

Robson Forensic

Engineers, Architects, Scientists & Fire Investigators

ERIC HEIBERG, P.E. Mechanical Engineer

PROFESSIONAL EXPERIENCE

2007 to **Robson Forensic, Inc.**

present *Associate*

Provide technical investigations, analyses, reports and testimony towards the resolution of litigation and claims involving product liability, industrial accidents, workplace safety, and regulatory/agency compliance.

1996 to **Eric Heiberg, P.E.**

present *Consultant*

Engineer providing consulting services to industry, including: design, analysis, materials selection, hazard analysis, design review and compliance with local and federal regulations. Industries served include windows, exterior walls and railings.

2003 to **EBI, Parsippany, NJ**

2006 *Manager of Engineering and Design, Sports Medicine Department* 2004-2006

Responsible for new product development/product design for sports medicine department including engineering, (design engineering, process engineering, plant layout, manufacturing engineering) as well as product failure analysis. Product line included both hard bracing and soft goods (fabric) bracing. Responsible for compliance with FDA required design controls. In charge of hazard analyses/risk analyses. Additional duties included: product labeling, instructions manuals, warnings, overseeing design reviews, product testing, component testing, workplace safety, time lines for design and manufacturing. Responsible for selection and purchase of production machinery as well as safety equipment. Supervised prototype shop personnel and directed design team.

Senior Project Engineer 2003-2004

Co-led Sports Medicine product design and development department. Responsibilities included: new products design, & testing, selection of manufacturing methods, patent review. Additional duties included: overseeing construction, purchase and implementation of safe testing facility. Served as injection molding consultant to department, led introduction of FDA required design controls to department. Initiated hazard/risk analysis in department.

1992 to **Coltene/Whaledent, Mahwah, NJ**

2003 *Project Mechanical Engineer*

Responsible for new product engineering from initial concepts through pre-production runs and manufacture. Designed and developed a broad array of products ranging from minute Swiss type screw-machined dental posts and accessories, to large electro-mechanical laboratory equipment. Also responsible for the design and production of plastic injection molded products: syringes, packaging, automatic dispensers, etc. In charge of verification and validation testing and analysis, selection and qualification of vendors, design, selection and purchase of production machinery

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and equipment, selection and purchase of safety equipment. Additional duties included materials specification and selection as well as regulatory compliance (FDA, ADA, tests to UL standards and CE certification). Responsible for product documentation including service manuals, instruction manuals and warnings. Responsible for the safe layout and setup of production lines. Work performed in an ISO 9000 certified company according to approved procedures.

1986 to **Gordon H. Smith Corporation**, New York, NY

1992 *Senior Inspector*

1991-1992

Senior engineer leading six man technical inspection team; responsible for the on-site inspection of the largest window replacement project in the world, (Stuyvesant Town/Peter Cooper Village, New York City, NY). Duties included: Acceptability of on-site deviations from design drawings, allocating necessary manpower, distributing work assignments, overseeing on-site materials and product testing to verify product performance. Issued design recommendations.

Inspector

1986-1987, 1988-1991

Consultant contracted to real estate developers to specify, test, and verify accurate, safe, and watertight exterior walls on high rise buildings. Monitored design and materials testing. Was responsible for ascertaining and correcting improper designs. On-site testing and evaluation of materials, products and systems. Noted discrepancies from job specifications and advised appropriate action. Projects included many of the most prestigious buildings in New York City as well as other major northeast metropolitan areas.

1988 to **Surgical Design Corporation, L.I.C., NY**

1990 *Independent Design Consultant/Engineer*

Design of therapeutic pneumatic medical devices. Led development of "low-air-loss mattress" including: direction of mechanical design, reduction to working prototypes, revision to market ready products.

1988 **Heraeus Amersil**, Sayreville, NJ

Applications Engineer

In charge of technical sales support of infrared heat processing equipment for the Northern Midwest States. Specified appropriate machinery for customers based upon in-house temperature/processing tests. Promoted custom-designed capital machinery from design conception to completion via marketing through trade shows, journals and coordinating local independent manufacturers' reps.

PROFESSIONAL CREDENTIALS

Registered Professional Engineer: NCEES, New York, New Jersey, Pennsylvania
PADI certified diver

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EDUCATION

B.S., Mechanical Engineering, The Cooper Union for the Advancement of Science and Art, New York, NY, 1986

Full four year, merit based, tuition free scholarship

Pi Tau Sigma, National Honor Society for Mechanical Engineers

Seminars:

OSHA: OSHA Compliance for the Construction Industry

Boiler Operation and Maintenance, American Trainco

Loctite Bonding seminar

Management training seminars, Rockhurst University

PLC training seminar

Project Scheduling Training, Calc/Canterbury

GEOstar Finite Element Analysis training

DesignStar Finite Element Analysis training

Ultrasonic symposium, Schaumburg, IL

OSHA: Machine safeguarding

PROFESSIONAL MEMBERSHIPS and AFFILIATIONS

ASTM International

ASME

ANSI Subcommittee B11.TR3, Risk Assessment and Risk Reduction – A Guide to Estimate, Evaluate and Reduce Risks Associated with Machine Tools

PATENTS

U.S. Patent 7,837,637 Safety cast (a casting material that changes color based upon its temperature)

U.S. Patent 7,661,178 Fastener adapter

U.S. Patent 7,451,531 Fastener adapter

U.S. Patent 6,722,378 Gun rack for ultrasonic cleaning

U.S. Patent 6,463,944 Gun rack for ultrasonic cleaning

Patent applications:

20040001784

Autoclave Base and Shelf

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AREAS OF EXPERTISE

Manufacturing processes: general machining, sheet metal forming, drawing, punching, welding, brazing, drilling, grinding, soldering, laser cutting, swaging, ultrasonic welding, injection molding, carbon composite molding, reaction injection molding, thermoforming, electro-polishing, passivating, painting, anodizing, assembling fastening, gluing, sand and bead blasting, heat treating, casting, spinning, die cutting, fixturing, powder coating, sterilizing, adhesives

Manufacturing procedures, codes and regulations: ASME boiler & pressure vessel code, ISO 9001, FDA GMP's, Design Controls, Verification, Validation

Testing methods, standards and specifications: hydrostatic testing, materials testing utilizing Instron machines, life testing, materials testing, FCC EMC & RFI testing, UL standards, TUV, CE, AAMA and ASTM test standards, DOE (Design of Experiments)

Management systems and standards: 21 CFR 820, Quality System Record

Materials: steels: carbon, stainless, both 300 series and 400 series, silicones, wood, aluminums (7XXX, 6XXX, 5XXX alloys), carbon composite layups, Kevlar, fiberglass, plastics: polyolefins, polystyrenes, ABS, Nylons, polyurethanes, TPEs, LCPs, textiles, hook and loop closures, glass

Machinery: fans, pumps, gears, boilers, milling machines, lathes, presses, center-less grinders, screw machines, autoclaves, Hi Pot testers, industrial ovens, temperature controllers, PLC controllers, injection molding machines, conveyors, coilers, packaging, grinders, saws, crimping machines, soldering machines, riveting machines, punch presses, brake presses, deep drawing

Products: orthopedic bracing, diagnostic sampling devices, autoclaves, ultrasonic scalars, material delivery devices, electromechanical, curing lamps, dental posts and pins, dental machinery and equipment, ultrasonic cleaners, weapons cleaning, resistance heaters, band heaters, infra-red/radiant heaters, sterilizing ovens, steam sterilizers, pulse-oximeters, exercise equipment, scooters, pumps, winches, lawn and garden tools, equipment and machinery, sports equipment, power washers, spa equipment, furniture, cabinetry, roofing equipment, fall protection devices, food processing equipment, child seats, hot beverage (coffee) machines

Regulatory compliance: FDA, CE, FCC

PRODUCT DEVELOPMENT EXPERIENCE

- Miniature boiler
- Autoclave (steam sterilizer)
- Ultrasonic cleaners
- Curing lamps
- ACL knee bracing
- Sports protective equipment
- Pulse oximeter
- Casting materials
- Parts dispenser
- Dental pins and posts
- Dental hand tools

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ENGINEERING MANAGEMENT EXPERIENCE

- Led construction inspection teams
- Led Design Controls implementation
- Supervised Sports Medicine design team
- Oversaw electrical production testing of electromechanical equipment
- Oversaw pre-production manufacturing runs
- Advised manufacturing teams
- Led Steam Sterilizer design team
- Actively led aspects of department ISO 9000 implementation including work-process flowcharts and portions of Quality Manual
- Directed printed wiring board layout
- Directed drafting personnel to assure proper documentation
- As resident plastics expert advised on all plastic parts design and material selections, from small dental parts through large equipment housings

FAILURE ANALYSIS EXPERIENCE

- Corrosion
- Wear
- Improper embedment on expansion anchor bolts
- Analysis of the failure of dental posts and dental wrenches due to stress concentrations
- Retaining wall failure
- Plastics failure due to: molding issues, improper mold design, improper material selection, environmental stress cracking, improper part design
- Metals failure due to: improper heat treating, stress concentration, fatigue, overstressed conditions, hydrogen embrittlement
- Glazing failures
- Water intrusion through building envelope
- Analysis of life-test failures on electromechanical equipment
- Printed wiring board failures
- Inadequate grounding
- Solder failure

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ADDITIONAL EXPERIENCE: CONSTRUCTION

- Performed design calculations for railings, windows, curtain walls and crash bars
- Water Infiltration testing per AAMA test procedures
- Mock up wall testing per AAMA test procedures
- Stone anchor pullout tests
- Finish tests per ASTM D3359-90 and NCCA-11-18
- Sealant tests per ASTM test procedures C794
- Proper Glazing Verification
- Fire-safing inspections, windows, window guards, limit stops
- Prevented inadequate expansion joints in exterior walls both for thermal expansion and inter-story movement
- As lead inspector on dozens of hi-rise NYC construction projects detected and led resolution of construction defects.
- NYC Local law 10 inspections
- Controlled inspections for exterior walls