JON WILLIAM BURNS, Mechanical Design Engineer

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PROFILE

Experienced ingenious and quirky applied mechanical design engineer with prolific CAD & machine skills. Several patents, clever solutions and sound experience gained from working for many years with talented people, broad hands-on experience and mechanical intuition. Often selected for new projects where no prior concept existed, where solutions could not be found and when single design positions also likely required significant in-house fabrication, prototyping and proofing skills.

Inspired to simplify complicated design and manufacturing problems. More than 20 years of full-time applied mechanical design experience in small talented multidisciplinary workgroups on interesting projects/programs involving modern technologies - proven valuable for project planning and feasibility, program and department. An enthusiastic team player provides fresh perspectives and catalysis for productive group ideation and problem solving.

SPECIAL SKILLS AND AREAS OF STRENGTH

- Unique perspective from working closely with talented people for many years in small multidisciplinary work-groups
- Solution & simplification discovery & proofing
- Costing, design risk assessment, critical path
- Design from scratch through manufacturing transfer, providing own supporting rolls
- Machining and fabrication for rapid in-house proofing, prototyping, rapid debugging
- Compact lightweight multi-axis machines, devices & mechanisms
- Hard materials, slippery coatings, custom bearings, compact lightweight linkages and power transmission, personal hydraulics, composites
- Silicon wafer & optical fiber capital equipment and automation, powered orthotics & prosthetics
- Commercialization and ruggedization, ingress/egress, IP67, RF/EMF shielding
- Sensors, wire routing & harness with motion, flexible PCB, connectors
- DFM, DFA, GD&T, ANSI Y14.5, Select ISO & FDA Quality Systems
- Design for plastic injection mold, titanium castings, aluminum extrusions
- Government R&D, SBIR through STTR, DOE, DOD
- Creative use of Solidworks Simulation Professional FEA, motion analysis
- Design of tests, design & fabricate, assemble & run proof-of-concept & cycle testing machines, data presentation
- Advanced Solidworks surface modeling, large assembly management, top-down implementation for groups, envelopes
- PDM administration, planning, purchase support
- Prior: machinist, electro-optics, measurement

PROFESSIONAL EXPERIENCE

- Contract Mechanical Design Engineer, GlassPoint Solar, Freemont California 7-15 – 2-16 (7 months)
Design development and commercialization of a lightweight modular indoor aluminum structural support frame for a hung articulated 7+ meter wide parabolic trough mirror system. Design and prototyping of associated assembly systems. Interfaced with overseas manufacturers and a GlassPoint office in Shenzhen. Phase 1 as-quoted BOM came in 24% under budget. Project scale: Multiphase $600M commissioned, 700 acres, 1GW peak concentrated solar steam generation, 300k tons estimated CO2 emissions saved per year (=36000 less cars driven).

- Contract Mechanical Design Engineer, Various, Boulder Colorado 2/14 – 4/15 (Partial time)
Plastic injection mold repair, funding collateral, planning, costing, sourcing, BT LE, IoT

- Contract Mechanical Design Engineer, FitBionic, Boulder Colorado 7/13 – 6/14 (1 year)
Mechanical engineering and development of novel lower limb prosthetic devices

- **Mechanical Engineer**, Ekso Bionics, Richmond California 4/07 – 12/12 (5 years 9 months)
[Spin-off from UC Berkeley Lab (see below). From pre-startup to 120 employees] Mechanical design development and production of human bionic exoskeletons for therapy, conveyance and performance enhancement via reduction of problems, progressive experience and the study and exercise of new and old manufacturing technologies. This position involved the concept/proofing/prototyping/pre-production release of original designs, the evaluation/improvement of other's designs, design engineering/analysis, the selection/evaluation of critical OEM/COTS components, detail design/documentation with adherence to ANSI Y14.5 including in depth GD&T and inspection requirements, the introduction, education and initial practice of design transfer, risk assessment, engineering and manufacturing documentation required to meet FDA standards for class II medical devices, hands-on functional prototyping and inspection using our in-house machine shop, design/documentation/creation of assembly tooling/processes, the assembly/fitting of critical mechanical components/sensors, the building/testing/installation/debug of electrical harnesses and cable assemblies, design and building of testing fixtures for subsystem/component level testing/capture/analysis, critical functional evaluation/disassembly/modification/reassembly, inspection/evaluation/scrap for manufacturing dept, and vendor/order development and maintenance - until the eventual creation of traditional manufacturing and purchasing departments - when I then returned to more standard ECN/ECO workflows and vender/order development practices from prior jobs. (details at mechdesigner.com)

- Contract Mechanical Designer, Powis Parker, Berkeley California 2/07 – 3/07 (2 months)
As consultant to assist in mechanical design concerning the development of preproduction book press variation concept before introduction deadline.

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- Contract Mechanical Designer, MicroAssembly, Richmond California 6/06 – 10/06 (5 months)
Mechanical design, machine retrofits and improvements, basic mechatronics and software creation involved with the research and production of prototype MEMS chips (micro electro-mechanical systems).

-**Associate Development Engineer**, Univ. of California Mechanical Eng. Dept., Berkeley California 3/04 – 5/06 (2 years 3 months)
[Gov. Funded R&D, P.I. Professor H. Kazerooni; Bioengineering, Human-Machine Systems] A UC Lab staff position dedicated to the development of heavily funded human exoskeleton projects. The position involved mechanical design work related to BLEEX, ExoHiker, ExoClimber. The latter two were the basis of the commercial success "HULC" and spin-off company Ekso Bionics. Work involved succeeding in a fast paced and dynamically changing project environment with highly educated individuals and involved the evaluation, development and application of uncommon and proprietary manufacturing methods both internally and together with vendors to achieve design goals. These included a novel method to rapidly create composite parts in short run order quantities, hollow thin wall cast titanium structures and technical vacuum brazing and joining of dissimilar metals. Achieved success meeting scheduled critical deadlines for important presentations and live remote demonstrations associated with several millions of dollars of funding. Developed and worked closely with a diverse vendor group to ensure design intent and engineering accuracy. Attended required staff training for the university's purchasing processes and regulations. (details at mechdesigner.com)

-**Mechanical Engineer**, Berkeley Process Control, Richmond, California 8/03 – 3/04 (7 months)
[See, "Mechanical Designer, Berkeley Process Control" Below] Design, develop, specify and assemble prototype drive-train retrofit of a flat panel imager for Siemens Medical ONCOR™ Linear Accelerator. Design and setup proof-of-concept fixtures for silicon wafer handling machines. Develop and maintain enclosure designs for high frequency electronic controller products. (details at mechdesigner.com)

-**Contractor, Mechanical Designer**, Berkeley Process Control, Richmond, California 3/03 – 8/03 (6 months)
[See, "Berkeley Process Control Below] Contracted to convert an earlier designed robotic TIG welder (see below) to Hot Wire TIG.

-**Contractor, Mechanical Design**, Analog Devices Inc, MEMS division, Berkeley, California. 12/02 – 1/03 (2 months)
[A/D, optical and MEMS component manufacturer bought UC Berkeley spin-off company Integrated Micro Instruments in 2001] Designed, assembled and delivered an optical bench to test performance of MEMS mirror gimbal. (details at mechdesigner.com)

-**Mechanical Designer**, **Contractor & Mechanical Engineer**, Berkeley Process Control, Richmond, California 3/94 - 10/02 (8 years)
[An automation company privately held for 21 years then purchased by MOOG in 2009, held up to 200 employees, grossed up to $37.7M annually and holds several unique patents involving motion controllers, amplifiers, I/O technologies, and the design and production of capital equipment such as semiconductor wafer machines, optical fiber manufacturing machines, and robotic pipeline and nuclear spent fuel canister welders.]
Consistently assigned to the most challenging new projects resulting in two patents and numerous other solutions. Generated "considerable amount of intellectual property" according to an annual review. Considered excellent and focused on the success of the project, the group and the company by department and project managers. Asked to act as a mentor to inexperienced members of the mechanical group. Built relationships with vendors in the area. Continually asked to sit in on technical meetings with vendors and buyers. Decreased company cost by streamlining parts, processes and assemblies, simplifying designs, and reducing BOM size. Contributed Pro/Engineer use methods and mechanical design techniques naturally adopted by the group. Relied upon for creative ideas during brainstorming sessions. Guided engineers in accurately applying advanced GD&T and to comply with ANSI y14.5 and other industry standards. (details at mechdesigner.com)

-**Prototype Machinist**, Peak Precision, Richmond, Ca (now located Broomfield, Colorado) 7/92 - 3/94 (2 years)
[Small two man short run and prototype machine shop servicing special needs including film industry, research community and automation industry] Generated and modified parts and assemblies per drawings and customer needs. Designed and created fixtures, tooling and setups for specific tasks and operations. Performed CNC programming. Gained hands on experience with a large variety of high tech materials. Gained experience from interesting extraordinary short run and prototype jobs; creating and fabricating utilizing a large variety of machines, tooling, and measurement tools in a relatively short period. Became familiar with a broad range of drawing styles, formats, and dimensioning and tolerancing schemes from many different designers and engineers including clients from overseas.

-**Electro-Optical Machinist**, Assistant shop supervisor, VA Optical Labs, San Anselmo, California 1/90 - 3/94 (4 years)
[Small specialty electro-optical component manufacturer] Setup and operated a variety of production optical manufacturing equipment, tooling and measurement instruments. Conceived and implemented strategies for short run and production prisms, windows, filters, precision blanks, reflectors and special jobs. Designed and built fixtures. Performed coring, slicing, orienting, grinding, lapping and polishing of a variety of silicon, germanium, fused silica, filter glass and quartz crystal. Setup and used various measurement tools and instruments including; interferometer, x-ray protractor, infrared photo spectrometer and autocollimator.

Experience prior to 1990 includes; Production Machinist, CJB Machine, Novato, California; Assistant Electrician, Mills College, California; and Draftsman, Wolf Amplification, Hayward, California.

PATENTS:
Exoskeleton Load Handling System And Method Of Use (Link), United States WO2011127421, Issued April 8, 2011
Human Machine Interface For Human Exoskeleton (Link), United States WO2012037555, Issued September 19, 2011
Wearable Material Handling System (Link), United States WO2010101595, Issued December 17, 2009
Hip and Knee Actuation Systems for Lower Limb Orthotic Devices (Link), United States US20110166489, Issued September 24, 2009
High Speed Transfer Takeup (Link), United States WO2003062114, Issued January 21, 2003
Fiber Payout Follower (Link), United States WO2004026742, Issued September 19, 2003

Other interests include; Large format photography and composite construction of radio controlled sailplanes. [end]