JON O. JACOBSON, Ph.D., P.E.

Jacobson Engineers
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EDUCATION

Washington State University; BS, Mechanical Engineering
University of Washington; MS, Mechanical/Bioengineering
University of Washington; Ph.D., Mechanical/Bioengineering

PROFESSIONAL AFFILIATIONS

Professional Engineer, State of Washington
American Society of Mechanical Engineers
Society of Automotive Engineers
Association for the Advancement of Automotive Medicine
National Academy of Forensic Engineers
National Society of Professional Engineers
National Fire Protection Association; Member Fire & Life Safety Committee
National Association of Sports Officials
National Commissaire, Bicycle Racing
USA Cycling, Category 1 Official
Brain Injury Association of Washington
Journeyman Plumber

PROFESSIONAL EXPERIENCE

Biomechanics of injury, litigation and consultation.
Rebuilding Seattle Monorail, Chief Design Engineer.
Detailed design and fabrication of seafood processing equipment.
Chemical processing plant redesign and fabrication supervision; re: safety containment.
Computer-simulated water distribution system for St. Helens, Oregon.
Failure analysis and rebuild supervision of 9000 H.P. marine diesel engines.
Design analysis of structural requirements for laser communication devices used on orbiting satellites.
Auto accident reconstruction using computational physics and computer-based analysis techniques.
Study of instrumentation required for cardiovascular surgery (physiological monitoring, recording, decisions required, safety and maintenance).
Testing of automobile brake performance.
Bicycle: design, maintenance, handling and conduct of bicycle racing events.
Milking machine performance: testing, performance and design.
Electrocution: industrial machinery, hospital equipment, sailboat design.
Breathalyzer Testing: radio frequency interference.
Microwave oven malfunction, testing and evaluation.
Medical device testing and analysis: defibrillator, heart/lung/membrane oxygenator, electrosurgical equipment, resectoscope, breathing apparatus, safety alarms.
Sports injuries: facility evaluation and device testing.
Design of sports equipment and facilities, skiing, gymnastics, track and field.
Design analysis of helmets for athletic participation.
Helicopter instrumentation testing.
Structural vibration testing and evaluation.
Dynamic analysis of industrial hydraulic drive components.
Analysis of seatbelt failures and injuries.
Electronic device evaluation.
Consultation on personal injury litigation, testing and analysis of equipment with human factor consideration.

Thermal cooling analysis of electronic components and assemblies.

Olympic Engineering Corporation (3 years)

Design evaluation of thermal systems for copper mine (Santiago, Chile).
Design analysis and experimental testing of energy conservation device for steel making industry requiring free convection heat transfer design, thermal stress analysis and test design, and supervision.
Analysis and redesign of chemical processing facility and safety of specified exothermic reactions.
Required scoping hazard, computer simulation, detailed design and final installation supervision for ASME coded system.
Expert witness for personal injury and product liability cases.
Design of commercial building in Northwest for passive solar application using developed computer codes.
Consultant for active solar system studies and installations; commercial and residential.
Analysis of off-design heat exchanger performance. This unit, containing liquid metal, was to operate near the freezing point with particular attention applied to the interrelationships between local heat transfer (free convection) and fluid dynamics (free and forced flows, modified near freezing). This was integrated into an overall, safety-risk assessment.
Analysis and experimental study of liquid metal purification equipment. Required test design and analysis.
Final assessment required studies of free and forced convection heat transfer with extensions to localized thermal stress analysis.
Developed design concept of liquid metal centrifuge (20,000-g) for purification technique. This was followed through detailed design to final procurement.
Developed grant applications for energy and environmental projects.

Flow Research, Inc. (1-1/2 years)

Responsible for design, development and testing of hydraulic seals for 4000 atmosphere pumping system.
Finite element stress analysis methods for production parts.
Developed new products, applications and market proposals.
Participated in team project grant applications.

Applied Physics Laboratory, University of Washington

Consultant; Hydrodynamic Cavitation and Ultrasonic Generation

Virginia Mason Research Center

Responsible for development of ultrasonic detection instruments for experimental studies (decompression systems) and clinical applications (open heart surgery, neurosurgery).
Manager of optical research project for clinical study of occipital lobe tumors.
Co-investigator in multi-disciplinary arterial disease detection and risk evaluation study.

Boeing Company (2 years)

Supervisor of design and test manager for aero acoustic studies on noise generation from fan of full-scale turbojet engines.
Worked on fault-tree analysis for Minuteman Safety Program.
Developed specific personnel safety equipment for thermally hazardous (hot and cold) and chemically hazardous environments.

Engineered Industrial Systems (1 year)

Engineering analysis and design of mechanical systems using metallic and non-metallic materials with specific bonding applications.
Dynamic stress analysis of missile transport and protection container.
Design of quick-change airframe components with stress-weight optimization.
Developed erection procedure for Libby, Montana bridge.

Lockheed Shipyard and Construction Co. (1 year)

In charge of new facility installation such as computer controlled flame cutting facility, high speed cut-off saw and modular assembly area.