

P.E.S., Inc.

presents

SAPHE SYSTEMS[®]

**The *SAPHE*[®] Solution for Lithium Ion
Battery Performance**

Business Overview

Overview

P.E.S. Inc, together with Idaho National Laboratory, has developed a novel, inorganic electrolyte for the \$5 Billion Lithium Ion battery market.

We resolve critical problems for Li-Ion applications including:

- Hybrid and all-Electric Vehicles
- Mission Critical and High Temperature applications
- Cell phones, Laptops and Consumer Electronics

The Problem with Lithium Ion Batteries

Over the last 3-5 years, tens of thousands of incidences occurred where Lithium-Ion batteries

- Overheated
- Short circuited
- Self ignited or
- Exploded

Over the last two years, over 9 million Lithium Ion batteries have been recalled.



At a conference in Japan, a Dell laptop suddenly exploded into flames, and lucky for its owner the fiery blast occurred while the PC was sitting on a table and not in his lap. An onlooker reported that the notebook continued to burn, producing several more explosions over the course of about five minutes.

The model of the offending Dell notebook wasn't mentioned, but since it was of the Windows persuasion, we can now boast that we are unbiased in our reports of fiery laptops, both Mac and PC. It's only a matter of time before something like this happens on an airplane. - CHARLIE WHITE

Reported Industry - Wide Problems / Recalls

Date	End Use Product Type	End Use Product Manufacturer	# of Units Recalled	Reported Hazardous Incidents
08/27/06	laptop	Apple iBook/Powerbook	1,800,000	various
05/20/05	laptop	Apple iBook/Powerbook	128,000	6 incidents
08/19/04	laptop	Apple Powerbook G4	28,000	4 incidents
06/22/05	laptop	Battery Biz	10,000	various
06/22/05	laptop	BatteryBiz	10,000	six reports
06/21/05	GPS	Belkin	10,300	15 incidents of overheating or expanding, no injuries
01/21/04	flashlight	Browning	12,500	2 flashlights burst
08/16/06	laptop	Dell	4,100,000	various
12/16/05	laptop	Dell	22,000	3 reports, all with minor damage
04/13/06	DVD player	Disney	102,000	17 incidents. 3 skin irritations, 3 minor property damage
02/03/04	flashlight	Dorcy Xenon		4 reports clothing damage, burn injuries, 1 house fire.
09/17/02	electric bicycle	EV Global Motors	2,000	5 reports, 3 fires, no injuries
09/25/03	flashlight	Galls	10,084	5 overheating/exploding w/ minor injuries & property damage
10/14/05	laptop	Hewlett-Packard	135,000	16 incidents, no injuries, four minor property damage
04/20/06	laptop	Hewlett-Packard	15,700	20 incidents, 1 minor burn injury, 11 minor property damage
10/28/04	cell phone	Kyocera Wireless	1,000,000	14 smoke & minor property damage, 2 minor burn injuries
01/23/04	cell phone	Kyocera Wireless	140,000	4 incidents, 1 minor burn
06/08/05	DVD player	Mintek Digital/Best Buy	116,000	10 incidents, 9 overheating &/or catching fire, 1 bursting
11/08/05	digital camera	Nikon	710,000	4 incidents, no injuries
02/22/05	DVD player	Polaroid	165,000	8 reports of overheating or smoking
02/17/06	wireless phone	Polycom	27,700	2 incidents with minor damage
02/17/06	telephone	Polycom	21,000	2 reports causing minor damage to tables
03/03/05	toy	QSP	555	5 reports, no injuries
03/28/06	video game	Sony	231,000	143 incidents, one fire damage
03/23/05	DVD player	Thomson	47,000	11 overheating, 5 exploding, 2 people burned
06/24/04	cell phone	Verizon	50,000	18 reports including injuries & property damage

The Extent of the Problem

- Consumer Liabilities, Recalls, Stock Price
- FAA and Flight Risks
- Risk to Military Operations & Personnel
- Hybrid / All Electric Vehicles
 - Safety Problems – stalling Li-Ion take up
 - Restrained Energy Density
 - Cost (temperature management, cooling systems, safety systems)

Thermal Runaway Contributor: The Electrolyte

ALL commercial electrolyte solutions are organic, (like gasoline):

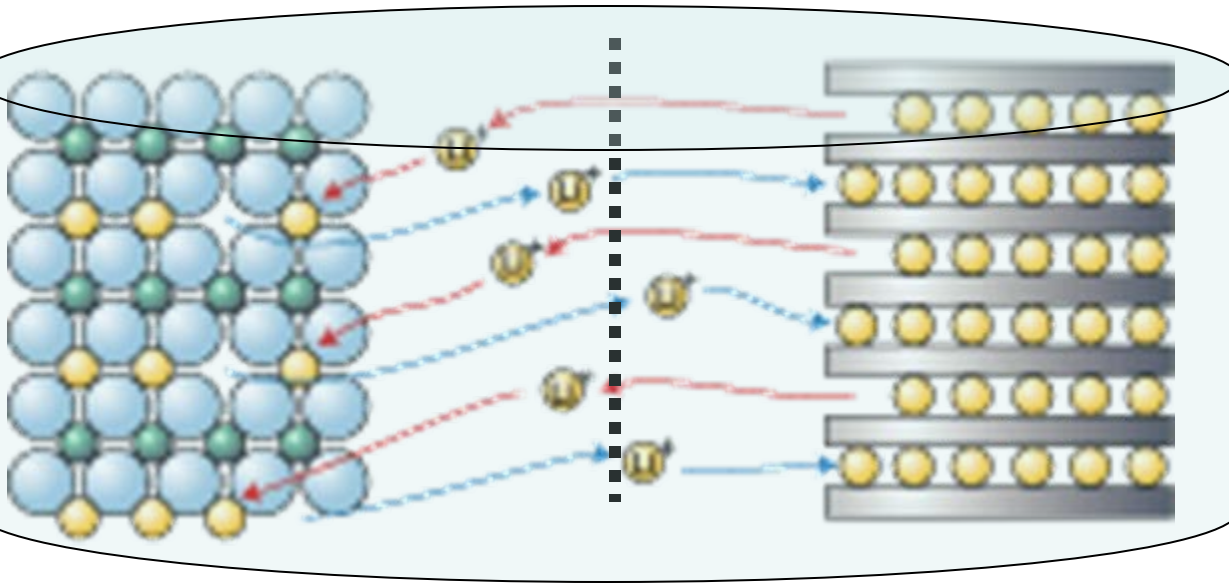
Inherently volatile

Highly flammable

Not thermally stable
at elevated temperatures

Decomposition
products release
gas (CO_2)

Key Culprit in
Thermal
Runaway



Electrolytes Role: Transport Medium for Lithium Ions – shuttle back and forth between Cathode and Anode

The Electrolyte

Over a Billion dollars has been spent by government and industry in the quest for a functional, inorganic electrolyte*.

The SAPHE© Electrolyte is the first Viable Commercial*

(*February of 2008)

Solution to this problem:

SAPHE© non-flammable inorganic Electrolyte

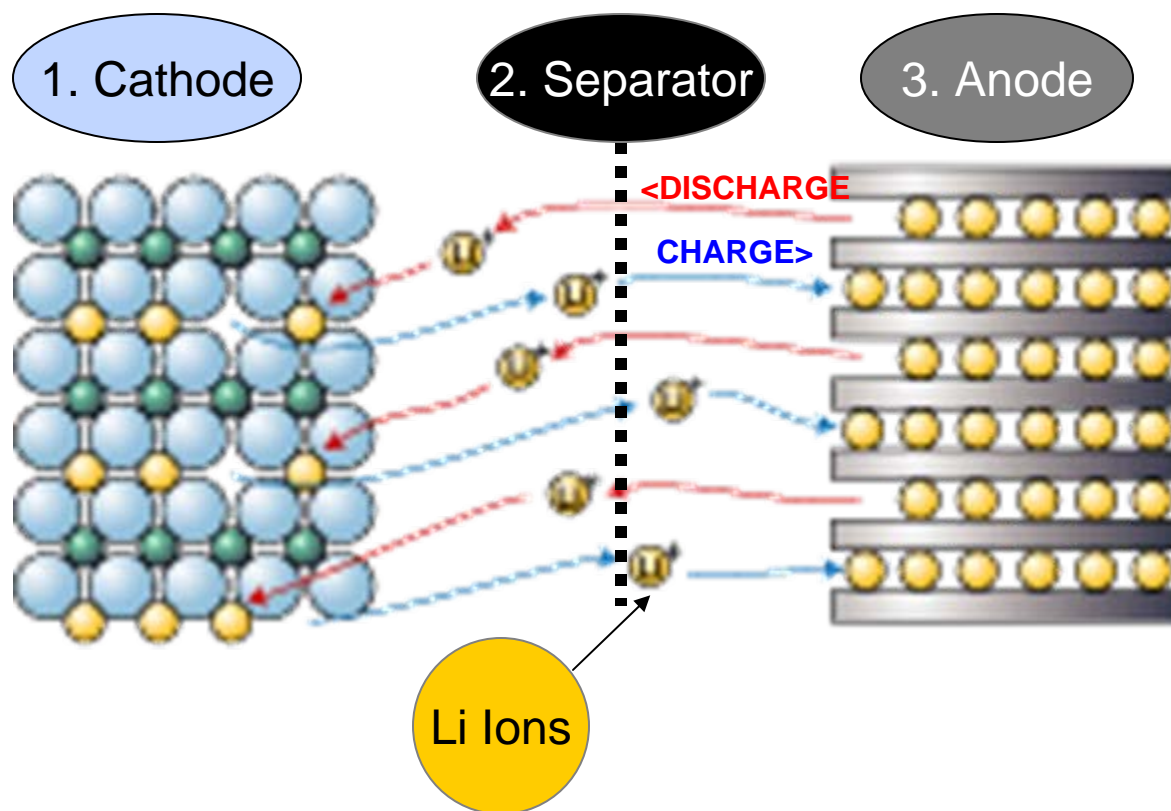
for all types of Lithium Ion Batteries

* According to Idaho National Laboratories' Lead Program Manager of the DOE Advanced Technology Development (ATD) program.

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Lithium Battery Basics

3 core components have improved to a degree:



But, commercial improvements also have downsides

No quantum leap breakthroughs are on the apparent horizon

None address inherent safety issue

Alternatives (Competition)

- All other Electrolytes are Organic – No real breakthroughs in 10+ years Ethylene carbonate (EC) + dimethyl carbonate (DMC) and/or diethyl carbonate (DEC)
- Electrolyte Additives help performance and reduce, but do not eliminate, flammability
- Additional safety measures **don't** eliminate the problem, are all **costly**, and **add weight**:
 - Expensive separators
 - Frangible fuse tabs
 - Electronic safety / systems
 - Cooling systems
 - External Battery Management Systems (hybrids)

P.E.S., Inc.

Founded in 2005

C Corp

PES has licensed from Idaho National Laboratories:

- **3 Issued Patents** polymer/solid electrolyte technologies
- **1 Published Patent** (November 2004) SAPHE© solvents composition, any mixture of SAPHE© and conventional solvents, and SAPHE© with any variations in pendant groups. **PCT filed.**
- **Exclusive, World Wide Licenses, Unlimited Use**

Idaho National Laboratory

- Partner and Co-Inventor; **2 PhD Project Leads & 4 Scientists**
- World's leading research institution in advanced battery systems, state of the art equipment, modeling, life cycle testing
- Preeminent Experts: DOE, Army, Navy, Sandia, Los Alamos...
- Access & Strategic Relationships:
 - U.S. Freedom Car Program**
 - The Partnership for New Generation Vehicles**
 - U.S. Advanced Battery Consortium's Hybrid Vehicle Propulsion Programs**
 - Advanced Vehicle Testing Activity**
 - Consultation to the U.S. Military**

Management

John Burba, Founder, CEO and Director

VP of Technology for \$200M+ rare earth / compounds company

Former Director of FMC Corporation's Lithium Division

Author/Co-author of 40 patents, Chemical Commercialization Expert

Laura Capper, President and Director

Commercialization, strategic marketing specialist; 225 technology companies; 15 VC firms

Financing, marketing, business development, early stage ops. and partner recruitment

Battery sector experience, high-end and commercial

Robert Hinkel, Director

Former CEO of \$100 M Venture-Backed Company

Former President and CEO, MolyCorp

Former GM of Procurement, Unocal: \$1.2 Billion in purchasing mgmt

Extensive international, tax, negotiation experience

Joe Buffa, Director

Founder, NanoSteele

Former Business Development Director of Milcom (Military VC Fund)

Attorney, Former Director of Legal Affairs for CSS, Export Expertise

SAPHE[©] Value Proposition

- **Identical Power Performance**

(pending results of cycle tests February 2007)

- ✓ Conductivity
- ✓ Charge
- ✓ Discharge
- ✓ Cycling, etc.

- **Elimination of Volatility, and Flammability, and Liabilities**
- **Ability to Reduce Cost & Weight of other components**
- **Resolve core safety issues for Consumer Electronics and**
Hybrids
- **Potential to allow more energy in smaller device**
...from higher manufacturing tolerances
- **Strong differentiation from competitors (ex: Dell vs. HP)**
- **No Changes to Manufacturing Flow – not Disruptive**

Competition

Pending successful Phase III Commercialization results, SAPHE© positioning would be as follows:

	Industry Standard EC/DEC/DMC/PC	SAPHE©
Molecular Structure	Organic	Inorganic
Good Battery Performance / Conductivity	Yes	Yes
Stable at High Temperatures	No	Yes
Non-Flammable	No	Yes
Non-Volatility	No	Yes
Very Low Vapor Pressure / High Boiling Point	No	Yes
Recyclable	No	Yes
Non-Toxic Byproducts	No	Yes
Standard Manufacturing Flow	Yes	Yes

The Market

\$ 5 + Billion dollar worldwide Market

Cost (of goods) per cell varies by battery type:

System

5-30*%

External Safety Controls

*Cost in addition to Battery Cell(s) Costs

Cell COG

15 -17%

Separator & Int'l Safety Controls

11-23%

Electrolyte

→ 2nd -4th most expensive component

+/- 17%

All Other Components

+/- 14%

Anode

\$500 - \$550 Million (2007)

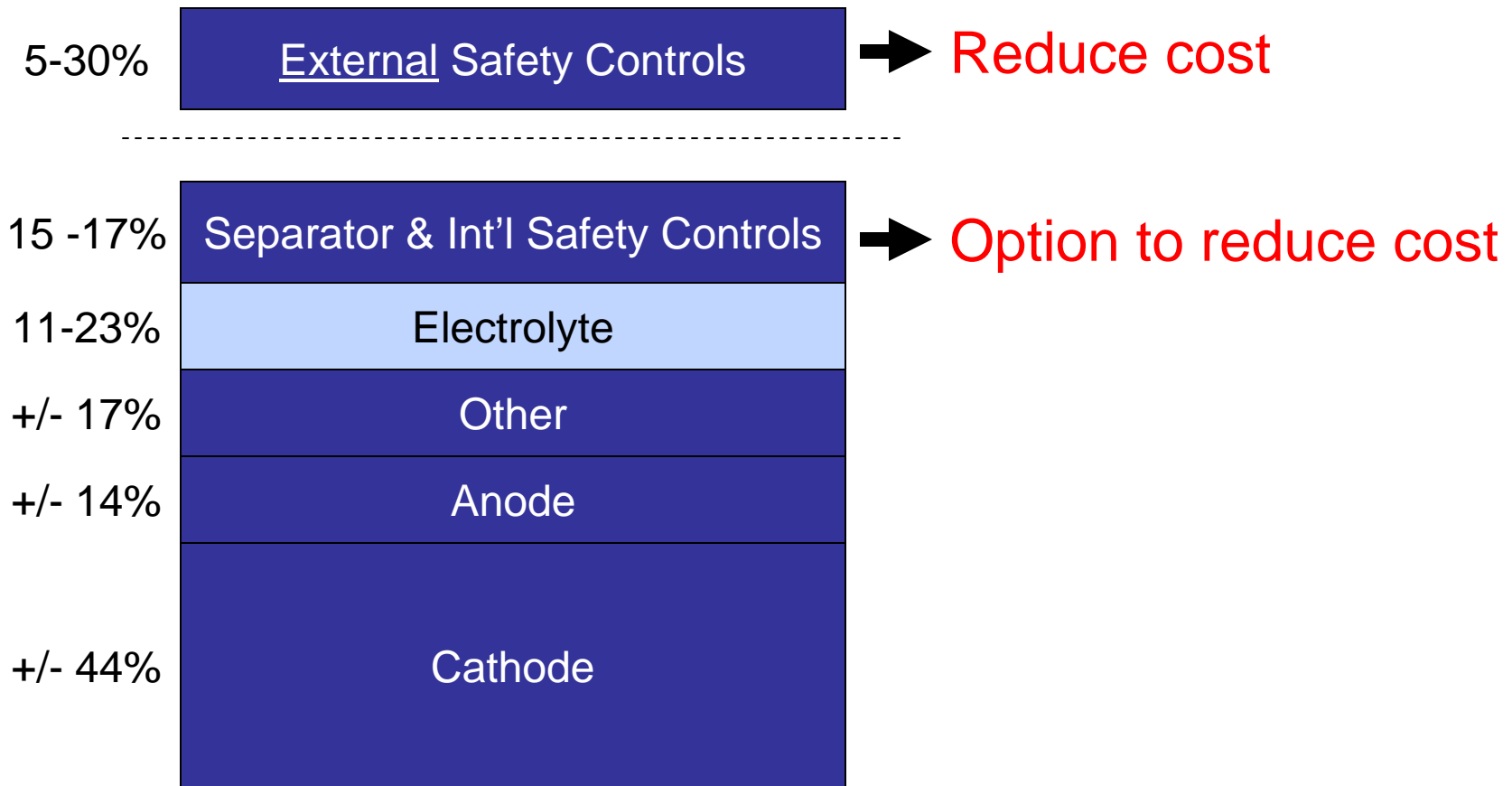
+/- 44%

Cathode

5-6% CAGR

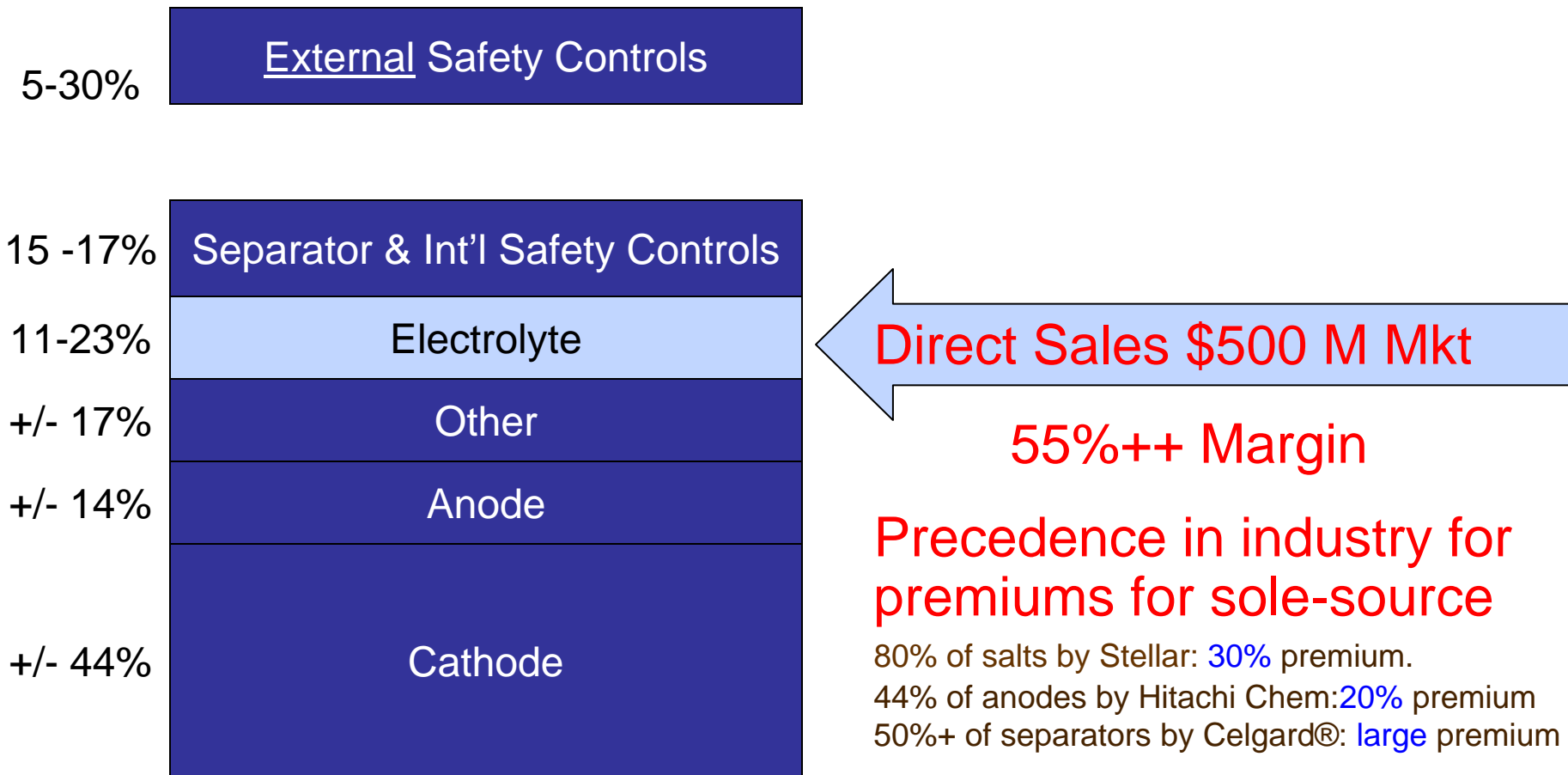
The Market

SAPHE© Electrolyte enables manufacturers to cut back on expensive safety measures:



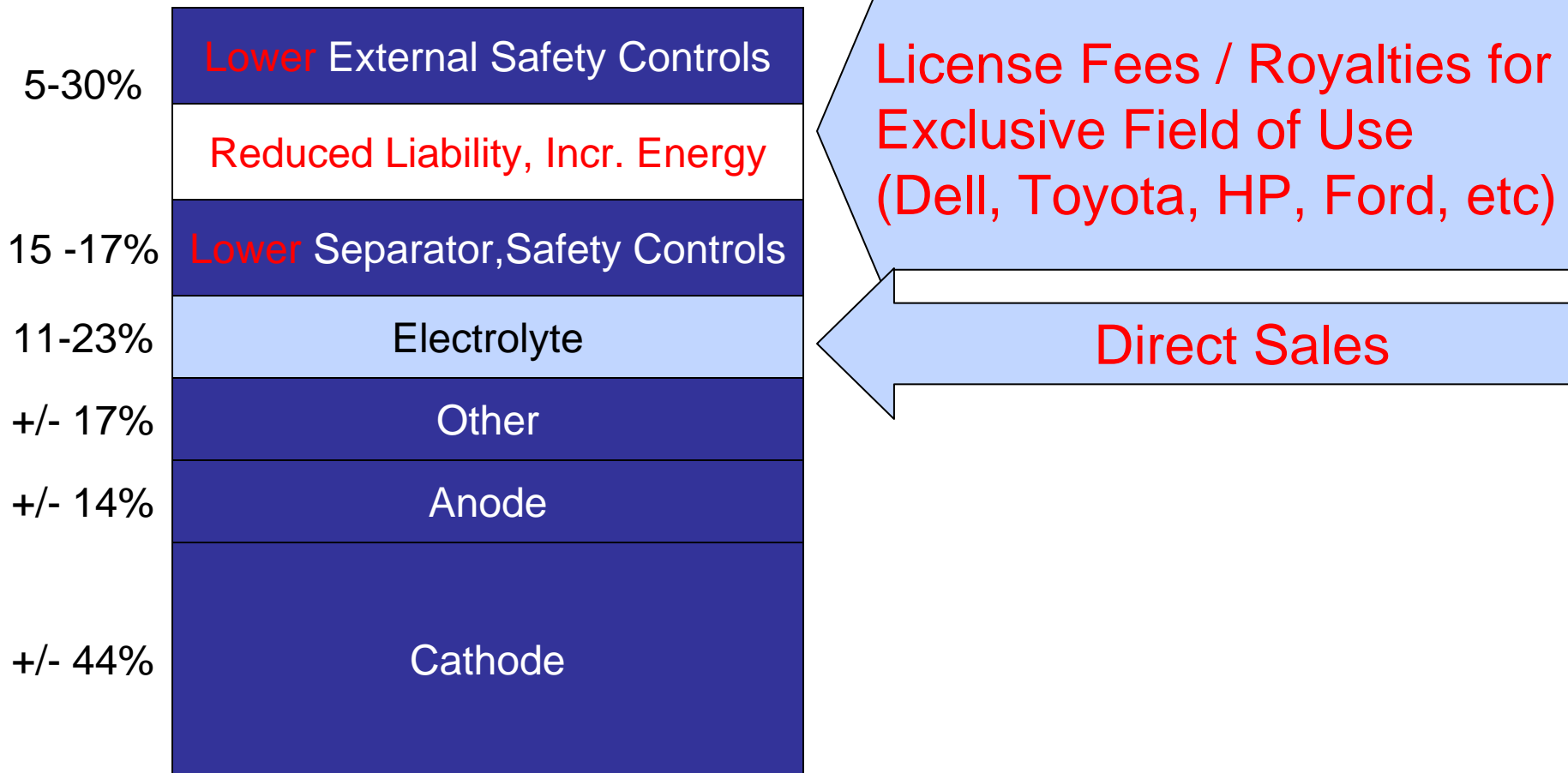
Business Model

1. Sell Electrolyte to Battery Makers (Sony, Sanyo, NEC, etc.)



Business Model

2. "Field of Use" Exclusivity Fees to Device and Auto Manufacturers



Milestones

- Phase I & 2 Development Complete
- Phase III underway, prototypes built and being tested
- Gen 3 Cycle tests (500 cycles) results complete Feb, 2008
- Qualification volumes by Q4, 2008
- Start Ramp up Tolloed Manufacturing
- Commercial Sales (small volumes) goal: Q1, 2009

Outlook and Funding Requirements

\$ 761K in Capitalization (founders, F&F, seed investor)

Pending Military BHA funding – potential \$1M+ (Q1 or 2 '08)

\$ 0.5 M Bridge round: Q1 2008

\$ 4 M Commercial Manufacturing: ~Q4 2008

	2007	2008	2009	2010	2011
'08 Grant; '09-'11 - License Fees	\$0.0	\$1.5	\$3.0	\$2.0	\$1.0
Product Revenues	\$0.0	\$0.1	\$6.0	\$28.0	\$48.0
Royalties	<u>\$0.0</u>	<u>\$0.0</u>	<u>\$1.2</u>	<u>\$5.6</u>	<u>\$9.4</u>
Total Income	\$0.0	\$1.6	\$10.2	\$35.6	\$58.4
Total Market Capture	0%	0%	2%	8%	13%
Total Operating Expenses	\$0.5	\$1.7	\$7.3	\$5.8	\$6.5
Net Income after Tax, Interest	(\$0.5)	(\$0.2)	\$0.0	\$10.6	\$18.5

Summary

Extraordinary Market Demand

Mature Team with proven Track Record

Strongly Differentiated Technology and Patents

High-Margin Business Model

Quantum Leap improvement, without being
disruptive to current industry practices