof-top HVAC unit with fatality. Managed extended joint site examinations with multiple parties and authored final comprehensive report.

Potable Water Heater – Copley, Ohio. Examined damage to a healthcare facility potable water heater/system. Determined cause of damage was water heater not installed in compliance with the manufacturer's instructions.

Manufacturing Facility – Sartell, Minnesota. Origin and cause of explosion in compressor room with fatality. Assisted in managing extended joint site examinations with multiple parties and authored examination protocols.

Landfill Equipment – Pennsylvania. Examined damage to 12 cylinder diesel engine; utilized oil and coolant analysis to determine cause of cavitation corrosion/erosion failure.

Sump Pumps – Cleveland and Columbus, Ohio. Examined sump pump systems to determine cause of failure; found high-end residence back-up pump was wired incorrectly causing pump burnout; determined alarms silenced allowing flooding of an unoccupied movie theater complex.

EXPERIENCE: SCOPE OF DAMAGE AND LOSS VALUATION WORK (partial list)

Industrial Autoclave – Pittsburgh, Pennsylvania. Scope of damage investigation and review of repair versus replacement of autoclave. Original design/sales firm was out-of-business presenting design pedigree issues. Researched and located original fabrication shop. Shop was able to find original design calculations and provide an ASME qualified repair at less than replacement. Estimated value of loss was \$500 K.

Glass Recycling Facility - Nashville, Tennessee. Scope of damage investigation and cost estimate for replacement and repair of all combustion and mechanical equipment damaged in the Nashville floods of 2010. Estimated value of loss was \$4 MM.

Manufacturing Facility - Kerney, New Jersey. Scope of damage investigation and cost estimate for replacement and repair of facility equipment damaged as a result of super storm Sandy. Estimated value of loss was \$80 MM.

Metals Re-processing Facility – Monaca, Pennsylvania. Scope of damage investigation, cost estimate, and cost monitoring for replacement and repair of combustion and melting equipment damaged in an explosion and resulting shut down. Segregate modification costs into code required versus betterments. Estimated value of loss was \$30 MM.

Die-Cast Manufacturing Facility – Fayetteville, Arkansas. Scope of damage investigation, cost estimate, and cost monitoring for replacement and repair of aluminum die cast

manufacturing and melting equipment damaged in a fire and resulting shut down. Segregate modification costs into code required versus betterments. Estimated value of loss was \$75 MM.

Automotive Recycling Facility – Chesapeake, Virginia. Scope of damage investigation, cost estimate, and cost monitoring for replacement and repair of automotive waste recycling equipment damaged in a fire. Estimated value of loss was \$5 MM.

CONTINUING EDUCATION:

Failure Analysis and Prevention, Materials Science & Technology Conference (MS&T), Columbus, OH (2015, 2011); Pittsburgh, PA (2017, 2014, 2012)

Fundamentals of Rigging / Computer Tools Class, The Crosby Group, Cleveland, OH (2013)

Visual Cylinder Inspection Course, PSI-PCI, Cleveland, OH (2015, 2012, 2009)

Investigation of Appliance Fires Course, Fire Findings, Benton Harbor, MI (2008)

Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, National Fire Protection Association, Cleveland, OH (2008)

National Safety Council Confined Spaces Compliance Training Course, Safety and Health Council of North Carolina, Charlotte, NC (2007)

Principles of Failure Analysis, ASM International (2007)

National Fire, Arson and Explosion Investigation Training Program, National Association of Fire Investigators, Sarasota, FL (2007)

Combustion School, North American Manufacturing Co., Cleveland, OH (1987)

Basic Plate & Sheet Metal (stick), GMAW (MIG), GTAW (TIG) welding programs, The Lincoln Electric Welding School, Cleveland, OH (1985)

PROFESSIONAL ORGANIZATIONS:

ASM International (ASM)

American Society of Mechanical Engineers (ASME)

National Association of Fire Investigators (NAFI)

National Fire Protection Association (NFPA)

National Society of Professional Engineers (NSPE)

Ohio Society of Professional Engineers (OSPE)

CERTIFICATIONS & REGISTRATIONS:

Certified Fire and Explosion Investigator (CFEI #6279)
NCEES Record (#16-819-32, old #32029)
Registered Professional Engineer in Ohio (E-56857)
Registered Professional Engineer in Alabama (35510-E)
Registered Professional Engineer in Arkansas (15282)
Registered Professional Engineer in Connecticut (PEN.0028240)
Registered Professional Engineer in Illinois (062.062099)
Registered Professional Engineer in Indiana (PE10708873)
Registered Professional Engineer in Iowa (P24285)
Registered Professional Engineer in Kentucky (26216)
Registered Professional Engineer in Maine (13839)
Registered Professional Engineer in Michigan (6201054902)
Registered Professional Engineer in Minnesota (50205)
Registered Professional Engineer in Mississippi (18959)
Registered Professional Engineer in Missouri (PE-2014034939)
Registered Professional Engineer in New Jersey (GE50571)
Registered Professional Engineer in New York (088002)
Registered Professional Engineer in North Carolina (044111)
Registered Professional Engineer in Pennsylvania (PE075126)
Registered Professional Engineer in West Virginia (17425)
Registered Professional Engineer in Wisconsin (40612-6)