

Academic-Entrepreneur Experiences with an Alternative Energy Startup

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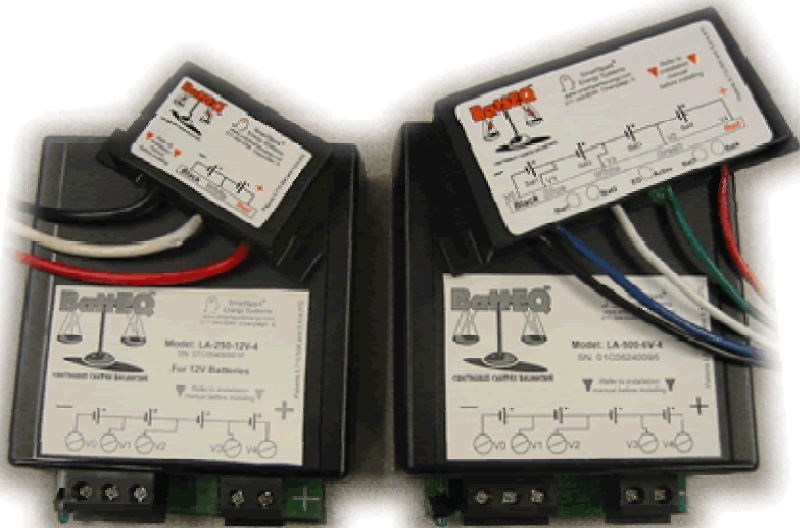
“Enhancing Linkages
between Universities and
Small Businesses”
Maine EPSCOR/USDA
Conference



Backgrounds

- Faculty in Electrical and Computer Engineering, 2000-
 - Power electronics (applicable to renewable energy)
- Co-founded SmartSpark Energy Systems in late 2003
 - Joined 3 other founders (one professor, two engineers)
 - Purpose: to commercialize inventions from UIUC

Products



- BattEQ™ for extending rechargeable battery life (electric vehicles, standalone solar)
- ForeverPower™ for ultra-long-life remote power (solar-powered, ideal for rural application)

Motivations to Start Company

- Difficult to get industry to license, develop, fund, and promote someone else's invention
- Frustration at seeing important ideas buried in journal
 - Never used in real life
 - Or, used without credit
- Contribute to UIUC economic development mission
- Another source of income
- Fame, glory

Detractors from Starting Company

- Time commitment
- Fear over job security
 - Originally as non-tenured faculty member, must consider real or perceived conflict of commitment
- Likelihood of failure
- Loss of investment
 - Founders backed company originally with their own cash

University Support

- Recently developed Research Park with Incubator
- Assurance from Dept. Head
 - But don't let it affect your UIUC work
- Technology Entrepreneurship Center
 - Business plan development, free advice, etc.
- University-influenced private equity
- Progressiveness in the intellectual property philosophies
- Faculty permitted “one day per week”

Starting Up

- Getting good legal advice
 - Get the right (not just good) attorney and accountant
 - Incorporate – use Delaware...
- Write business plan
 - Used for raising money
 - Used for planning business (should be obvious, but is often overlooked)
- Get real management – no ego trips
- Be honest with yourself – don't think you can have it "both ways"
- Be prepared to make and maintain sacrifice

Technology Licensing

- Very complicated and contentious process
 - Negotiating with your employer... again, have the attorney or management do it
- Offer equity instead of cash
 - Equity deals always more complicated
- Most university patents generate negative revenue
 - Patenting does little for an academic CV
- Have conflict management plan in place

Fundraising

- Sell equity
 - Self financed (easiest, but riskiest personally)
 - Friends/family (be careful)
 - Professional investors (difficult and compromising, especially in EPSCOR states)
 - Banks (not likely)
- Generate early revenue
 - Bootstrap with part-time employees, consulting, contracts
 - SBIR/STTR that promotes your product

VC Priorities

- Focus on one and only one thing
- Bring in top management
- Focus is on business, not the technology
- Relocation (problem for EPSCOR states)
- Exit strategy
- Large, quick return (\$100M opportunity)
- Provides enough funds to “get serious”
- “Hot” area = energy

SmartSpark Staying Alive

- 2004
 - Seed from founders, Illinois Ventures/ITEC
 - Interim-CEO (entrepreneur in residence)
 - First SBIR (SOCOM Phase I)
 - Solicitation “spoke” to us
 - Hit home run
 - Completed license, first full-time employees

Alive... continued

- 2005
 - Friends/family round = \$1.2M in debt/equity
 - Granted Phase II SBIR (SOCOM)
 - Full-time CEO
- 2006
 - Phase I SBIR – USDA (battery-based ForeverPower) → Hit home run
 - Continued consulting, odd jobs
 - Six full-time employees, initial product sales
 - State grant

Alive... continued

- 2007
 - Product sales ramping up
 - Phase II USDA SBIR
 - Developed new product concept: SolarBridge™
 - Much more venture ready – huge market and better defined need
 - Received large investment from Battery Ventures, a tier-1 venture capital group
 - Many changes, physical and psychological
 - R&D team successful Phase I proposals to NSF

SBIR/STTR Impact

- SOCOM and USDA SBIRs
 - Funded ForeverPower development
 - Working on larger Phase III deals with multiple customers
 - Not “one and done” projects
- State DCEO grant leveraged by Phase II
- Contributed our own funds on top of government funds
 - Full time management and business development hugely important

Current Status

- Adjusting to new venture money and intensified focus
 - Doubling or tripling employees in less than one year
 - Spending at faster rate
 - Getting used to outsiders, different priorities
 - Presenter stepped down from Board to make room
- Company will survive/thrive for foreseeable future

Personal Lessons Learned

- You can't do it all, but you have to try anyway
 - Legal, accounting, hiring/firing, negotiating, sales, etc.
- Pace and priorities different than academia
- Focus – company is not another professors' pet project
- SBIR highly competitive, but also very rewarding if going about it wisely
- Not a graduate student finishing school

Lessons Learned

- Start with market/business case, fill with technology (not vice versa)
- Separate from the emotion
- Resist urge to micromanage
- Tremendously rewarding