



Mechanical and Safety Engineering LLC

John L. Ryan, BSME, Professional Engineer, Curriculum Vitae

Education

B.S. Mechanical Engineering, University of Arkansas, Fayetteville, Arkansas, 1994
Engineering Studies, Colorado School of Mines, Golden, Colorado, 1990-1992
Emergency Medical Technician, Northwest Arkansas Community College 1997
Studies in psychology, University of Arkansas, Fayetteville, Arkansas 2006
Master of Arts Clinical Mental Health Counseling, Adams State University, 2015

Work Experience

Partner, Mechanical and Safety Engineering LLC, 2010 -

Duties include safety analysis of products, certification of products, structural analysis of buildings, product development, accident investigation, accident reconstruction, expert witness testimony

Forensic Engineer, Safety Engineering Resources, 2002-2009

Duties include accident investigation and reconstruction (determining initial accident cause, system or component failure cause), product safety testing (testing products adherence to ANSI, ASME, and other standards - includes determining testing requirement, setting up testing, running tests, analyzing test results, reporting test results), finite element analysis of products (developing 2D and 3D models of products, constraining and applying design loads, interpreting data, redesigning product, reanalyzing - determine cost-effective solution to over-stressed components), Autocad drawings, product development (development of product prototypes, redesign of existing products to meet new requirements), ergonomic design analysis (making sure products conform to ergonomic criteria for use), human factors research, patent searches, failure analysis (determining cause of component failure using hardness testing, stress analysis, destructive testing - determining failure cause and design solution), project management, bidding jobs, structural analysis of buildings and building components (finite element analysis of structures, hand calculations, code conformance), slab and foundation analysis, structural engineer report assistance (performing site visits for structural reports, checking code compliance of structure, assisting in final structural report), website design and maintenance, managing editor of publications, marketing

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Owner/Operator, Arkansas Web Solutions, 2005-

Duties include management of hosting business, website maintenance and troubleshooting, creating websites, submitting websites to search engines, accounting, advertising, website security, payment processing, online sales

Chief Operations Officer, Donegal Bay Publishing, 2005-

Duties include management of incoming documents, evaluation of documents, proofing of documents, formatting documents into press-ready format, marketing, electronic document procurement, online sales administration, Authors Guild creation and management

Design Engineer, Ryan Engineering Inc., Siloam Springs, Arkansas, 1996-2001.

Duties included industrial manufacturing design, machine element design, finite element analysis, design and safety analysis of existing products, product safety testing, collections, patent research. Products designed: Numerous steel angle and steel channel building trusses (this involved determining loading conditions for each structure, developing 2D FEA model, applying loads, interpreting results, redesigning trusses, re-running FEA), bleacher stands, floor polisher handle (this involved producing an exact 3D replica of a complex handle, then applying loads, boundary conditions, material properties, running FEA, interpreting results, changing handle design), lifeboat foundation for shipping vessel, 5000 pound engine hoist, 55,000 pound hydraulic press, trailer back-up mirror, burnisher testing apparatus, warehouse floor plan, solar heater, torsional electrical control switch, mandrel stripper, safety interlock for rubber mold press, garlock dough sweeper, ladder fly-lock. Finite element analysis was performed on various products to determine if any structural design defects existed in the products. Three dimensional models as well as beam element models were used depending on the particular situation. Finite element analysis was used to optimize designs of new metal truss buildings.

Co-Owner and Operator, Wild World Paintball, Siloam Springs, Arkansas, 1988-2002

Duties included personnel management, directing operations, accounting, supply, construction, maintenance, cost reduction

Maintenance Director, Gilgit Eye Hospital, Gilgit Pakistan, 1995-1996

Duties included repairing and performing maintenance on medical and domestic equipment, completion of hospital building, building maintenance, and supervising the other maintenance personnel. Maintenance of facility was continued to keep

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

machinery up and running, and any problems with hospital building were addressed and corrected. Duties also included teaching children part time.

Engineering Apprentice, Ryan Engineering, Inc., 1994-1995

Engineering Apprentice, Ryan Engineering, Inc., Duties included product testing, design analysis, CAD. Product testing involved testing various products for adequate strength, stability, and quality control. Products were tested according to nationally-established standards such as ANSI, as well as to in-house testing standards. Specific testing performed included ladder strength and stability testing, aluminum material testing, car seat strength testing, destructive testing to determine ultimate strength of samples from various products. Extensive testing was performed, often requiring innovative methods and testing devices. Design analysis and redesign was performed on different products manufactured by Ryan Engineering's clients. These products were redesigned to make them cheaper to produce, stronger, and to better perform their intended use. This required in-depth creative design. Design projects were often performed in teams of two, requiring a high degree of accountability and responsibility from all. CAD duties involved producing complete sets of drawings for redesigned products. CAD was also used to produce representations of tested products. Complex CAD drawings were produced, assembly and detail drawings.

Technician, Ryan Engineering, Inc., 1987-1994

Duties included factory automation, machine fabrication, machining, welding, assembly, maintenance. Factory automation duties included fabricating machine parts and assembling robotic machines. These machines ranged from moderately to highly complex. Machines included automated vehicle belt stuffing machine, tortilla handling prototype, automated bleacher drill machine, multiple PVC pipe handling machines. I was responsible for following design drawings to produce machinery, as well as develop and implement solutions to machine design problems that were encountered during fabrication. There was a high degree of responsibility for machine fabrication and assembly. Fabrication of parts for machines was also performed, using plasma cutter, chop saws, drill press, milling machine, hand tools, welding. Duties also included installation of factory automation machinery.

Books Written

Warnings Manual, Donegal Bay Publishing, 2007

Take This Job..., Donegal Bay Publishing, 2007

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Forklift and Stackler Manual, Donegal Bay Publishing, co-author, 2006

Stepladder Manual, Donegal Bay Publishing, co-author, 2005

Machine Guarding Manual, Donegal Bay Publishing, co-author, 2007

Lawnmower Manual, Donegal Bay Publishing, co-author, 2006

Overhead Door Manual, Donegal Bay Publishing, co-author 2007

ATV Manual, Donegal Bay Publishing, co-author, 2007

Articles Written

“Continuing Education for Engineers”, ME Today, May 2010

“Engineering Ethics Basics – A Practical Guide to the Theory and Implementation of Engineers’ Moral and Professional Obligations” 2008

Courses Written

“Product Safety for Design Engineers”, November 2010

Strengths of Materials II, 2014

Courses/Certifications

September 2011 - Crash Data Technician 1 and 2

May 2012 - Crash Data Analyst

December 2012 - Accident Investigation I

Licensed Professional Engineer in: Arkansas, Alabama, Oregon

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Education relevant to warning design

Bachelor of Science in Mechanical Engineering

Master of Arts in Clinical Mental Health Counseling

Undergraduate courses relevant to warning design:

Developmental Psychology; addresses learning and development processes; details

Information Processing Theory which is a primary theory of warning design

Psychology of Learning: addresses how people learn, what methods result in the most effective acquisition and retention of knowledge

Psychology Research - Main project for this course was analyzing warning design and determining methods of improving warning compliance

Mechanical Engineering Design – covers hierarchy of safe design; eliminate the hazard; safeguard the hazard if elimination is impossible; warn if safeguards are not feasible or do not complete guard the hazard; train the individual; provide personal protective equipment. Some references place training at a higher level than warnings. Hazard analyses were also covered that identify hazards, as well as risk assessment, which involves assessing risk, applying interventions to reduce that level of risk, and reassessing.

EPICS – Hazard analysis and risk assessment

Graduate courses relevant to warning design:

Human Development: Covers Information Processing Theory which is a fundamental theory of warning design

Clinical Mental Health Counseling; Internship: Developing safety plans for suicidal clients to get them to contact other people prior to making any sort of attempt on their life

Literature written:

Warnings Manual

Courses Taught

Warnings Course for Licensed Professional Engineers

Relevant Work Experience

- Design of warnings for a prototype gas valve replacement device and procedure to switch high pressure gas valves without turning the main gas line off
- Design of instructions for mobile tool safe that was produced for several years
- Determining if warnings comply with applicable industry standards
- Rubber strap failure case: Lack of adequate warnings noted, alternative design created for warnings; case settled
- Skid Steer Loader fatality: Lack of warning related to a very specific known hazard, created an alternative design for this warning; case still pending
- Tree Stand Failure: Lack of warnings related to hazardous condition created by unsupported treestand; case settled

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

- Hot wax burn case: Alternate instructions or warning created; I believe this settled
- Chop saw injury case: Alternate warnings created; case settled
- Tractor roll-over fatalities: Alternate warnings created to address specific potentially unknown hazards that can lead to roll-overs; case settled
- Pinch point hazard: Lack of warnings of a specific amputation hazard; case settled
- Falling hazard: lack of warnings and safeguards to prevent freefall in a museum exhibit; pending
- Roll-forming machine: Warning fails to identify what the hazard is, how to avoid the hazard, and the seriousness of the hazard; alternate warnings identified; case pending
- Meat saw: failure to maintain warnings on machinery; case won at trial

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

L.D. Ryan Curriculum Vitae

Education

Ph.D. Agricultural Engineering, Michigan State Univ., East Lansing, Michigan, 1980
M.S. Mechanical Engineering, University of Toledo, Toledo, Ohio, 1967
B.S. Mechanical engineering, Tri-State University, Angola, Indiana, 1959

Short Courses

Finite Element Analysis, Miami International University
Sound and Vibration, University of Wisconsin
Explosions and Fire, Houston, Texas by AIChE
Elevators and Escalators, ASME
Traffic Accident Reconstruction by CASE
Finding and Communicating Scientific Evidence by Ryan Engineering
Lessons in Professional Liability by OPIC, Monterey, CA
Introduction to Structural Engineering by CASE
Information Resource Management by CASE
Design for Safety by CASE

University Teaching Experience

Western Michigan University, Kalamazoo, MI, Associate Professor of Mechanical Engineering, 1967 to 1979

Tri-State University, Angola, IN, Associate Professor of Mechanical Engineering, 1979 to 1980

John Brown University, Siloam Springs, AR, Professor of Mechanical Engineering, 1980 to 1982 and 1983 to 1989

University Courses Taught

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Senior Design Machine Design
Strength of Material Advanced Strength of Material
Thermodynamics Statics and Dynamics
Heat Transfer Mechanical Systems
Fluid Dynamics Pneumatics & Hydraulics
Solar Energy Design Sound and Noise Control

Publications **(partial list)**

Textbook: Fundamentals of Solar Heating, Prentice Hall

Manuals: Environmental Noise Control, W.M.U. Press

Stepladder Manual, L.D.Ryan & John L. Ryan Donegal Bay Publishing, 2006

Forklift & Stacker Manual, John L. Ryan & L.D. Ryan, Donegal Bay Publishing, 2006

ATV Manual, L.D. Ryan and John L. Ryan, Donegal Bay Publishing, 2007

Lawn Mower Manual, John Ryan & L.D. Ryan, Donegal Bay Publishing, 2006

Machine Guarding Manual, L.D. Ryan and John L. Ryan, Donegal Bay Publishing, 2006

Warnings Manual, John L. Ryan and L.D. Ryan, Donegal Bay Publishing, 2007

Overhead Door Manual, L.D. Ryan and John L. Ryan, Donegal Bay Publishing 2007

Magazine - Michigan Riparian

"Peat Bog Draining...Environmentally Destructive."

Magazine - Products Liability Law Reporter, ATLA, May 1998. *"Design Defects in Today's Ladders"*. Trial Magazine, January 2002, *"The fiction of technical peer review."*

Paper and presentation – American Society of Agricultural Engineers, July 18-21, 1999

"Minimizing Extension Ladder Slide-Out Accidents," Paper # 997042

Conference Proceeding on:

Factory Automation Engineering Education

Energy Solar Engines

Farm Structures Minimizing Extension Ladder Slide-Out Accidents.

(ASAE presentation.)

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Patents

Machine to attach glass handle to tumbler
Machine to package glassware

Licensed Professional Engineer in:

Ohio, Michigan, Indiana, , Arkansas, Oklahoma, Texas, and Alabama

Industrial Experience

President, Safety Engineering Resources, 1999 to present.
CEO Ryan Engineering, 1967 to 1999. (See Consulting Practice)
COO and CEO of Ryan Systems, 1991 to 1993. Managed all corporation functions for the manufacturing of soundproof movable walls.
Engineering Manager, B.S. and B Safety Systems, 1982 to 1983. Managed all corporate engineering functions for the manufacturing of pressure relief devices.
Design and Development Engineer, Union Carbide, 1963 to 1965. Designed machinery for manufacturing welding rods.
Machine Designer, National Machinery, 1962 to 1963. Designed presses and cold forming equipment.
Machine Designer and Project Engineer, Owens Illinois, 1960 to 1962. Designed glass manufacturing machinery.
Project Engineer, Mason and Hanger, U.S. Army contractors, 1959 to 1960.
Experimentally loaded missile warheads. Top secret clearance.
Engineman 2nd Class Petty Officer, U.S.S. Tercel and Grosbeak, Minesweepers, U.S. Navy, 1952 to 1955. Operation of ship engine room.

Consulting and Machine Design (*partial list*)

Designed and fabricated Production Machinery for:

Rubber belts, Glass products, PVC plastic pipe, Electric motors, Bleachers, Moveable wall system

Engineering & Design:

Steel trusses, Automatic car washers, Conveyors, Herbicide applicator, Shock absorber, "g" force meter, Engineering laboratory equip., Solar still, food

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

dryer, collectors, Ceiling fan, Geo thermal heating, Wood furnaces, Wood-fired water heaters, Poultry cages, Tool boxes, Brake, Mining crane boom

Certified products:

Engine hoists, Jack stands, Tractor cabs, Stadium/arena seating: bleachers, etc

Designed guards and warning devices for:

Rubber mills, Sheeter, Calender, All types of production equipment.

Designed automobile seatback testing system.

Researched methods to prevent electrocution with cranes or booms

Product Development

Mobile-Tool-Safe, Boat back up mirror, Controllable industrial shock absorber, Indoor bleachers, Check-out Conveyors, and meter riser device for gas company.

Litigation Experience *Engineering Analysis & Testing (partial list)*

Manufacturing/production equipment:

Guarding for mills, sheeters, and calenders, conveyors. Tested saws, forklifts. Analyzed large metal presses, rock crushers, freight and personnel lifts.

Automotive:

Brake systems, suspension systems, vehicle roll over, crash worthiness, car seats, seat belts, trailer accidents, trailer hitches, reconstructed traffic accidents.

Farm Equipment:

Farm tractors, ROPS, tractor-mounted augers, PTO guards, grain drills, wood-chippers, feed truck accidents, lawn mowers and tractors, combines, balers, grain bin/silo accidents, cotton module, bush hogs, log splitter

Recreational Equipment:

Golf carts, pinsetters, exercise equipment, three and four wheel ATV's, bicycles

Buildings and equipment:

Controls of automatic and revolving doors, overhead doors, fire extinguishers, air conditioning systems, building trusses, elevators, determined origin of fire

Consumer Products:

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Stepladders, extension ladders, ladder-jacks, ladder stand-off, shopping carts, baby cribs, high chair, toys, ATV's, three and four wheelers, table saws, toys, etc.

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Kenneth W. French, Jr. Ph.D. P.E. Curriculum Vitae

Education

Ph.D., Engineering Mechanics, State University of New York @ Stony Brook, 1973
M.S. Mechanical Engineering, University of Minnesota, 1968
B.S. Mechanical engineering, Purdue University, 1963

Short Courses

Computational Fluid Dynamics and Heat Transfer, University of Minnesota
Fluent.BFC CFM Training Course, Minnesota Supercomputing Institute Center (MSI)
CO-PI CRAY @ Machine Time Grant, MSI/Army High Performance Computing
Research Center
Traffic Accident Reconstruction, Center of Applied Studies in Engineering, Siloam
Springs, Arkansas
Hazards and Safety, Center of Applied Studies in Engineering, Siloam Springs,
Arkansas
Automatic Identification and Data Capture Summer Institute, Ohio University
Enhancement of Faculty Design Capabilities, Southern Methodist University
Integrating Design into Manufacture, Colorado State University
Wind Engineering Design, FEMA Training Center

University Teaching Experience

Engineering Division Chairman, John Brown University, Siloam Springs, Arkansas,
1995 – present
Professor of Engineering, John Brown University, Siloam Springs, Arkansas, 1971 –
present
Engineering Design Support, University of Minnesota, Minneapolis, Minnesota,
1989-1990

Publications **(partial list)**

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

“A study of the compatibility of an existing CFD Code with a broader class of constitutions”, NASA-ASEE Summer Faculty Fellow Final Report, 1984

“A PHOENICS model for the Triaxial Loading of an initially cylindrical mass of rate-type material with provisions for bulging and yield”, NASA-ASEE Summer Faculty Fellow Final Report, 1985

“Theoretical studies on the Mechanical behavior of granular material materials under very-low intergranular pressure”, NASA-ASEE Summer Faculty Fellow Final Report, 1986

“Mechanical behavior of cohesionless granular materials at very-low intergranular pressure” Constitutive Laws for Engineering Materials, Second International Conference, AIAA, 1987

MGM FEM Applications Manual v 1.0, Descriptions and instructions for the Perkin-Elmer 3280 FORTRAN/unix installation for the finite element modeling system for the mechanics of granular materials, 1988

“Thermal Conductivity, heat-capacity and high temperature strength tests of Whitrock Composite”, Final Report for Whitney Rock Company, Palm Springs, Florida, 1988

PIPEFLOW – menu driven solver for single conduit fluid flow with user selectable dependent variables, 1989

Licensed Professional Engineer in:

Arkansas

Professional societies

Member of ASME

Litigation Experience *Engineering Analysis & Testing (partial list)*

Expert Witness, Safety Engineering Resources, 2002 – present

Expert Witness Support, Ryan Engineering, 1985 – present

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231



Mechanical and Safety Engineering LLC

Cases worked on include:

Fatigue failure of truck-trailer axle retaining U-bolts
Hawser restraint calculations for ship retrofit
Shear, melt, or tension failure of seat-belt fibers
Rotary lawn mower baffle failure
Seat belt test for spring constant
Retarded deployment of tipping acceleration latch
Seat belt marking from D-rings under extreme impact loads
Bus driver seat latch release fall tests using instrumented anthropomorphic model
Visual and microscopic analysis of step-ladder leg failure surface
Railroad train brake system analysis
Seat-belt latch plate test
Multi-body dynamic analysis for coupled truck axle assembly subject to traumatic curb loading
Multiple impulse collision with simulation
Bullet-head impact tests to determine HIC
Two-car accident reconstruction to validate alleged initial condition
JP-4 tank truck explosion during steam cleaning
Skylight fall dynamics
Rock crusher safety analysis
BMX Bike handlebar end impact protection
Truck/pedestrian collision
Seat-belt test for ultimate strength
Asymmetric seat-belt mount location and pendulum motion
Motorcycle impact testing with instrumented simulated head
True post-collision skid trajectory prediction for vehicle with speed and spin
2D accident reconstruction of automobile kneeling under tractor-trailer fender bar
Burn trauma from exploding acetylene generator, failure scenario and safety violations
Telescoping ladder latch failure due to chemical corrosion cracking and fatigue
Plastic soft-drink bottle explosion during removal of labeling sleeve

www.mase.pro

Colorado Branch:
P.O. Box 7
Poncha Springs, CO 81242
(855) 627-6273

Arkansas Branch:
P.O. Box 7318
Siloam Springs, AR 72761
(855) 627-6273

Michigan Branch:
P.O. Box 499
Beaver Island, MI 49782
(231) 448-3231