Robert Setbacken

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Systems/Mechatronics/Management

Summary

Over 20 years experience in the Motion Control Industry. Throughout my career I have been involved at the front end of the development cycle, working closely with customers to provide them with the highest value product consistent with their needs. I have participated in international product development teams, working with peers from Sweden, China, Japan, Germany and the UK to develop global products using standardized manufacturing methodologies and processes. I enjoy travel and foreign cultures, and have established both business and personal relationships all over the world. I am an extremely hands-on person (but not a micro-manager) and work well in either team environments or on my own. As a manager I am effective at delegation and mentoring. As an individual I am resourceful and not easily deterred. I work best in an environment where trust and responsibility are the norm, risk is responsibly managed, and success is recognized and rewarded.

Notable Contributions and Achievements

Management

- Starting in 2007 productivity as measured by $ shipped per employee increased 25% per year every year in an economic environment characterized by declining unit prices.
- Established Micro-Electronic assembly as a core competency for Santa Barbara Operations.
- Brought four completely new products to market in 1 year.

Designs

- Supported Specification Development and review for advanced incremental and absolute rotary encoder products
- Developed Serial Databus Encoder using low cost micro-controllers for fast time to market.

Technology Advances

- Developed novel Chip on Glass manufacturing concept for bulk sensor optical encoders. (Patent awarded)
- Introduced Opto-ASIC technology to our product lines. (Patents awarded)
- Introduced lead-frame technologies to our product offerings. (Patents awarded.)
- Championed innovative optical designs to promote manufacturabilty
- Conceptualized, developed, and sold low cost programmable encoder products and programming tools.
- Developed a new method for environmental sealing of bearing encoders (Patent awarded)

Employment History

President RENCO Encoders, Inc. 2007 - Present

Coordinated Sales, Engineering, Production, Purchasing/Sourcing and Quality organizations. Responsible for operations, customer relations and internal Sales and Marketing. Responsible for strategic planning for product lines, including estimation of target market size, capital investment requirements, and projected revenue. I have defined and implemented capital equipment plans, long term facility development plans, and implemented programs within the community to develop human capital. I have also had to make the difficult decisions, such as reducing head-count when faced with difficult economies. However I have also been lucky enough to be responsible for building the business up when times are good.

VP Engineering RENCO Encoders, Inc. 1990 – 2007
Responsible for hiring, training and development of the Engineering team. Worked closely to flow down new product needs from Sales and Marketing into a continuous product development plan and technology roadmap. During this period I managed the redesign for manufacturability all of our Hybrid product lines, developed three new bearing encoder lines, brought our first lead-frame products to market, participated in the specification, test, and introduction of our advanced incremental encoder ASIC's, championed the development of incremental encoder products including commutation outputs, conceptualized and sold the Integrated motor encoder Value Added concept, introduced the industry's first programmable incremental encoder with customer programming tools.

Skill Set & Misc. Experience

Engineering. Active involvement in design and manufacture of mechanical and electromechanical products and components. Specific experience in the design and manufacture of angular measuring systems, inertial stabilization systems, and precision mechanical assemblies. System specification and error budget allocations for incremental and absolute rotary encoders. System specification for Multi processor control applications utilizing custom and OTS CPU/DSP/µ-controllers with a wide variety of sensors, effectors and RTOS'. Mechanical system development including analysis, specification of materials, tolerances analysis, MTTF calculations, environmental protection, production planning and manufacturing process capability analysis. Training and application experience using Design for Manufacture and Assembly techniques, flow-oriented manufacturing methods, Design of Experiments, SPC. Substantial experience with micro-electronic assembly processes including COB, Multichip Modules in laminate and ceramic (MCM-L, MCM-C), SMT, die-placement, wire-bonding, and encapsulation methods. Experience with rapid prototyping of injection molded and die cast assemblies. Development and implementation of test programs for Environmental Stress Screening and Life testing of commercial products. ANSI Y14.5 GD&T documentation. Somewhat skilled in PRO/E Wildfire 4.0

Program Management. Supported a wide variety of R&D and Production programs in both Mil-Spec and Commercial environments. This has included responsibility for proposal support, system concept development, cost estimation, basis of estimate documentation, and support of fact-finding, technical coordination, tracking of schedule, status, cost, and manpower coordination. These programs included governmental CPFF and Fixed cost programs, as well as commercial "lowest bidder" contracts.

Sales and Marketing. Worked with CTO's or Engineering Management at major customers to promote existing technology roadmap and coordinate internal R&D with customer goals. Used benchmarking and customer input for new product specification. Used market knowledge to define new product offerings and identify Blue Ocean opportunities. Developed Sales forecast and 5 year plan. Support Trade Show demonstrations. Developed "success stories" for product application at lead customers for promotions and advertisement. Created the foundation for company website technical content.

Business Management. P&L responsibility. Capital budgets, Presentation of results to Board. Coordination of Technical, Sales and Earnings 5 year plan.

Education and Other

EDUCATION. MSME, University of California Santa Barbara

Continuing Education.
Concurrent Engineering, Manufacturing Cost Strategies, Robust Product and Process Design with Design of Experiments, Fast Cycle Time, Streamlining the Product Development Process, Taking Technology Products to Market, Bullet-Proof Manager

Certificaton, Practical Design of Experiments for Electronics Manufacturing, Creating Breakthrough Products, UCLA Technical Management Program, JCIT Demand Flow Technology Workshop, Magagement Action Program, Strategic Pricing, Design for Manufacturing and Assembly, Geometric Dimensioning and Tolerancing, Advanced Lithography technologies and processes.

PUBLICATIONS.

- IEEE Trans. in Education, "A Design Oriented Feedback Control Laboratory,", vol., E-22, no. 3, August 1979.
- SAE Trans., 1985, "On the Design of an Optimal Seismic Isolation System", 0096-736X/86/9406-0813, 851929
- Robert Setbacken, “Application of Rotary Optical Encoders and Resolvers in Brushless Servo Motors”, Small Motor Manufacturing Association Fall Meeting, October, 1994.
- Steele, Setbacken and Zierhut, “Tips for Using Optical Encoders”, Motion, Vol 11, Number 2, Mar/Apr 1995.
- Power Conversion and Intelligent Motion, “System Performance and Application Tradeoffs Determine the Choice between Encoders and Resolvers in Brushless Servos”, Pg. 69, Vol22, No 5, May 1996
- Robert Setbacken , “Feedback Devices in Motion Control Systems”, Fithian Press, 1997. ISBN 1-56474-247-4
- Robert Setbacken, “Dynamic Resolution for Optical Encoders”, Motion Control, Jan/Feb 1998.
- Robert Setbacken, Contributing Author, “Handbook of Small Electric Motors”, McGraw-Hill, 2001, ISBN 0-07-072332-X
- Robert Setbacken with Richard Welch, Jr., “Maximizing Efficiency with Encoders”, Part 1 of 2, Motion System Design, Nov. 2009
- Robert Setbacken with Richard Welch, Jr., “Maximizing Efficiency with Encoders”, Part 2 of 2, Motion System Design, Dec. 2009

PATENTS

- USPN 5,670,781 - Photoelectrical Encoder, Sept 23, 1997. This was a foundation concept which is cited in a large number of follow-on inventions.
- USPN 5,708,496 - Modular Optical Shaft Encoder Having A Slide Gap Centering Mechanism And Method Of Use. (With Barnett and Carbone.)
- USPN 5920494 - Method and Device for varying interpolation factors (With Mazgaj), 6July99.
- USPN 5981940 - Angle Measuring System with a Clampable Shaft. (With Goeden). 9Nov99, re-issued Nov 22, 2005 RE38,882 E
- USPN 5,936,236 - Method for generating a synthetic reference signal for comparison with scanning signals of a position measuring device. 10Aug99.
  USPN 6,175,109 - Encoder for Providing Incremental and Absolute Position Data. (With Barnett) 21Oct99
- USPN 6,642,508 B2 – System and method in an angle measuring system with an encoder attachment system for attaching an encoder to a motor shaft through the use of a spring generating a radial pressure. (With Roach and Mathewson.)
- USPN 7,601,948 B1 – Encoder Device and Alignment Device for an Encoder. (With Rhodes and Powell)
- EP 2 072 968 A2 – Encoder, Encoder System and method for manufacturing an Encoder. Patent Application Sep 2008. (With Rhodes, Cortina, Cepeda.)