αlpha-En

High Purity Lithium Metal - Clean Technology

Enabling Next Generation Energy Storage

Room Temperature Production of High Purity Lithium Metal & Associated Products

April 15, 2017

SAFE HARBOR STATEMENT

This presentation is for informational purposes only and does not constitute an offer to sell, or the solicitation of an offer to buy, any securities of the alpha-En Corporation or its subsidiary, Clean Lithium Corporation; or a promise or representation that any such offer will be made to the recipient or any other party.

This presentation contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as: "expect," "anticipate," "intend," "plan," "believe," "seek," "estimate," "project," "goal," "may," "should," "will" and similar expressions that concern our prospects, objectives, strategies, plans or intentions. Forward-looking statements are neither historical facts nor assurances of future performance. They are based on current beliefs, expectations and assumptions that are subject to inherent risks and uncertainties and our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not place undue reliance on any forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in forward-looking statements include unfavorable changes in general economic and financial conditions; our lack of relevant operating history and revenues; competition and technical alternatives in the overall battery market; government regulation; our ability to attract and retain key personnel; our ability to successfully collaborate with partners; the availability of financing; marketplace acceptance of our technology; and such other factors discussed in our filings with the Securities and Exchange Commission. Any forward-looking statement speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether written or oral, whether as a result of new information, future developments or otherwise.

ENABLING NEXT GENERATION ENERGY STORAGE

MARKET OPPORTUNITY

- Lithium Ion (Li-Ion) battery market was >$10B in 2015, and expected to be >$20B in 2020*
    - Li-Ion technology was introduced in the ‘90s. It is mature and has plateaued.
- The next leap in performance is anticipated from Lithium Metal (Li-M) battery technology.
    - Disruptive technology. Can displace Li-Ion and accelerate market growth.

ALPHA-EN TECHNOLOGY

- apha-En’s cleaner process is less costly and produces high purity Li-M, an enabling technology for Li-M batteries.
- alpha-En’s flexible deposition method can also streamline battery manufacturing leading to battery production cost benefits.
- Furthermore, we believe alpha-En’s core technology can potentially recycle discarded Lithium batteries as feedstock for Li-M production.

STATUS

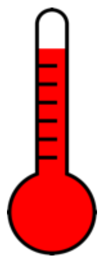
- alpha-En is in ongoing discussions with global battery manufacturers and end users.
    - Potential partnering and/or licensing opportunities.
- alpha-En has strategic research partnerships with Argonne National Laboratory, Princeton University, and the City University of New York to advance commercialization and scale-up of production.

*Source: Avicenne Energy

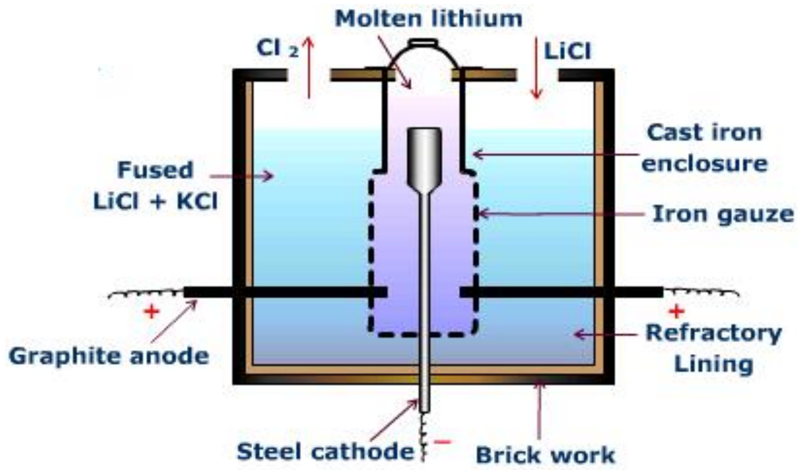
ALPE Process Benefits

BENEFITS OVER CONVENTIONAL PROCESS

CONVENTIONAL Molten Salt Process



≈ 800˚F



Conventional Electrolysis of Lithium Chloride

- Lithium carbonate is converted into lithium chloride (55%), fused with potassium chloride (45%) and electrolyzed in an electrolytic cell.
- Potassium chloride increases conductivity of lithium chloride and lowers fusion temperature – Cell still operates at over 800°F.
- Byproduct chlorine gas produced at anode leaves cell while molten lithium rises to the surface of fused electrolytes and collects in cast iron enclosure surrounding the cathode – metal obtained is preserved in paraffin wax .
- Chlorine gas is post-processed into lower value, and in some cases non-core commodities

αlpha-En

High Purity Lithium Metal - Clean Technology

- Room Temperature
- Reduced Energy Consumption
- Less Capital Intensive
- No Chlorine Processing
- No Handling of Molten Li

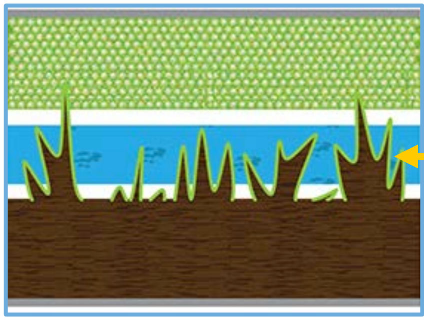
TRADITIONAL LITHIUM METAL PRODUCTION VS. ALPE:
PROCESS COMPARISON

ALPE PROCESS	TRADITIONAL PROCESS
High Purity	**Conventional Purity**
Produced at Room Temperature Process conducted at 20°-30°C.	**Produced at High Temperatures** Electrolysis of molten salts at ~750°F.
Chlorine Gas Free Lithium Carbonate feedstock eliminates chlorine gas by-product.	**Requires Intermediate Lithium Chloride Process Step** Chlorine gas byproduct which is post-processed into commodities.
Feedstock Flexibility: Can Use Lower Grades of Lithium Carbonate Reduces raw material costs.	**Uses Lithium Chloride** Chlorine gas byproduct which is post-processed into commodities.
Battery Production Efficiency Cellular and Vertical Manufacturing integration into the battery factory, reducing capital, logistics and inventory costs.	**Produced Remote from End Use** Industrial refining process not suitable for co-location into battery plant.

PURITY – WHY IT MATTERS

den·drite /ˈdendrīt/, a crystal or crystalline mass with a branching, treelike structure. From Greek *dendritēs* 'treelike,' from *dendron* 'tree.*

* Google.



SLAC National Accelerator Laboratory *

Actual lithium dendrites growing from an anode surface, Image from: R.R. Chianelli, J. Cryst. Growth, 1976, 34, 239-244 **

- Other non-lithium elements (e.g., K, Na, Ca, N) are found in existing battery-grade lithium metal.
- Formation of dendrites, which are microscopic fibers that can expand into the electrolyte, in some instances short-circuits the battery causing premature failure or "thermal runaway"
- Lawrence Livermore National Lab researchers report dendrites nucleate inside a Li-M electrode **at the site of impurities**. ***
- Reduction of other metallic elements in Li-M may enhance Li-M anodes for advanced batteries.

* http://ein.iconnect007.com/index.php/article/90840/next-gen-lithium-batteries-that-prevent-fires/90843/?skin+ein
** https://areweanycloser.wordpress.com/2013/06/21/dendritic-lithium-and-battery-fires/
*** Dendrites of subsurface structures underneath dendrites formed on cycled lithium metal electrodes, Nitash P Balsara et.al., Nature Materials published online 24 November 2013.

INTELLECTUAL PROPERTY

- ALPE engaged K&L Gates in 2015 to implement IP strategy.
- Initial 2013 ALPE patent portfolio was broadened and strengthened and now includes filings for international markets.
- The Company is securing additional IP related to other aspects of its core technology.
- ALPE has filed process and use patents totaling over 100 claims, and continues to innovate.
- K&L Gates distinctions:
  - *Global Dispute of the Year, The American Lawyer's Global Legal Awards (2016).*
  - *Included on IP Hot List, National Law Journal (2013).*
  - *Included among IP Practices of the Year, Law360 (2013).*
  - *Top 10 Client Service: In-house corporate counsel in an unprompted BTI survey ranked K&L Gates in the top 10 among all law firms in the past two consecutive years (2015 and 2016).*

K&L GATES

The Lithium Battery Market

INDUSTRY DEVELOPMENTS

Nikkei Electronics Magazine

February, 2017

Breakthrough

Acceleration of post-Li-ion batteries, Existing technology has only five more years

ionic MATERIALS

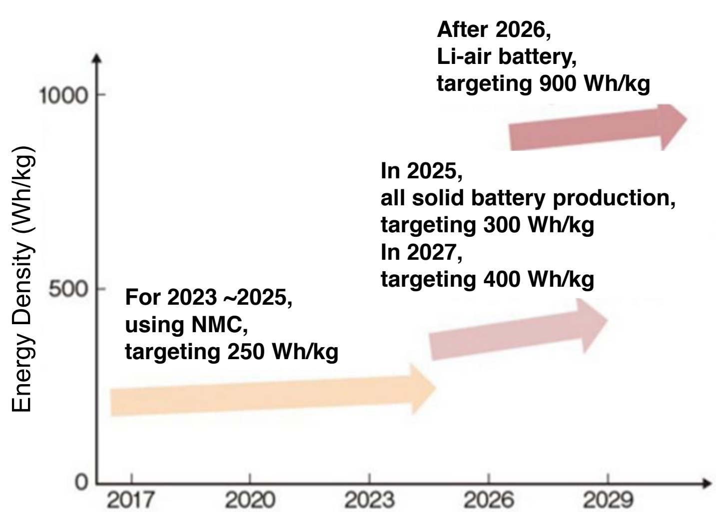
Researchers Create New, High Capacity Battery Technology Without Lithium-Ion's Explosive Risks

Forbes

Marco Ciapetta
Jan 31, 2017

SAMSUNG

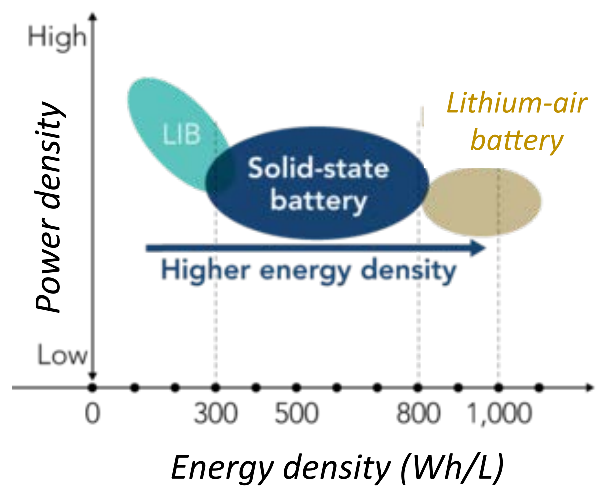
Post Li-Ion Battery Roadmap



NIKKEI ASIAN REVIEW

TETSUO NOZAWA,
Nikkei Electronics
April 2, 2017

Toyota Motor's proposed battery development roadmap



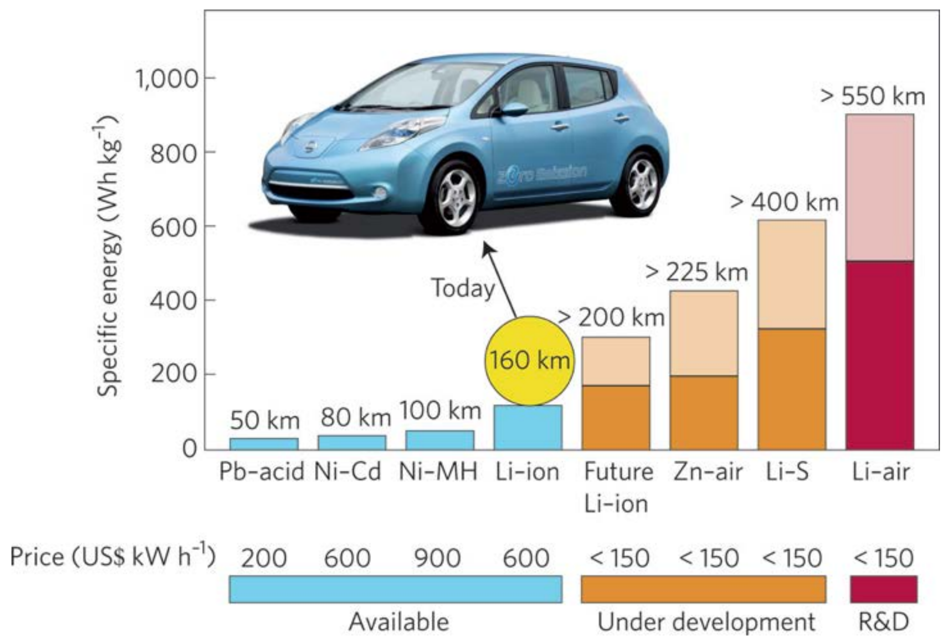
Development scenario Toyota researchers presented at the Battery Symposium in Japan in 2016

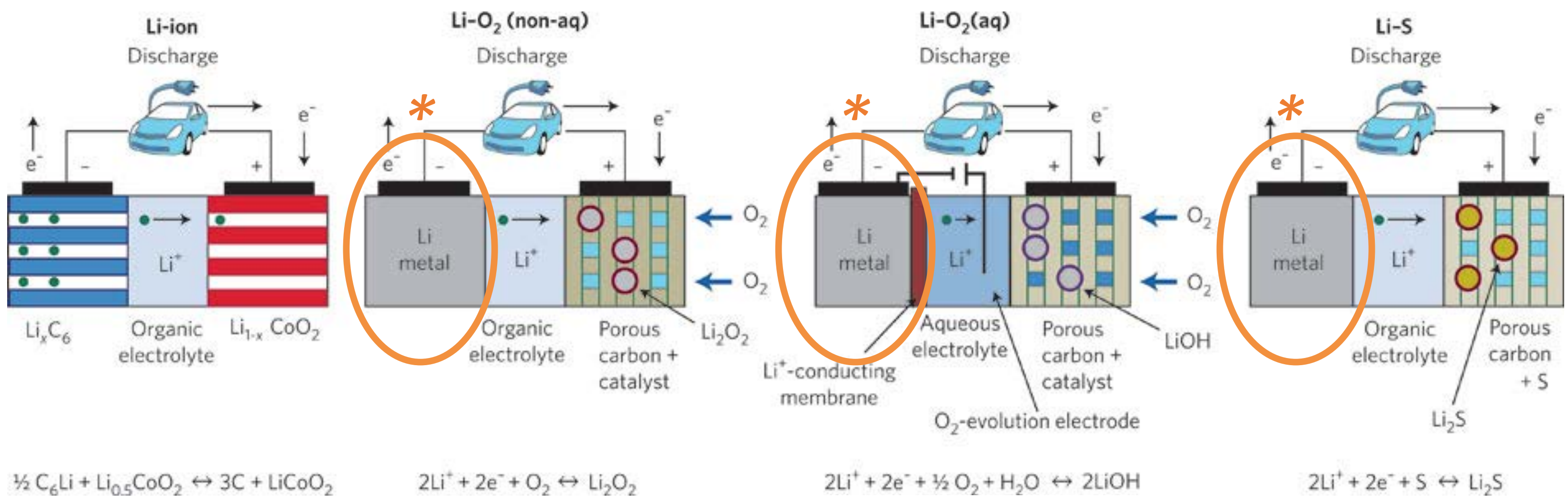
ELECTRIC VEHICLES: EXTENDING RANGE

*Alpha-En is Positioning for Range Extending Lithium Batteries**

- Extending range may increase EV Demand
- Lithium Metal based batteries can potentially increase range as shown on the right
- Lithium Sulpher and Lithium Air in R&D stage may increase range further.
- Anode Design: Lithium Metal.

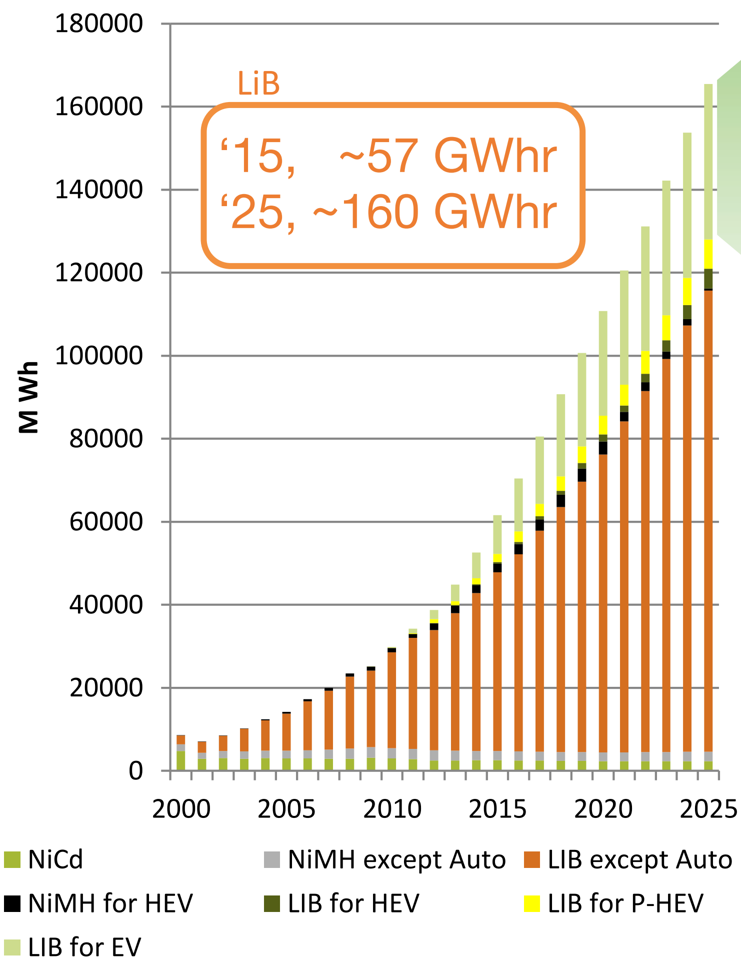
Figures from “Li–O2 and Li–S batteries with high energy storage.” by Peter G. Bruce, Stefan A. Freunberger, Laurence J. Hardwick and Jean-Marie Tarascon. Nature Materials, Volume 11, 2012



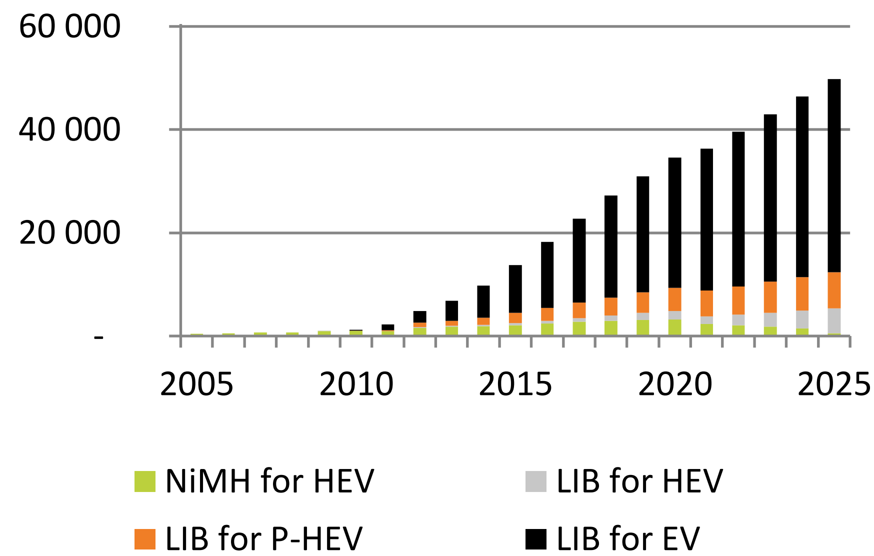


FAST GROWING RECHARGEABLE BATTERY DEMAND

Total battery demand (MWh)
CAGR 2013-2025: +12%



EV, HEV & P-HEV Battery needs (MWh)
CAGR 2013-2025: +20%



How Much is a Giga-Watt-Hour?

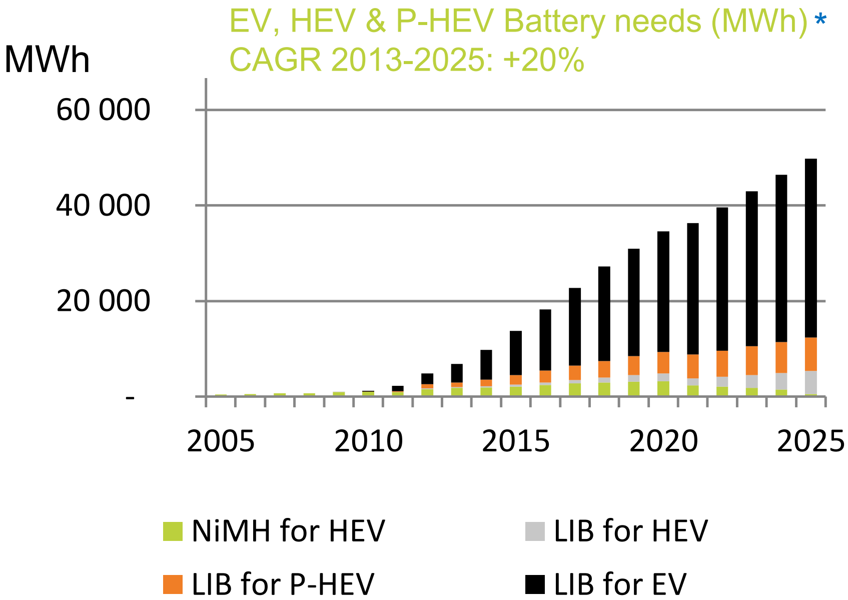
- Typical smartphone battery ~ 6-10 Whr
- 1GWhr ~ > 100 million smartphone batteries

Source: avicenne ENERGY INFORMATION FOR GROWTH

NiCd: Nickle Cadmium
NiMH: Nickle Metal Hydride
LIB: Lithoim Ion Battery

EV: Electric Vehicle
HEV: Hybrid Electric Vehicle
P-HEV: Plug In Hybrid Electric Vehicle

POTENTIAL MARKET MODEL FOR LI-M ANODES



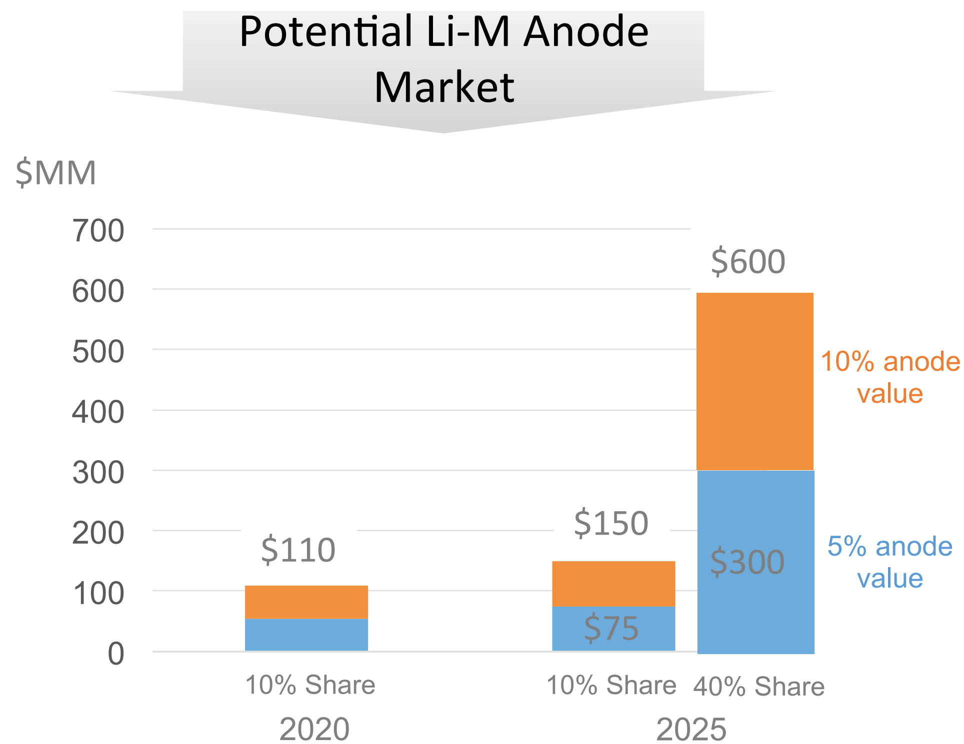
$

Assumed Early Adopter: Electric Vehicles

- Electric Vehicles would benefit from significant battery storage improvements in order to overcome "range anxiety."
- We assume the EV market sector will be the early adoptor of Li-M battery technology.
- P-HEV & EV will be powered by Li-Ion: $6B market in 2015, $11B in 2020 and $15B in 2025.*
- Assume Li-M battery technology is commercialized by 2020 and begins at that time to displace some of the Li-Ion market forecast.
    - Postulate a market model for Li-M anodes

Assumptions (for modelling purposes, alternate factors and results may occur):

- EV market only (~1/3 of total market)
    - Adoption of Li-M technology by other sectors would be upside and/or offset lower anode bill of materials (BOM) percentages assumed below
- Uses EV forecast for *existing* Li-Ion technology
    - New technology could increase market size
- Li-M share assumption: 0 to 10% by '20, increasing to a range of 10 - 40% by '25
- Li-M anode modeled as a range of 5% to 10% of battery pack value
    - Li-Ion anode represents ~8% of cell and ~5% to ~7% of pack cost*
    - Li-Ion cathode represents ~15% to ~17% of cell and ~11% to ~13% of pack cost*
    - Together Li-Ion anode and cathode represent ~23% to ~25% of cell and ~16% to 20% of pack cost*
    - Assume Li-M anode will represent a higher proportional value due to the importance of the pre-Lithiated anode

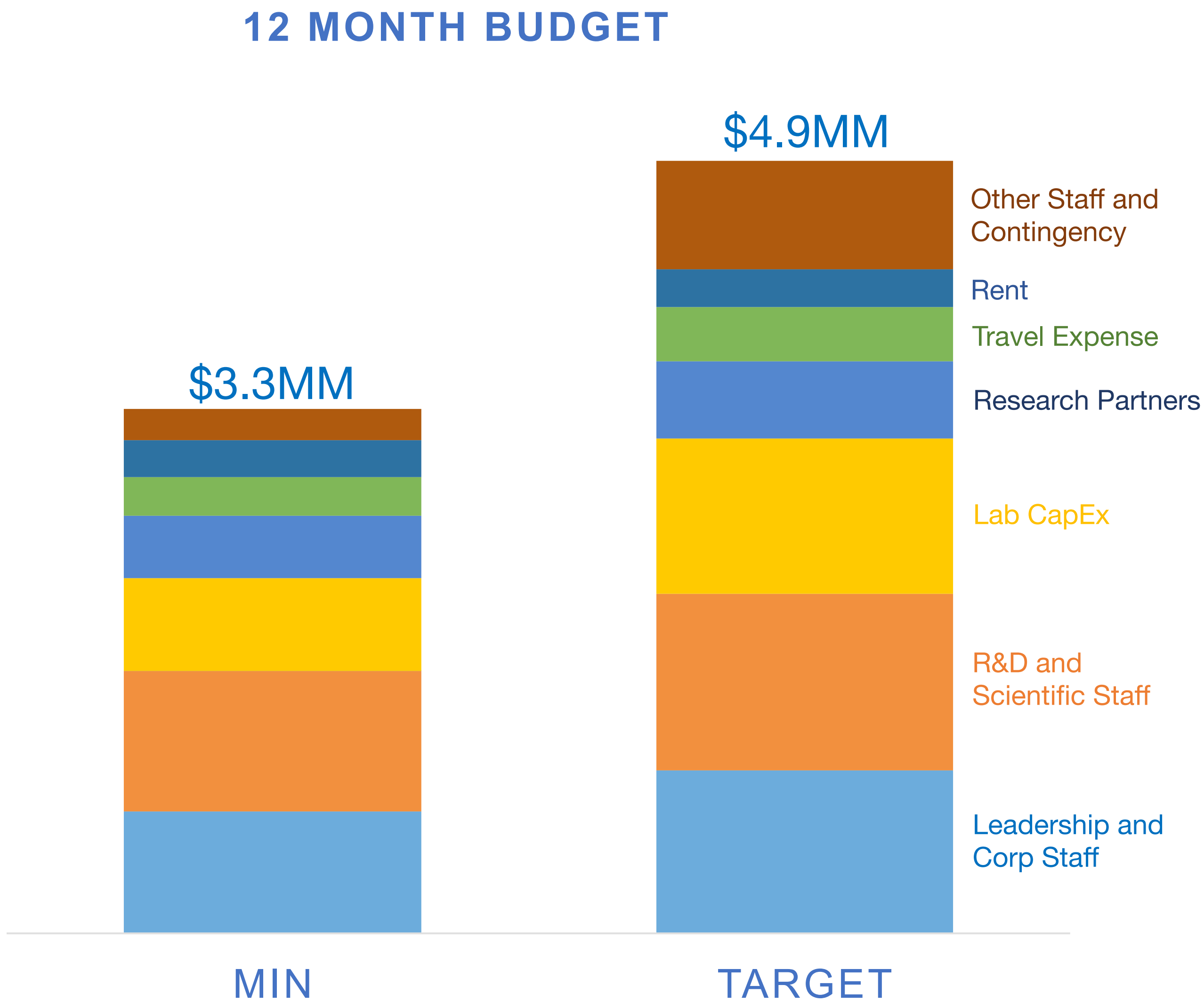


* Source: Avicenne Energy Batteries 2014 presentation.

Company Information

RAMPING UP

- alpha-En is at a potential inflection point
- Technology has been characterized
- Customer Samples are Ramping Up
- Opening of new R&D and Product Development Center
- Staffing up Scientists, Engineers and Corporate functions
- Increase in business development and sample production



~12 Month Plan:

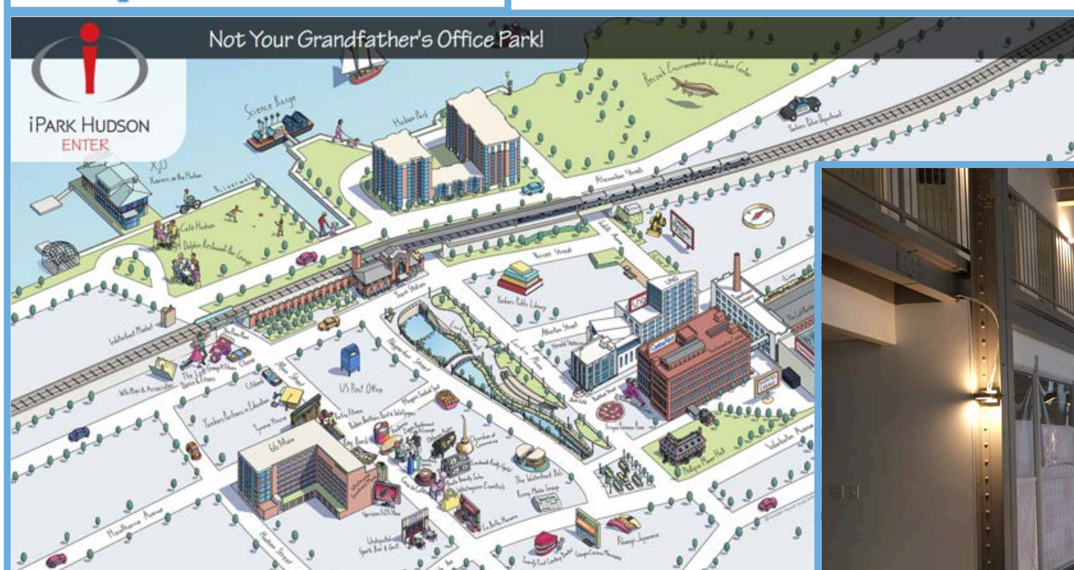
- Opening of product development Lab — June '17
- Multiple Client Sample Production and Delivery
- Design, Build & Demo Prototype Commercial Production System — Dec '17
- Negotiate Commercial License and Production Agreements — June '18

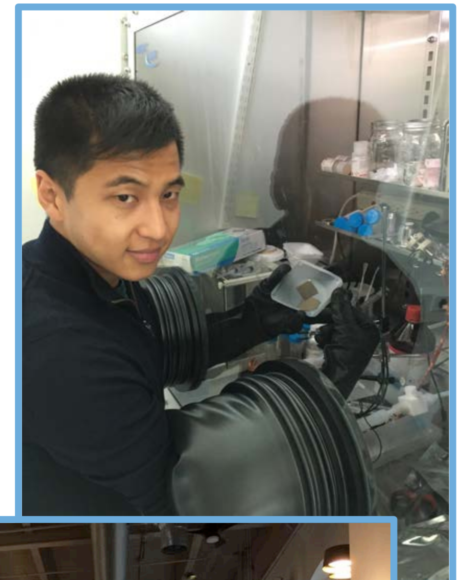
R&D // PRODUCT DEVELOPMENT CENTER

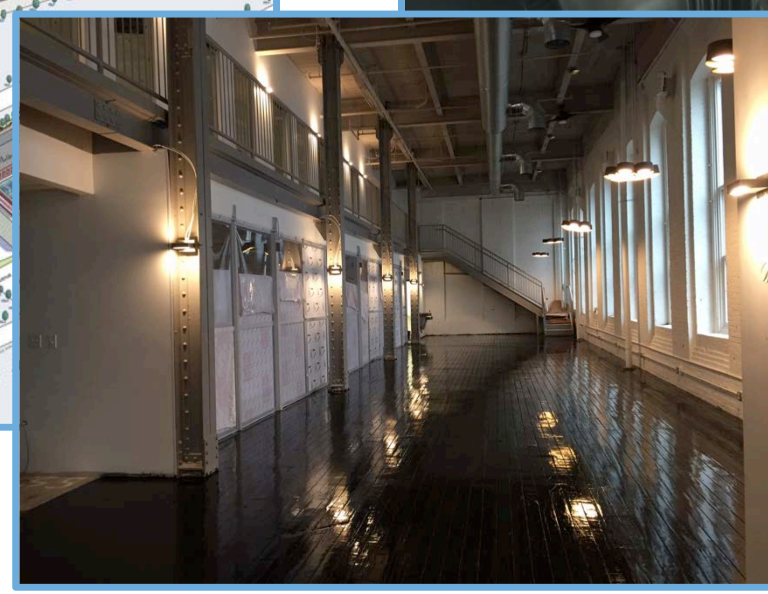
- 8,000 Sq.Ft. facility with high tech lab and product development operations
- Global HQ, New York, USA
- Innovative iPark Hudson development with Tech., Bio/Pharma and innovation incubators in historic Otis elevator manufacturing plant.
- 7 Year Lease with renewal terms.
- Alpha-En to move in 2Q'17

Producing prototype lithium products and samples for global battery manufacturers

αlpha-En







COMPANY TIMELINE

Invention – Validation – Commercialization

2013 | 2014 | 2015 | 2016

Corporate

July 2015
Discussions with major battery companies and requests for samples. Discussions with major auto companies for collaboration

October 2015
Steve Fludder joins as CEO

March 2016
Lease signed for new headquarters in New York

Technology

June 2013
ALPE scientist conceptualizes room temperature process to produce Li-M

July 2013
Provisional patent application filed

April 2015
Process demonstrated at CUNY

K&L GATES

May 2015
K&L Gates broadens IP with global PCT and Use Patent applications

September 2015
Innovation continues, further Patent applications filed

2015/2016
ICP and XPS analyses of purity and presence of base metals

Partnerships

CUNY The City University of New York

January 2014
SRA at CUNY's new Advanced Science Research Center

Nano Science

PRINCETON UNIVERSITY

October 2015
Commencement of Collaboration with Princeton University on Battery R&D

Process Development

Argonne NATIONAL LABORATORY

January 2016
Commencement of collaboration & Scale-up at Argonne National Lab

Scale Up

JCESR

April 2016
The Company becomes an affiliate of JCESR

Network

The Team

LEADERSHIP

Jerome I. Feldman, Founder & Chairman of the Board

Mr. Feldman has devoted his life to searching for new inventions and bringing them to market. He founded National Patent Development Corporation in 1959, which evolved over many years into GP Strategies, Inc. Mr. Feldman has taken 11 companies public. Among the technologies he helped introduce are soft contact lenses (1971 with Bausch & Lomb), surgical staples (via U.S. Surgical, which was sold to Tyco for $3 billion in 1998), and high silica glass to store nuclear waste (via Duratek, which was later sold to the Carlyle Group). He holds a JD degree from NYU.

Steve Fludder, CEO

Mr. Fludder has over 30 years of global leadership experience in the energy and power markets. He spent 4 years with Samsung as a Senior Executive Vice President and 27 years with GE, including 5 years as a vice president and GE corporate officer. In addition to numerous energy sector leadership roles he also led GE's company-wide "ecomagination" clean tech initiative which included the company's clean energy R&D and early stage venture capital investments. He holds a BS in Mechanical Engineering from Columbia University and a MS in Mechanical Engineering from Massachusetts Institute of Technology.

Nathan Wasserman, CFO

Mr. Wasserman is the owner and President of Columbia Enterprises, Inc., a state-of-the-art digital reprographic firm located in Manhattan, New York. Prior to joining Columbia Enterprises, Mr. Wasserman was an audit partner and certified public accountant (CPA) at Deloitte & Touche LLP, a multi-national professional services firm where he worked for 16 years. Mr. Wasserman holds a BBA in accounting from Kent State University. Mr. Wasserman has maintained his CPA status and is a member of the American Institute of Certified Public Accountants (AICPA) and the New York State Society of Certified Public Accountants (NYSSCPA).

Lawrence Swonger, CTO & Lead Inventor

Mr. Swonger is a Mechanical Engineer and the inventor of ALPE's technology. He has 7 years of experience researching Li-M production methods. He served 6 years in the US Navy as a nuclear plant operator and instructor, has over 20 years of process design and process automation experience. He holds a BS in Mechanical Engineering from Florida Institute of Technology. Mr. Swonger is named on all the Company's recent patents.

Emilie Bodoin, Managing Director, Technology Partnerships

Ms. Bodoin is a co-inventor on two patents, and heads IP strategy and implementation. She evaluates trends in technology to identify markets for ALPE's IP. She supports both the Scientific Team and the Corporate Team. She joined ALPE in December of 2012. Ms. Bodoin attended Carnegie Mellon University and began her career in finance at A&M Investment Partners, a New York-based hedge fund. Subsequently, she worked as an analyst in private equity.

SCIENTIFIC ADVISORY BOARD

Roald Hoffmann, Nobel Laureate (Chemistry), Chairman of Scientific Advisory Board

Roald Hoffmann is currently Professor Emeritus of Chemistry at Cornell University, which he joined in 1965. In 1981, Dr. Hoffmann received the Nobel Prize in Chemistry for his work on the course of chemical reactions. He has many other notable awards, is well known for introducing quantum mechanical ideas to organic, inorganic and solid state chemistry. In his recent research he worked on solid state compounds of lithium.

Jack Marple, LoneStar Point of View Consulting

Mr. Marple is a former Technology Fellow at Energizer battery company. His forty years of expertise extends to form factors in energy storage, as well as an extensive knowledge of various battery chemistries, including those used with Lithium-ion carbon anode systems, lithium anode systems, and zinc anode systems. He has been the Principal Investigator on government contracts through CERDEC (Communications Electronics Research Development and Engineering Center for the United States Army), has experience with Six Sigma and has a long history of working with battery manufacturing, including process scale-up and designing for quality, reliability and safety. Mr. Marple has numerous US and international patents to his name, as well as professional white papers and publications.

Dan Steingart, Princeton University

Dan Steingart in an Assistant Professor in the Department of Mechanical and Aerospace Engineering and the Andlinger Center for Energy and the Environment. His research is concerned with the intersection of material and systems behavior, with an emphasis on system to exploit perceived shortcomings of electrochemical systems for performance advances. Most recently, his lab has uncovered new understanding of behavior far from equilibrium in plate metal systems as well as new insights into acoustic/electrochemical interactions.

Stephen O'Brien, City University of New York

Stephen is Professor of Chemistry at The City University of New York (CUNY) where he is almost full time dedicated to the CUNY Energy Institute. Professor O'Brien received his Ph.D. in Chemistry from Oxford University and is widely published for his research on energy materials and applied nanotechnology. He is experienced in technology transfer, start-ups, IP and has worked with DOE, ARPA-e, NYSERDA, NYSTAR, NSF and several national laboratories. He specializes in nanoscale materials.

CONTACT

"The world we were born into is not the same one we live in…"- Anyoymous

alpha-En Corporation
120 White Plains Road Suite 425
Tarrytown, NY 10591
914 418 2000
www.alpha-encorp.com

Steve Fludder, CEO
steve.fludder@alpha-encorp.com

Thomas Suppanz, Director of Finance
tsuppanz@alpha-encorp.com