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Total Battery Consulting Associate

Energy Storage System & Electronics Management

OVERVIEW

Highly skilled and engaged engineering manager with a history of challenging leadership roles in the area of energy storage systems (ESS), advanced technology vehicles (HEV, PHEV, EV, EREV) and electronics development. Experienced at developing robust product development plans for new products.

EXPERIENCE

Overview:
I have worked for five companies during my career; and each has taught me an important aspect that has shaped my view of engineering development. At Lockheed Martin, I learned the importance of a thorough design effort and detailed test-plan. At GM, I learned about bringing a design into high-volume production; how to work with suppliers and how to integrate multiple sub-systems into a vehicle. At Cobasys & EnerDel, I learned about what it takes for a supplier to implement a design and launch a production product along with how to build and manage a team of talented engineers. At Fisker, I expanded my skillset beyond batteries into power electronics and learned how to manage a variety of components with a team of diverse skills.

Fisker Automotive (Anaheim, CA) 2010 - 2013

Engineering Manager – Energy Storage and Power Conversion Mar 2010 – Apr 2013
Manage an energetic team that is responsible for component design, development, test & validation as well as vehicle-integration for energy storage systems (battery packs), inverters, battery charger, DC-DC converter & solar cell array.

- Developed an Engineering Product Development Process from scratch for our engineers and suppliers to follow.
    - This process was adapted to each component in our group and included in the sourcing package for each supplier to properly quote the project and assess the scope of the development and test effort
- Built my engineering team from 2 to 21 people in < 1 year. I hired many people into my group who had less than 3 years of professional experience as well as others without automotive experience. I developed a process for my team to quickly bring these younger engineers to a knowledgeable position where they contributed greatly to the organization.
- Initiated an inverter program that was challenged with bringing the product from program kick-off to low-volume production in less than a year. The inverter also achieved one of the highest levels of quality for all of the new-design & new-technology components.
- Created high-voltage safety standards for corporation.
- Created high-voltage subsystem to vehicle integration test-plan.

EnerDel (Indianapolis, IN) 2009 - 2010

Applications/Systems Engineering Manager Mar 2009 – Mar 2010
Responsible for building an applications/systems group to be responsible for a customer's requirements and working cross-functionally within EnerDel to develop a solution.

- Manage the applications/systems group.
- Developed an internal Engineering Product Development Process from scratch.

- Developed a company-wide test-plan for the cell and systems groups to be able to meet the customers' expectations and prove valid product life and optimal usage.

General Motors 2006 - 2009

GM Powertrain (Indianapolis, IN)

Energy Storage Systems Development Engineer Jan 2008 – Mar 2009

Responsible for re-scoping the GM Powertrain battery lab in Indianapolis from a heavy-duty focus to a new focus supporting the in-use application of ESS in passenger-car applications.

- Manage the lab efforts and battery team.
- Develop test matrix to support powertrain controls development.
- Develop overall lab responsibilities.
- Develop test structure, reporting methodology and key tracking metrics that are critical to passenger-car applications.

GM Vehicle Engineering Center (Milford, MI)

Energy Storage Systems Integration Engineer 2006 – Jan 2008

Responsible for integrating energy-storage systems (ESS) into the vehicle environment for GM's 2-mode strong hybrid programs.

- Develop responsibilities for new and previously undefined role in hybrid integration group.
- Lead a cross-function group in integrating the ESS and addressing issues. (cross-functional group includes members from battery test lab, vehicle controls, NVH, thermal, ESS-design, fuel-economy/emissions and vehicle program team leadership)
- Determine proper usage conditions that meet vehicle team's design objectives as well as insuring product life.
- Develop test-plan and perform on-vehicle testing on roads and dynamometers

Cobasys, LLC (Orion, MI) 2005 – 2006

Cobasys was formerly a developer and manufacturer of battery systems for Hybrid Electric Vehicles (HEV).

Manager – Transportation Systems Team 2005 – Nov 2006

Responsible for managing the transportation system team

- Led a group of 30+ team members; including Program Managers, Systems Engineers, Mechanical Engineers, CAD designers and technicians – established individual's yearly objectives and assigned day-to-day assignments.
- Managed a range of programs including OEM HEV production programs, medium & heavy-duty HEV programs and early prototype development programs.
- Worked with cross-functional teams integrating members from test lab, quality, manufacturing, module design, control systems design and quality.
- Established group's goals & objectives for design, development, testing and validation.

Manager – Technical Sales Feb 2005 – 2005

Responsible for working with sales team to develop solutions for potential customers.

- Worked with sales managers and potential customers on potential business opportunities.
- Responsible for communicating the customer's requirements to the engineering team and developed an applicable solution

General Motors 2000 – 2005

GM Vehicle Engineering Center (Warren, MI) 2003 – 2005

Design Release Engineer – Energy Storage Systems - AHS2 Strong Hybrid Systems 2003 – 2005

Responsible for developing and bringing to production an Energy Storage System (ESS) for GM's AHS2 Strong Hybrid Program.

- Led initial ESS design prior to program initiation; working with multiple groups, to identify a complete set of requirements. Requirements spanned multiple disciplines; such as vehicle power and energy needs, customer-practical packaging, thermal, electronics, software, life and warranty, environmental requirements and durability.

- Led ESS design from concept initiation into the production program phase. Coordinated ESS design with multiple groups in 2 organizations to ensure successful design.

GM Powertrain – Allison Electric Drives (Indianapolis, IN) **2000 – 2003**

Energy Storage Systems Lead Engineer 2000 – 2003

Responsible for two main tasks relating to energy-storage for Allison Electric Drives; Design Release Engineer (DRE) for a production program and overseeing a lab to research and test multiple energy storage technologies and manufacturers.

Design Release Engineer - Hybrid Electric Vehicle Programs 2001 – 2003

Responsible for the design and development of a production energy storage system. Worked with a Japanese company through the design process – developed and implemented new methods of communication between GM and the Japanese company. This successful program produced vehicle-ready hardware (Design Validation system) in less than 6 months from start of contract and a fully validated system in 16 months.

- Initiated division's change in technology choice
- Led engineering team to develop complete specification (involved cross-functional engineering team from software, mechanical, electrical and service)
- Worked with engineering team as well as interfaced with multiple internal groups (quality, purchasing, business, sales, applications) during product development to ensure successful product
- Built proof-of-concept system from over-the-counter parts and custom electronics (developed in-house) – system was driving on a vehicle 2 months after approval was given

Battery Research & Development - Hybrid Electric Vehicle Programs 2000 – 2003

Developed a research lab and testing philosophy/direction for energy storage research and development. Started with 4 inactive test-channels in 2000, grew lab and activities to a total of 16 test-channels running 9 long-term life-cycle tests and multiple shorter experiments.

- Initiated test program to identify key driving parameters to achieve desired life
- Developed testing philosophy to include meeting the program's short-term needs as well as investigative testing to look at future solutions
- Designed new monitoring electronics
- Developed custom test-scripts
- Tested multiple technologies and manufacturers

LOCKHEED MARTIN CONTROL SYSTEMS (Binghamton, NY) **1995 – 2000**

Battery Research & Development - Hybrid Electric Vehicle Programs 1997 – 2000

Managed the research effort to study batteries in a Hybrid-Electric Vehicle (HEV).

- Developed and ran tests to evaluate battery parameters that were critical to program success
- Developed tasks, schedules, and budgets for the research effort and monitored these tasks to see that they were accomplished within the budget given.
- Identified future direction for the research program in order to maintain technical advantage over competitors

Circuit Designer - Hybrid Electric Vehicle Programs 1996 - 1997

Analog & power circuit designer in the HEV program.

- Designed electronics for the core computer on an HEV system
- Designed electronics for the battery management system in an HEV system.
- Developed initial test procedure for 1st iteration of the original electronics (thorough evaluation).
- Performed stress and tolerance analysis of the circuitry.
- Developed test procedures for technicians to test future production cycles.

Systems Engineer – Aircraft Controls 1995 - 1996

Performed systems engineering functions for two aircraft control systems

- Worked on a team that wrote a failure analysis memo for an aircraft control system.
- Wrote software specifications for a subcontractor and tested subcontractors software after delivery.
- Designed 'motherboard' circuit card for an aircraft control system.

- Developed solutions to customer's requests for improvements in current aircraft system.

Engineering Leadership Development Program 1995 – 1997

Hired into the Lockheed Martin Engineering Leadership Development Program (formerly General Electric's Edison Program). This program trained the participants in both their technical skills as well as necessary 'soft-skills' needed to be successful leaders. Technically, participants changed job/program responsibilities 3 times in a 2-year period for a more well rounded technical background. Also, participants attended 3 week-long seminars that focused on management skills (negotiating, team-building, diversity, etc.)

EDUCATION

M.S., Electrical Engineering
Purdue University (IUPUI), Indianapolis, IN
GPA 3.33/4.0 Graduation: 5/04

B.S., Electrical Engineering
Clarkson University, Potsdam, NY
GPA 3.79/4.0 Graduation: 5/95

PAPERS and PRESENTATIONS

- *"Energy Storage Design for Heavy-Duty Applications*" - 2nd International Advanced Automotive Battery Conference - Feb 5, '02
- *"Energy Storage System Design for Heavy-Duty Applications"* SAE TOPTEC Conference - June 27, '02
- *"Energy-Storage Design For Heavy-Duty Vehicles"* GM Powertrain - 14th Annual Transmission Technology Symposium - Oct 8-11, '02
- *"Energy-Storage System Design"* – 4th International Advanced Automotive Battery Conference – June '04
- *"Cobasys NIMH Energy-Storage Systems for Passenger, Commercial & Military Vehicles"* – 6th International Advanced Automotive Battery Conference – May '06
- *"ESS Integration and Field Experience in Passenger-Car and Heavy-Duty Applications*" – 8th International Advanced Automotive Battery Conference – May '08
- *"Design and Development of EnerDel Energy Storage Systems*" – 9th International Advanced Automotive Battery Conference – May '09
- *"Energy Storage System Design for Performance Extended Range Electric Vehicles" - 12*th International Advanced Automotive Battery Conference – Feb '12

COMPUTER EXPERIENCE

- Microsoft Office (Word, Excel, Access, PowerPoint, Project)
- MathCAD
- MATLAB/Simulink
- LabView
- C/C++