August 16, 2011

Daniel S. Cook
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Learn more about me at:
http://www.danielscook.com

Hiring Manager:

Thank you for taking the time to consider me for the position currently available with your client; I would also be interested in learning more about other positions for which you feel I may be better suited. I am confident that a cursory review of the enclosed resume will encourage any interested party to request a more formal, personal meeting which I am eager to entertain.

As a current Senior Engineer and Project Manager in a small, leading technology company, I have successfully coordinated and participated in numerous complex embedded electro-mechanical product development efforts; two projects in particular involved an intra-aortic balloon pump and portable respirator. My current role provides unique challenges associated with small companies yet I have extensive experience with larger companies including in-depth involvement with General Dynamics. These experiences combined have prepared me for all levels of organization, complexity, hierarchy, and specialization that are present in companies of varying sizes. I have served in several roles ranging from a member of a small, collaborative team to leading and managing complex projects where safety was a paramount concern and responsibility. Furthermore, by maintaining close professional and personal relationships with customers, I was able to keep the customer informed while balancing technical requirements and business goals. I am confident that I would be successful in the most technically challenging roles, corporate environments, and cultures.

I feel that the experience I have gained with Enfield Technologies as a small 'start-up' company as well as in the U.S. Navy Nuclear Power Program set me apart from most applicants. New product planning, development, design, sales, and marketing contrast and compliment my experiences with reactor plant operation and supervision; combined, these experiences have fortified the theoretical knowledge gained through education to make me a unique candidate for challenging development, embedded servo controls, and management roles in technology, mechatronics, engineering, automation, and fluid power alike. I am a determined team member and team leader with a 'Let's get the job done right!' attitude. My personality, skills, experiences, and attitude are best utilized in a role that will have a direct and meaningful impact on an organizations effectiveness, efficiency, and profitability.

The enclosed resume provides more detail about my qualifications; however, I am certain that a personal meeting would afford me the opportunity to discuss in more detail the extent of my experiences. I am eager to meet with any member or representative of your client's company to discuss my qualifications further. Thank you for your consideration.

Best regards,

Daniel S. Cook
Encl.: Resume

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- **Technical Aptitude**
- **Diverse Background**
- **Ambitious Leader**
- **Small Business Experience**

## EMPLOYMENT HISTORY

**Enfield Technologies** **2003 – Present**
R&D / Product Design Engineer / Engineering Manager / Principal Engineer Trumbull, CT

- » Holder of 4 issued patents (US 7401541, US 7845370, US 8001993, PUB 20080099706) as well as 7 patents pending
- » Designed and developed numerous electronic and/or mechanical products from concept through production :
  - o Worked with Cannondale Bicycle Company to develop a cutting edge active suspension damping system that incorporated multiple I2C networked embedded processors, mechanical and fluid systems, position and acceleration sensors, battery technologies & graphic user interfaces. Designed and developed a custom robotic/servo fluid control valve with embedded processor controls and sensors.
  - o Designed and developed numerous voice coil pneumatic valves to control the flow of pressurized air through application of a controlled current to the voice coil. Typical pressures up to 500 psig and flow up to 100 SCFM (see 'M1d', 'M2s', and 'M2d' at www.enfieldtech.com).
  - o Designed and developed several embedded and mixed-signal products utilizing micro-controllers, analog sensors, analog filtering circuits, algorithm development using C programming, and graphic LCD's.
  - o Designed and developed a product that consisted of an analog PID control circuit that also incorporated digital potentiometers for adjustment; the potentiometers interfaced with a primary micro-controller over an SPI digital communication bus. The output of the analog PID control circuitry served as an input to a secondary micro-controller based PWM power amplifier/coil driver circuit to drive a voice coil valve or DC motor. The primary micro-controller also provided user-interface functions through a graphic LCD and membrane keypad (see 'C2s' and 'C2d' products at www.enfieldtech.com)
- » Sole developer on several custom development projects where implementation of new or developing technologies were necessary to achieve success :
  - o Designed and developed a control system that would control the pressure in the dome of a dome-loaded pressure regulator which would control a much higher process pressure. The controller monitored dome pressure and process pressure through the use of analog sensors and calculated an output to provide to a voice coil proportional valve that would either add or remove air as required to control the process pressure to within 1psig over the range of 0-1500 psig.
- » Researched incumbent and competing technologies to assess the intellectual property landscape to determine competitive threat and/or technical merit; guided others with regard to technical/legal barriers to development
- » Provided executive level guidance and assistance on various technology related matters including competing products, new or start-up technologies, evaluation of feasibility of various control algorithms, product road-mapping, software, and company technical personnel development strategies.

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**Independent Efforts** **2008 – Present**
Design Engineer Terryville, CT

- » Sole developer on several custom development projects where implementation of new or developing technologies were necessary to achieve success :
  - Designed and developed miniature watch-cell battery powered digital wireless communication device (about 1" x 0.75" x 0.25") incorporating Microchip XLP low-power micro-controllers and digitally controlled radio transceivers operating in the FCC allocated ISM bands (433MHz, 868MHz, and 915MHz)
  - Designed and developed a low-cost digital read-out (DRO) system that accepts digital position information from up to 4 independent position encoders, parses the SPI serial data stream to extract position information, and displays this information on a 16-bit color LCD (320x240). Utilizes a dsPIC30F / PIC24 micro-controller, level shifting circuits, USB interface, color graphic LCD, and resistive touch screen to allow the user to navigate a menu system to access various calculation tools, options, and configuration information.
  - Designed and developed both the hardware circuits and Windows software for a user programmable mixed signal (analog and digital) controller. The user draws a block diagram in the host software representing the process algorithms they would like performed (similar to but much simpler than LabView) and what the inputs / outputs will be. Once complete, the software creates a downloadable machine program that will alter the target devices behavior. The device interfaces with the host computer via USB or serial RS232 during programming and operation but can operated with host PC support during normal operation.

**University of New Haven** **2008 – Present**
Department of Electrical and Computer Engineering West Haven, CT
Adjunct Professor

- » Responsible for mentoring and assisting Junior/Senior level students in technical skills development as well as personal and professional growth; developed engineering and professional skills in young and ambitious intellectuals.
- » Conduct hands-on education with up to 12 engineering students in a blended lecture and lab environment while fostering 'technical-yet-practical' engineering philosophy
- » Worked with senior faculty to evaluate and revise the existing curriculum to better prepare students for 'real world' dilemmas; proposed, wrote, and implemented customized design projects to adequately challenge students of varying levels of capability.
- » Encouraged and inspired all students to achieve to the maximum of their ability by stimulating collective conversation, assigning challenging entry level design problems, and challenging mental blocks or paradigms in their approach to problem solving.

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**United States Navy** **1993 – 2003**
Naval Submarine Support Facility Groton, CT
NSF Director / Nuclear Repair Project Lead / Technical Writer

USS Seawolf (SSN 21) Groton, CT Engineering
Supervisor / Reactor Operator / Electronics Technician

**General Technical Skills**

- Highly skilled with all standard electronic and mechanical lab test instruments and sensor technologies (oscilloscopes, DMM's, function generators, data acquisition, load cells, calipers/micrometer, flow meters, pressure sensor and gauges, regulators, EPR's, etc)
- Expert troubleshooter – routinely assists employees and clients with difficult troubleshooting of complex closed loop and open loop electro-mechanical systems
- Multi-disciplinary – circuit design/bread boarding, embedded systems, serial communications, solid modeling, machining (lathe, Bridgeport, etc), magnetic modeling, dynamic systems modeling via first principles equations and computer simulation, assembly/C language programming, construction of electro-mechanical prototypes
- Simultaneous application of skills during complex product and system design on both a macro-systems scale down to a micro-component scale to develop a more complete and intuitive understanding of an overall system; enables the creation of more robust, reliable, maintainable, and cost effective product and system designs

**Diverse Hands-On Experience**

- Over 10 years experience in various forms of fluid power, electronics, machinery, electro-mechanical actuation and automation
- Research and evaluation of emerging technologies and companies for potential acquisition opportunity, product design-in, technology buy, or competitive threat
- Evaluation of risk associated with new products by considering volume/COGS trade-offs, market acceptance, product life-cycle, and return-on-investment (ROI) over product life
- Experience with new product development from concept development and refinement to realization and production
- Management and Leadership in small to large projects as well as daily operations
- Electronic design, mechanical design, product design, and intellectual property management
- Hands on experience with sales, application support, and customer service

**Perceptive Leader**

- Makes astute and timely decisions, often with limited or imperfect information; welcomes alternative views in the process of evaluating and making decisions
- Inspires sustained superior performance in self and others by clearly establishing and maintaining high standards
- Revered as a valuable team member on multiple projects as well as a respected team leader on development projects critical to both the customer and the company; inspires trust and respect among team members by a simple virtue of 'leading by example'
- History of accelerated promotion, level of responsibility and accountability

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**10 Years Military Service** (Naval Nuclear Powered Submarines)

- » Held SECRET Security Clearance
- » Assigned responsibility for operation and maintenance of a 58-year old radioactive liquid processing barge and 4 portable storage tanks *Result* – Ensured continued operation of 17 nuclear reactor plants vital to Navy's mission
- » Earned accelerated advancement to Chief Petty Officer (E-7) approximately 5 years ahead of peers
- » Earned 2 Navy Achievement Medals: designed, developed, and constructed electronic indication simulator; simulated conditions during major inspection *Result* – improved safety margin during drills and accuracy of simulated conditions

## SOFTWARE EXPERIENCE

- Productivity – Skilled in all elements of MS Office (Word, Excel, PowerPoint, Outlook, Project, Access, Photo Editor), Corel WordPerfect, Lotus Notes, some web-site design
- Technical – MatLab & Simulink, Protel Circuit Maker 2000, Altium Designer, Solidworks, Autodesk Inventor, CF Design, Ansoft Maxwell 3D, Orcad Pspice, LabView, MPLAB, WinAVR, many more…
- Programming Languages – VB.Net, C/C++, Assembly, some C#, some Java
- Media – Adobe (Acrobat, Photoshop, Illustrator, After Effects, Premiere)
- Operating Systems – MS DOS, MS Windows 95/98/2000/ME/NT/XP/7, Networking Skills

## EDUCATION

**Bachelor's Degree in Electrical Engineering**

*University of New Haven - School of Engineering and Applied Science*
*West Haven, CT* *[GPA: 4.00/4.00 – Dean's List]*

**Graduate - Naval Nuclear Power Training Command**

*Nuclear Power School (Orlando, FL)* *[Rank: 26 of 246 – GPA 3.68/4.00]*
*Electronics Technician 'A' School (Orlando, FL)* *[Rank: 1 of 13 – GPA 3.47/4.00]*

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{Search Keywords}

## Summary of Technical Background, Experience, and Skills

### Electro-Magnetics

- Designed, tested, and produced several specialized electro-magnetic linear actuators (voice coil actuators) including static and dynamic magnetic simulation, materials and performance optimization, and cost reduction.
- Versed in electro-magnetic theory of permanent rare-earth (NdFeB and SmCo) magnets, ferromagnetic materials with inherent B-H non-linearity, optimizing and modeling back EMF & eddycurrents, modeling & optimizing thermal performance, and integrating unconventional magnetic materials.
- Versed in magnetic bearings construction and the associated electric control systems (servo control of shaft position)
- Design, simulation, and implementation of passive permanent magnet non-linear springs
- Familiarity with and hand-on use of magnetic Finite Element software tools such as Ansoft 2D/3D, Terra Analysis, Ansys, Cosmos

### Rotary Machines

- Experience with all types of rotary electrical motors and generators (synchronous AC and asynchronous 'squirrel cage' motors up to 700 kW, 1- phase and 3-phase machines and systems, DC motors up to 500 kW, 3-phase AC turbine-generator sets up to 4 MW, variable frequency drives for asynchronous motors up to 350 kW, stepper motors and drives, BLDC motors and drives, reluctance motors)
- Designed and conducted Computational Fluid Dynamics (CFD) simulation/analysis on a Tesla Turbine design (self-inspired)
- Self-inspired interest and study into combustion turbines (gas turbines, jet engines, propane combustors) as well as associated nozzle design and CFD
- Design, CFD, and construction/assembly of a small impulse turbine for personal education
- Implementation of numerous small motor drives for testing (both open-loop DC and steppers as well as closed-loop)
- Familiarity with air motors, hydraulic motors, swash-plate type pumps, hydraulic pumps, air compression technologies, internal combustion engines, compressed air turbines (up to 100,000 rpm)
- Self-inspired interest in rotary mechanical energy storage (flywheel) design and trade-offs

### Fluid Systems

- Expert in fluid power technologies, design, use, integration, components, markets, etc to include system design, component design, component and system sales / marketing, competitive analysis of emerging technologies, holder of multiple patents & pending patents related to fluid power components
- Experience with 1000psig & 3000psig oil-hydraulic systems, up to 4500psig compressed air

systems, 1000psig water-hydraulic systems, up to 700psig steam systems, low and high pressure air-over-water hydraulic systems, vacuum systems, and all associated fluid energy components including valves, pipes, fitting, tubing gauges, pumps, motors, accumulators, etc

- Experience with several types of thermo-dynamic cycles such as Rankine cycles and refrigeration cycles; skilled in thermodynamic systems analysis and use of fluid property databases (steam tables, Mollier diagrams for various fluids, etc)
- Some experience with cryogenic fluids and applications
- Experience with several types of heat exchangers, construction and use

### Electronics & Embedded Software Experience

- Embedded wireless designs (ISM band, ZigBee, FM) for remote device actuation, sensing, monitoring, and control
- Embedded C and assembly programming for Atmel and PIC families of micro-controller products
- Embedded products with HMI via LCD's and touch screens
- Home electronics work-bench with function generator, oscilloscope, DMM, soldering station, SMT soldering binocular scope, and supporting tools and equipment

### Mechanical Experience

- Hands-on experience with solid modeling tools (Autodesk Inventor, Solidworks)
- Preparation of mechanical design for production by preparing drawings, procedures, specifying materials
- Hands-on use of countless hand-tools, power-tools, and powered machinery
- Concurrent integrated electro-mechanical design of various products involving moving parts, sensor, electronic circuits, controls, and mechanical interfacing
- Home machine shop

### Control Systems Design and Implementation

- Embedded, battery powered, adaptive hydraulic damping systems and components using classical tools such as MatLab and Simulink (see Design News article regarding Cannondale Bicycle)
- Embedded low pressure medical gas flow control device functioning as a servo valve with embedded PIC micro-controller and integrated linear actuator and position sensor
- Automatic dynamic control of various physical processes (linear position, rotary position, tank pressure, gas mass flow controllers, force application) to include systems analysis and modeling (Simulink), control system theoretical design (Matlab, Simulink), implementation, and testing to include hardware-in-the-loop.
- Familiarity and/or use of various common control algorithms (PID, Kalman Filters, PVA, Adaptive Control, Gain Scheduling, Model-Reference Control, Sliding Mode, classical FIR and IIR filters, Analog filtering techniques, Lead/Lag compensators, etc)
- Multiple-input control systems and cascaded controls development

### Manufacturing and Prototyping Technologies

- Machining (lathe, mill, bandsaw, drill press, CNC routers, CNC lates, CNC milling, 4-5 axis

machining centers, grinders, honing machines, swiss screw machines, etc)

- Injection molding
- Casting (lost core, investment, polymer resin)
- Rapid Prototyping technologies (SLA, FDM, etc)

### Materials Science

- Familiarity and experience with numerous materials

- Metals – most ferrous alloy steels (1018, 1045, 12L14, 1215), cast iron, aluminum alloys (2024, , 5052, 6061, 7075), copper alloys (brass 360, phosphor bronze 9XX), stainless steel (302, 303, 316, 416, 440C, Nitronic 60, 18-8, 17-4ph), exotics (Inconel 625, 650, 750, titanium)
- Plastics – Nylon, Polyethylene, Acetal, Teflon, PEEK, Polycarbonate, ABS, PVC, PET
- Other Non-Metals – glass, graphite, fiberglass, carbon fiber, epoxies, resins

- Versed in manufacturing, thermal performance, costs, and handling of various materials such as those above.

### Government / Naval Experience

- Served aboard a sea-going nuclear powered submarine (USS Seawolf) as a nuclear propulsion plant operator and plant supervisor.
- Acted as a Nuclear Submarine Maintenance / Repair Depot liaison to interface between the Navy ships, shore-based naval repair organizations, and civilian repair technical expertise; worked closely with engineering and management at General Dynamics / EB to ensure timely, cost effective completion of complex maintenance activities aboard Naval assets.
- Director of a Nuclear waste water processing facility responsible for training, qualifications, and safe operation of the facility to process >5,000 gallons per month of radioactive waste water into pure water and thousands of pounds of radioactive waste by-products.
- Held a SECRET security clearance until separation in 2003; easily reinstated.

### Education (of others)

- Served as an adjunct professor for the University of New Haven EE Department
- Spear-headed a ‘first of its kind’ course at the University involving robotics systems design, implementation, and construction
- Frequently sought out as a technical resource on a variety of subjects from a wide range of personnel (educators, students, academics, entrepreneurs, peers, and co-workers)