

Patrick Conarro

New Product Development & Technologies

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CAREER SUMMARY

- 35 years of demonstrated experience in the national and international product development.
- Participated in the release of many complex electro mechanical products and manufacturing systems.
- Work well independently, as well as in a team environment.
- Enjoy learning and the challenge of a dynamic work environment.
- Extensive experience in the following areas: product development, customer support and problem solving.
- Own a small machine shop with CNC mill and lathe capabilities
- Maintain and repair machining equipment with servos, hydraulics, pneumatics, PLC, motion controllers.

EDUCATION / CERTIFICATIONS

A.S. Tool Design (1983), The Pennsylvania State University, Williamsport, PA

EXPERIENCE

Independent: 04/2001 Present (Consulting Engineering & New Product Development)

- Developed specifications, researched materials, designed and built 12 samples for salesmen. Brought in-house a Citizen Swiss Screw machine along with building a number of injection molds. Tooling up production capabilities for an in-house turn-key CNC solution. The device is going in to medical grade vaporizer market with measured dosages. The program required high temperature management along with custom circuit boards, and logic controls.
- Worked on business plans, raising capital and online proposals.
- Building thermoplastic and ceramic injection molds
- Developed an e-commerce web site that processed orders and was integrated into QuickBooks.

Spray Tools, CO: 12/2012-Jan 2014 (Independent Contract)

- Designed built and developed hydraulic pumps to mix metered fluids. Working pressures are 3500PSI. Regulatory pressures were subjected to 10,000+PSI
- Brokered all aspects of \$1.3M deal to build a state of the art high pressure spray gun that included a higher revenue stream with new consumable components that improved product reliability.
- Completed extensive patent research along with all details needed to control costs. Located potential IP conflicts and was able to design around any potential conflicts of IP
- Delivered a complete
- Worked to develop 42 injection molded parts and sub- assemblies for a high pressure spray apparatus. The work was completed in Solidworks 2012 in 3 months. Used Cimatron CAMCAE software to build complex injection molds. Installed a Mori Seiki CNC and all facility support systems to operate this equipment in less than 30 days.
- Installed a Citizen Swiss Screw Machine. Programmed to make high speed aluminum, stainless and

ceramic 5-Axis parts.

- Extensive budgetary costing from raw materials through production. Worked with vendors to lower their costs through designing in features for their manufacturing capabilities.
- Developed a new pumping system that is controlled using Schneider Electric PLC interface. Provided all PLC logic design along with GUI interfaces and iPhone/Android remote controls and data logging.

Holloway, Automation Process Development, CO (4/2002 to 12/2012)

- Xcel Energy: Developed a plan to repair a hydroelectric pipeline with robotics that was approved by the USFS and FERC. The automation was successful in rehabilitating a 104 year old in the fall of 2011. Was responsible for securing a \$1M contract to complete 1 mile.
- Have managed new automation /product design & system tooling fabrication for a variety of companies as an independent developer and fabricator. Most recently
 - iPad controlled automation over a local wireless secure network
 - Developed a pipeline automation process system that reaches 1600' and applies UV curable resins at a specific repair location. This design included onboard video over fiber optics with live motion
 - Developed and programmed a FANUC LR-mate spray robot system to make polyurea rock wall façade. Integrated a large conveyor system and sub stations to complete the work cell.
- Developed business model and costing for automation roll out. Provide sourcing estimates, electronics & software screens, logic diagrams, fluid dynamics and hydraulics design.
- Develop all 3D & 2D shop & patent drawings along with IP language, logic diagrams, software GUI's.
- Worked on the ground in India developing websites to control electronics while traveling to China to complete the electronics integrations to communicate with these web based controls
- Complex high precision production line automation in Juarez MX
- Commercial product in electro mechanical industrial design for retail products using Solidworks, Freeform.
- Developed packaging for Disney, Warner Bros retail toys
- Worked in Thailand for 3 months in the capacity of a hydrogen consultant fabricating emissions reduction equipment. Installed equipment on a 1000Hp locomotive engine running bunker fuel.

Green Light Alternative:

- Designed and built large locomotive hydrogen fuel (HHO) generators for busses in Thailand and Malaysia.
- Systems were tested using Diesel engines with hydraulic engine breaking to simulate loads on the engine. Developed test plans that were run at the CSU engine lab in Fort Collins Colorado
- Controlled under Dr. Anthony Marchese
- Lived for 3 months in Thailand testing on Dynameters and Nisan busses in Malaysia.

Chief Technology Officer, MicroTool/Boos Automation, CO (03/98 to 04/2002)

- Built this robotic calibration company from the ground up and sold it to Brooks Automation
- Created a work flow for electro mechanical calibration equipment design engineers to deliver custom tooling to our clients world wide
- Established the industry standard at Intel to calibrate all 300mm wafer handling end effector robots.
- Was successful in developing an auto-teach controller to calibration device
- Developed 9 unique patents in the semiconductor robotics calibration business.
- Developed standards for calibrating equipment world-wide.
- Delivered a comprehensive service business throughout SE Asia.
- Installed my technology at Intel, Motorola USA & China, Texas Instrument, Sony, Samsung, TSMC, UMC, Chartered Semiconductor, Atmel
- Provided a battery operated robotic recharging system that mounted in FAB stockers.
- Brokered the sale of MicroTool for \$5.5M to the semiconductor automation giant Boos Automation. Completed due diligence under Oxley Sarbanes Act.
- Managed worldwide budgets for the robotic alignment integration tools in the Brooks service group.
- Rolled out a sales and service plan in Europe covering Germany, France, & Italy. Was responsible for qualifying sales and service personal.

- Worked with a number of sales firms to promote and service the MicroTool product line in North America.
- Worked in most FAB cleanrooms around the world qualifying the equipment that I developed.

3D Product Design & Tooling Development, Nike, Hillsboro OR (02/98 to 05/98)

- Worked to develop injection molded roller blades chassis. Complex organic shapes using Pro-Engineer
- Develop rapid tooling to build air sole tooling using laser fabrication.

Interim Engineering Manager, Empak / Entegris Semiconductor, CO (04/96 to 02/98)

Technical Center Supervisor, BP ARCO Polypropylene division, Carson, CA

- Managed the operation of a \$10M tooling/automation budget of the engineering department while the engineering manager set up the Malaysia facility.
- Developed 3D designs for lights out manufacturing in a clean room environment
- Worked with vendors on deliverables and tool qualifications.
- Worked with many major semiconductor manufacturers to qualify products at their FABS

Medical Tooling Engineer, Physio Control Redmond WA (1995-1996)

- Worked to bring 192 injection molds into GMP compliance for FDA 510K approvals
- Knowledgeable in product development, customer support and resolving quality issues

Tool Designer – 4D Precision, Redmond WA (1994-1996)

- Designed & built large Aerospace tooling
- Developed router CNC tooling paths for Kenworth cabs
- Developed zinc die cast molds
- Developed aluminum sand casting patterns

Tool Designer – Perstorp Xytech Tacoma WA (1994-1995)

- Designed & built large HDPE Ni gas assisted structural molds for shipping containers

Sr. Tooling Engineer Tupperware International, Orlando FL (1989-1990)

- Assisted to close down several engineering facilities in North America and kept engineering documentation moving out to worldwide molding and tooling operations.
- Designed using ProEngineer/ProMold

Tool Designer – Complex Tooling Boulder CO (1986-1987)

- Designed & built large HDPE Ni gas assisted structural molds for shipping containers

Tool Room Machinist (apprentice) – Whirley Industries Warren PA (1981-1983)

- Designed & built injection molds and supporting equipment
- Worked wiring up high speed injection molding and support equipment for a variety of machines

ACCOMPLISHMENTS

- Have built several companies from scratch in a boot strapping environment.
- Was published in Micro Magazine for the work completed at the Siemens Infineon FAB in Dresden Germany Implant department calibration.
- Was published in the July 2012 Energy & Mining magazine for my polyurea robotic pipeline rehabilitation solutions.
- Sold MicroTool to a Brooks Automation on the Nasdaq (BRKS)
- Certified in Fiber Optics installation, terminations and attenuation studies
- Hold a valid India & China Visa
- Lobbied and changed laws in Colorado (SB183) for 2 years. Was successful in bringing both parties together and getting the governor to sign the bill.

- In team effort, work to develop large proposals for the semiconductor industry that because robotic calibration standards.
- This included setting up new equipment for polymer processing and automated pick & place injection molded clean room products. Procedure writing, as well as, training and development of new employees.
- Have been called on by Toyota, Boeing, Kenworth to repair CAD data that could not be salvaged
- Have successfully developed e-commerce, HTML web sites
- Know how to operate and program most machines in a shop including: mills, lathes, grinders, water jets, CNC mills and routers, die stamps, hot forging, die casting, sheet metal shears & formers,
- Self-taught electronics. Understand AC/DC power controls, ladder logic, GUI's & power supplies.
- Set up a Chinese engineering department with Solidworks, MasterCAM & Sensible Freeform modeling to develop organic shapes in high speed tooling. Worked to integrate 3D scanning into these CAD programs and define workflows to insure that the process
- Self-taught Adobe Primer, Illustrator, Photo Shop After Effects, Dream Weaver, Encore

CODES AND STANDARDS

ISO 9001, ISO 14001, GMP

COMPUTER SKILLS

Solidworks 2012, (Mold, Sheet Metal, Wire Routing, Plumbing, Rendering) Microsoft Office, Word, Excel, Power Point, QuickBooks, Adobe (Illustrator, InDesign, Dreamweaver, Photoshop) Root Cause Analysis, Waste Disposal, Lock-out Tag-out, Safety Team Member, Confined Space Certified, Word Press Web sites, WebX Video Conferencing, Skype, Word Press Web sites

Computer Skills:

DEC MicroVAX VMS UNIX operating systems
 Sun UNIX stations
 Basic Networking & WAN & LAN
 Apple Macintosh Operating Systems

Analytical Techniques:

ASTM & NIST traceable standards

Shop Equipment: CMM, Optical Comparators, Calipers, Depth Gages, Pin Gages, Oscilloscopes, Current meters, Micrometers, Height Gages, Joe Blocks, Surface Profilometers, Coating (Adhesion & Thickness gages)

Polymer Processing Equipment:

Toshiba Injection Molding Machine, Blow Molding, Thermoforming, Roto Molding