

# Patrick L. Hearn

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## Qualification Summary:

### ***Engineering Development and Project Management -***

Extensive experience in management of interdisciplinary and cross-functional product development teams across multi-site locations. Qualified to define highly competitive products and lead engineering development to achieve optimal performance, cost, time to market, manufacturability and reliability. Effective in establishing product in very high volume production and in addressing critical technical issues with customers.

### ***Advanced Development / Research -***

Experience in creating and managing high output research and development teams in Servo Control, Mechanical Engineering and Tribology. Proven ability to plan, develop and nurture new technologies from concept to shipping product.

### ***Organizer / Problem Solver -***

Technically and organizationally innovative. Experience in conceptualizing and implementing pilot manufacturing to achieve early product maturity and more effective product launch. Established bottoms up product reliability prediction methodology that was adopted throughout a large corporation. Capable of functioning as strong bridge between R&D, Product Development and Manufacturing.

### ***Team Builder -***

Can attract, motivate and retain excellent engineers through a combination of interpersonal skill, attention to careers and genuine interest in broad range of engineering and science.

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## **Experience:**

*Ballard Power Systems, Burnaby ( Vancouver ), B.C. July 2002- Present*

### **Director – Fuel Cell Stack Development**

Leading 100 plus person fuel cell product development team through transition from R&D oriented organization to production-oriented organization. Activities include implementation of rigorous engineering practices and organizational structure to insure:

- Robust, optimal and cost effective products designed for manufacturability
- Strong emphasis on design verification and test
- Strong cross functional interactions between R&D, Product Development and Manufacturing
- Fast time to market.

Established cross-organizational task force model to solve critical Mechanical / Electro-chemical technical issues. This activity has increased organizational flexibility and enabled R&D, Product Development and Manufacturing to rapidly implement.

Introduced product and technology roadmaps based on quantified relationships between product attributes and technology trend lines. Represented Ballard in a joint keynote address and panel discussion at the Second International Fuel Cell Conference, Rochester, NY, June 14, 2004. Presentation topic was “ PEM Fuel Cell Design Boundaries and their Relationship to Technology Trend Lines “. Organized a Fuel Cell Simulation Tools development team with industry and university collaboration.

*Quantum Corporation / Maxtor Corporation, Shrewsbury, MA. October 1995 – June 2002*

**Senior Director – Advanced Technology and Engineering for Hard Disk Drives**

Built high performance advanced development teams in Servo, Mechanics and Tribology. Staffed teams, established labs, and transferred significant technology to products within nine months. Established contacts and working relationships with universities and industry consortiums. Effectively communicated technologies corporate wide through seminars and direct participation with design teams.

*Digital Equipment Corp / Quantum Corporation, Shrewsbury, MA.*

*October 1993 – October 1995*

**Engineering Manager** for Atlas series 7200 RPM, disk drives. Set initial specs and executed design resulting in a competitive and well-received product. Project family included 3, 5 and 10 disc units with a high level of commonality. Responsibilities included design, internal qualification, support of remote manufacturing ramp, interaction with critical component suppliers and engineering support of key customers. Over one million units sold and more than \$500M revenue generated. These were record sales and revenues for high end products at both Digital and Quantum.

*Digital Equipment Corporation, Shrewsbury, MA. September 1992 - Sept 1993*

**Engineering Manager** for RZ74 5400 RPM, 4 GB 5.25 inch disk drive. Effective in coordinating a U.S. design engineering team, a German drive manufacturing engineering team and an Irish printed circuit board manufacturing team in achieving 70 percent first pass yield of this 26 head disk drive.

*Digital Equipment Corporation, Shrewsbury, MA. July 1990 - August 1992*

**Engineering Manager** for RZ73, 2 GB, 5.25 inch disk drive. This program was a full six months ahead of the competition and was the first disk product from Digital sold in the OEM market. Played a major role in learning the OEM market requirements and then sharing this insight within Digital Equipment Corp. The RZ73 qualified at the industry's most demanding customer, EMC, for use in their storage arrays.

*Digital Equipment Corporation, Maynard, MA. June 1975 – June 1990*

**Engineering Manager, Mechanical Engineering Supervisor and Mechanical Design Engineer.** Conceived and implemented an engineering pilot line to insure product and process maturity before release to volume manufacturing. This pilot line proved to be essential for effective product launch across international sites. Test software and process was developed and then transferred to volume manufacturing. Pioneered computer based laboratory data acquisition and trained mechanical team in its use. Designed mechanical and electromechanical disk drive components to include actuator motors, tachometers and other precision devices.

**Activities Related to Electric Vehicle Industry**

Member of Northeast EV Consortium 8 person peer review panel. This panel selected sets of technology projects from a wide range of electric vehicle and electric vehicle component development proposals. The recommendation from this panel resulted in \$3.5M US federal funding for The Northeast EV consortium. April, 1993

Chaired "Optimizing the Hybrid EV" session at Northeast Sustainable Transportation EV 94 Conference. October, 1994

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**Education:**

BSME with High Honors, University of Massachusetts at Lowell, 1975.  
Worcester Polytechnic Institute, Graduate studies in Mechanical Engineering

**Military Service:**

US Army, June 1966, Nov 1999. Honorable Discharge. Rank: First Lieutenant Field Artillery.

**Patents:**

4,622,516 and 4,523,375, design concept and manufacturing process of a magnetic tachometer for disk drives.  
5,216,655, Concept of selective disk surface retirement to improve manufacturing yields.  
6,108,169, Randomly laser-textured magnetic recording media.  
6,567,235, Drive housing with integrated electrical connectors.  
6,556,372, Hermetically sealed data storage device with double seam seal.  
6,525,899, Hermetically sealed data storage device with adhesive seal.  
6,392,838, Hermetically sealed data storage device.

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