WARREN

THE WARREN GROUP, INC. FORENSIC ENGINEERS & CONSULTANTS
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Robert W. Hickman, P.E., CMSE®
Mechanical Engineer

Equipment Failure

Industrial Hazard Analysis

Machine Design

Machine Safeguarding

Machinery and Equipment Damage Assessment

Products Liability

EDUCATION

1987 **Bachelor of Science in Mechanical Engineering**
Clemson University, Clemson, South Carolina

EXPERIENCE

January 2022 to Present

The Warren Group, Inc., Irmo, South Carolina. Senior Consulting Engineer conducting specialized consulting and training related to unintentional injuries involving mechanical engineering, machine design and safety, product liability, and property loss analysis. Employing 3D scanning and SolidWorks modeling and animation for analysis and demonstration.

Safety Design Analysis (both personal injury and property damage)
Industrial accident reconstruction, machine controls, machine safeguarding, OSHA compliance, standards and codes compliance, maintenance, products liability, product failures, premises liability, risk assessment, failure analysis, consumer products.

Accident Prevention
Hazard identification of machinery and equipment, risk assessment, component testing, OSHA compliance, standards and codes compliance, and products liability analysis.

Property Loss Analysis
Determine the cause of the loss, establish scope of damage, estimate cost to repair, evaluate replacement cost, establish actual cash value, estimate salvage value, estimate time required to complete repair.

2016 to 2022

RWH Designs, Inc., Lexington, South Carolina. Mechanical Design Engineer working closely with an international paper manufacturer on designing / refining custom machines for their paper core-winding processes. Exposure to sensitive processes and trade secrets during development.

Redesigned several custom machines for a specialty producer of attic pull-down stairs to improve quality, productivity, reliability, and safety. Completed the mechanical design of several machines that automated manual processes and replaced inefficient/unreliable manual equipment. Assisted with plant layout/production line planning.

Successful tooling designs for a fencing manufacturer in order to produce various wire products on several of their 4-slide manufacturing machines.

EXPERIENCE (Continued)

1998 to 2015 AIDE, Inc. Greenville, South Carolina. Mechanical Design Engineer. Filled a contract mechanical design position to work on an expansion project for a new international tire manufacturing facility. Main duties were to help analyze and correct problems with new machines and processes to meet standards and/or achieve gains in safety, productivity, quality, and machine reliability. Exposed to many different types of production and machine technologies. Designed several unique material handling devices to move large, finished and unfinished tires and materials. Several of these mechanical and material handling designs have been implemented at their facilities worldwide. Significant exposure to pneumatic systems and components, as well as hydraulics.

Worked with a global industrial leader, a producer of over 1,500 diversified products, at one of their silica surface mines located in central SC. Main responsibilities were redesigning their micro-sizers and product discharge housings to accept ceramic wear plates internally to significantly reduce the excessive wear caused by the moving of silica through them. Also designed a safe, versatile, hydraulic-operated build table that made it easier for maintenance personnel to add the ceramic wear plate modifications to these components.

Worked with an international manufacturer that produces solutions for static sealing, improved acoustics, reduced vibration, structural reinforcement, and composite components for various applications. Responsible for the addition to an existing manufacturing line a large, adjustable infrared heater configuration that would cure their applied proprietary coatings to acoustical material for the automotive market. Also selected and designed the placement of heat shielding materials to protect various equipment components and to prevent the premature curing of the applied coatings.

1987 to 1996 Michelin Tire Corporation, Lexington, South Carolina. Mechanical Engineer. Plant Engineer position, hired to work on major plant expansion project. Helped coordinate equipment installation to meet production start-up deadlines. Mechanical redesign of new tire-building equipment in order to meet safety, production, and quality standards.

CERTIFICATIONS

CMSE® Certified Machinery Safety Expert

REGISTRATIONS

Professional Engineer in South Carolina (#36792)

Professional Engineer in North Carolina (#054294)

Professional Engineer in Georgia (#049607

Professional Engineer in Texas (#147365)

CONTINUING EDUCATION

November 30, 2023
"An Introduction to the Analysis and Design of Bolted Connections," presented by SunCam online, Columbia, South Carolina

November 28, 2023
"A Practical Design Guide for Welded Connections," presented by SunCam online, Columbia, South Carolina

November 27, 2023
"Mechanical Fatigue of Metals," presented by SunCam online, Columbia, South Carolina

February 16, 2023
"Ethics in Design and Oversight, Florida International University Bridge Collapse," presented by SunCam online, Columbia, South Carolina

February 16, 2023
"HVAC Design Cooling Towers," presented by SunCam online, Columbia, South Carolina

February 16, 2023
"HVAC Design Industrial Ventilation," presented by SunCam online, Columbia, South Carolina

February 15, 2023
"HVAC Design Fundamentals," presented by SunCam online, Columbia, South Carolina

April 12-15, 2022
"Certified Machinery Safety Expert Training," a course presented by Lee Burk for Pilz, Charlotte, North Carolina

- Standards and Regulations
- Equipment and Workplace Regulations
- CE Marking – Machinery Directive
- OHS – Occupational Health and Safety
- Risk Assessment – ISO 12100 Risk Assessment Standard
- Mechanical Guarding
    - ISO 12100 – Standards Related to Mechanical Guarding
    - ISO 14119 – Types of Interlocking Safety Devices
    - ISO 14120 – Safety of Machinery - Fixed and Movable Guards

CONTINUING EDUCATION Continued

April 12-15, 2022
"Certified Machinery Safety Expert Training," a course presented by Lee Burk for Pilz, Charlotte, North Carolina (Continued)

- Safety Components and Technologies
- Electrical Safety
- Functional Safety of Control Systems
- Functional Safety of Pneumatic and Hydraulic Systems

January 22, 2022
"Engineers Guide to Corrosion-Causes, Protection and Control", presented by EZ-PDH Online, Columbia, South Carolina

January 13, 2022
"Concepts for Advanced Electrical Knowledge and Practical Troubleshooting", presented by EZ-PDH Online, Columbia, South Carolina

January 11, 2022
"Coating Types and Characteristics of Metals", presented by EZ-PDH Online, Columbia, South Carolina

COURSES, SEMINARS AND LECTURES PRESENTED

November 7, 2023
Presentation on "Don't Let Your Guard Down: Expert and Legal Perspectives on Failure to Properly Guard Product Cases" presented at the National Association of Subrogation Professionals conference, Colorado Springs, Colorado

September 28, 2022
Presentation on "Who Else Owns This Loss? Subrogation of Workers' Compensation Injuries" presented at the South Carolina Workers' Compensation Education Association conference, Myrtle Beach, South Carolina

PATENTS

"Space-Saving Door and Wall-Hung Artist Easel," U.S. Patent #8,870,148, October 2014