“Unlock electrification through breakthrough chemistry”

Tim Vosburgh – Founder & CEO – August 2024

Why Now?

- Energy demand expected to double by 2050*
- Renewable energy supply is intermittent and requires more storage
- Energy demand is cyclical and requires storage to reduce costs
- Per DOE will run out of lithium By 2030**
- New tariffs on imported batteries drive domestic demand
- Current battery technologies are not up to the challenge

*Energy Live News - 2024

**Per Imre Guyk – Chief Scientist, Energy Storage Research, U.S. Dept. of Energy

CURRENT BATTERY MARKET IS RIPE FOR DISRUPTION

Lead acid and Lithium have significant issues and the addressable markets are large

	Lead Acid		Lithium Iron Phosphate
	$45B	Market Size	$55B
	Back-up Power & Starting Motors	Uses	E-Mobility & Grid Storage
	▸ Low Cycle Life ▸ Very Low Energy Density	Issues	▸ High Cost ▸ Slow Charge Times ▸ Earth Scarce Materials / Environmental Impact ▸ Safety / Fire Risk

Last year in New York alone there were 175 lithium e-bike fires killing 14 people and injuring 96 others.

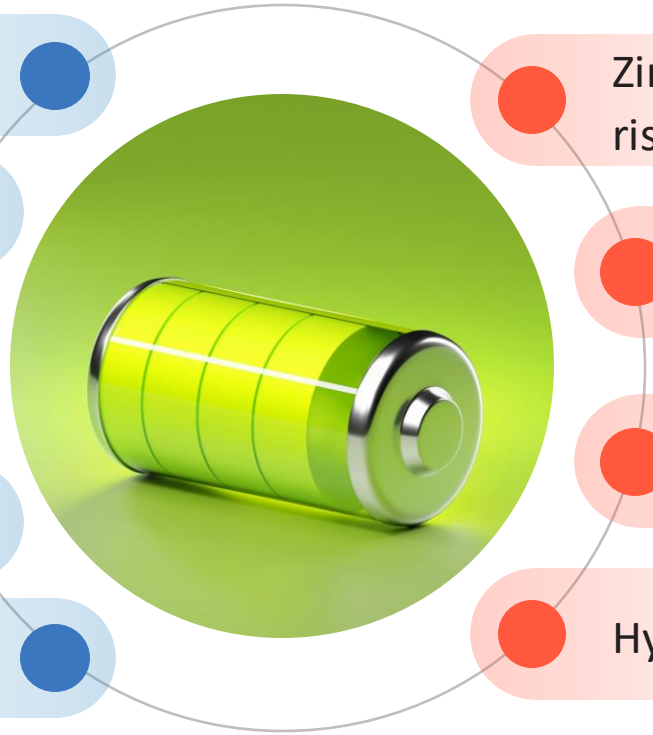
*New York Times - 2023

OUR BREAKTHROUGH TECHNOLOGY – PATENT-PENDING

Rechargeable Zinc-Ion Batteries have huge benefits but not yet commercially realized

Key Benefits

- No fire / thermal runaway Issues
- Fast <10-minute charge time
- 50% lower cost than US made lithium batteries
- Use earth-abundant materials
- 60C to -30C operating temperature



Common Roadblocks

- Zinc dendrites cause short circuit risk and reduce life
- Corrosion
- Instability of cathode materials
- Hydrogen gas generation

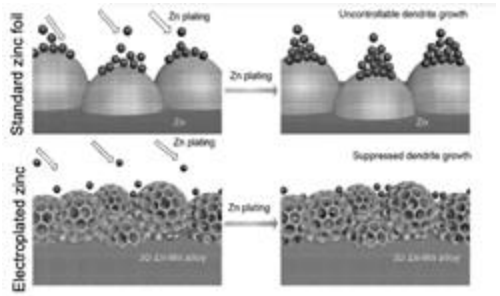
COULOMB TECHNOLOGY REMOVED THE ROADBLOCKS

Aqueous Zinc-Ion Batteries that meet or beat current technologies are now possible

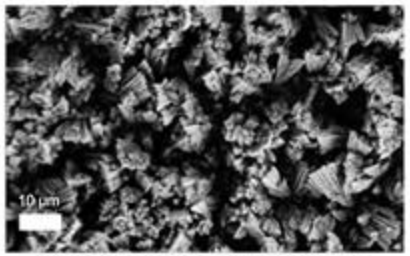
Patent-Pending Technology

- Electroplated 3D anode solves dendrites & corrosion issues which increases battery life.
- Acidic operation which increases energy density.
- Specific cathode and electrolyte additives increases energy density & cycle life.

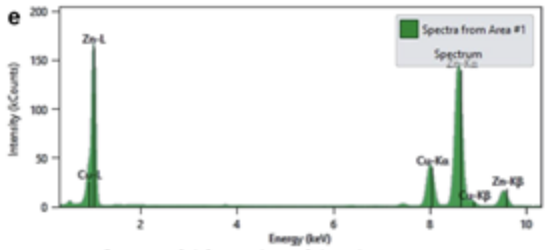
Morphology of anode inhibits dendrites & corrosion



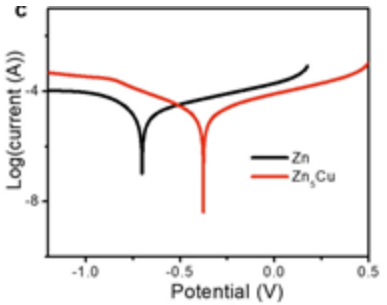
SEM of a cross-section of electroplated Zn-Cu anode



SEM of the surface of electroplated Zn-Cu anode



Successful formation of the zinc-copper alloy layer was confirmed through EDS



A shift to the right to more positive corrosion potentials of Zn-Cu compared to Zn reflects less corrosive tendencies of Zn_5Cu

COMPETITION: Patent-pending solution solves problems that others can't

Type	Energy Density	Safe?	Earth-Abundant?	Cycle Life	Cost
LFP – CATL, BYD, etc	180 Wh/kg	No	No	3k+	$55/kWh*
Sodium-Ion - CATL	140Wh/kg	No	Yes	3k+	>$80/kWh
Ni-Zn – Zinc5, ZAF	60 Wh/kg	Yes	Yes	800+	>$100/kWh
Zi-Mn – UEP, Salient	100 Wh/kg	Yes	Yes	1k+	>$90/kWh
coulomb TECHNOLOGY	**150 Wh/kg**	**Yes**	**Yes**	**2k+**	**<$50/kWh**

- Our RTE should be close to 93% and our self discharge rate should be about 0.01%/day
- Ni-Zn batteries are optimized for high-power and not energy density.

*Batteries from China before tariffs

HUGE POTENTIAL WITH $100B TAM / $1B SOM

Key Markets

E-Mobility

Replace Lead-Acid in SLI (Starting, Lighting, and Ignition) - **$45B**

Replace LFP in E-Bikes, Scooters, Golf Carts, Marine, etc - **$12B**

Energy Storage

Grid, Residential, Commercial, & Industrial - **$43B**

Key Drivers of Future Value

Different size batteries address multiple market segments

Profitability **~20%** EBITDA margins

Gov. aid to support ramp-up

- **$35/kWh** Production subsidies
- **~70%** factory CapEx via low-cost gov. loan

Source:

- Lead acid - https://straitsresearch.com/report/lead-acid-battery-market#:~:text=Market%20Overview,USD%2048.3%20billion%20in%202022.
- E-mobility - https://www.mordorintelligence.com/industry-reports/e-bike-battery-pack-market/market-size
- Stationary Storage- https://www.insightaceanalytic.com/report/stationary-energy-storage-market/1668#:~:text=The%20Global%20Stationary%20Energy%20Storage,forecast%20period%20for%202024%2D2031.

STRATEGIC PARTNERS

Our Development Partners:

- ORNL battery team with Ilias and Parans through the Innovation Crossroads program.
  - $400k of funding over 2 years, starting Aug 12, 2024.
  - Approved to put two Coulomb scientists in ORNL Battery Lab starting ~ mid Sept, 2024.
- Cradle to Commerce (C2C) program with Argonne National Labs.
  - $50k of funding over 1 year, starting Sept 13, 2024
- New Jersey Lab in collaboration with NEI corporation
- $40k New Jersey CSIT Voucher to use their SEM, XRD, etc to provide nanoscale images and material properties.
- Modeling with Columbia University – Alan West's group
- Specialty characterization work with Luke Workman at Electric Goddess
- We are also working with three professors and are hoping to announce a partnership and good data from our collaboration soon

Our Manufacturing Partners:

- In conversations with East Penn, SK ON, Kodak, and Vedanta (India)
- Working with NREL to develop a good proposal for grant 40209

PILOT CUSTOMERS

Status - These customers are waiting for samples to test which are expected early 2025.

LOI's – We have LOI's signed with this customer

Go-to-market plan – We will utilize a direct B2B sales model, channel partners, and eventually retail.

BUSINESS MODEL

Goal

1. To reduce our costs, reduce ownership of factories, material, etc.
2. To provide great customer service
3. Own the customer for life

How

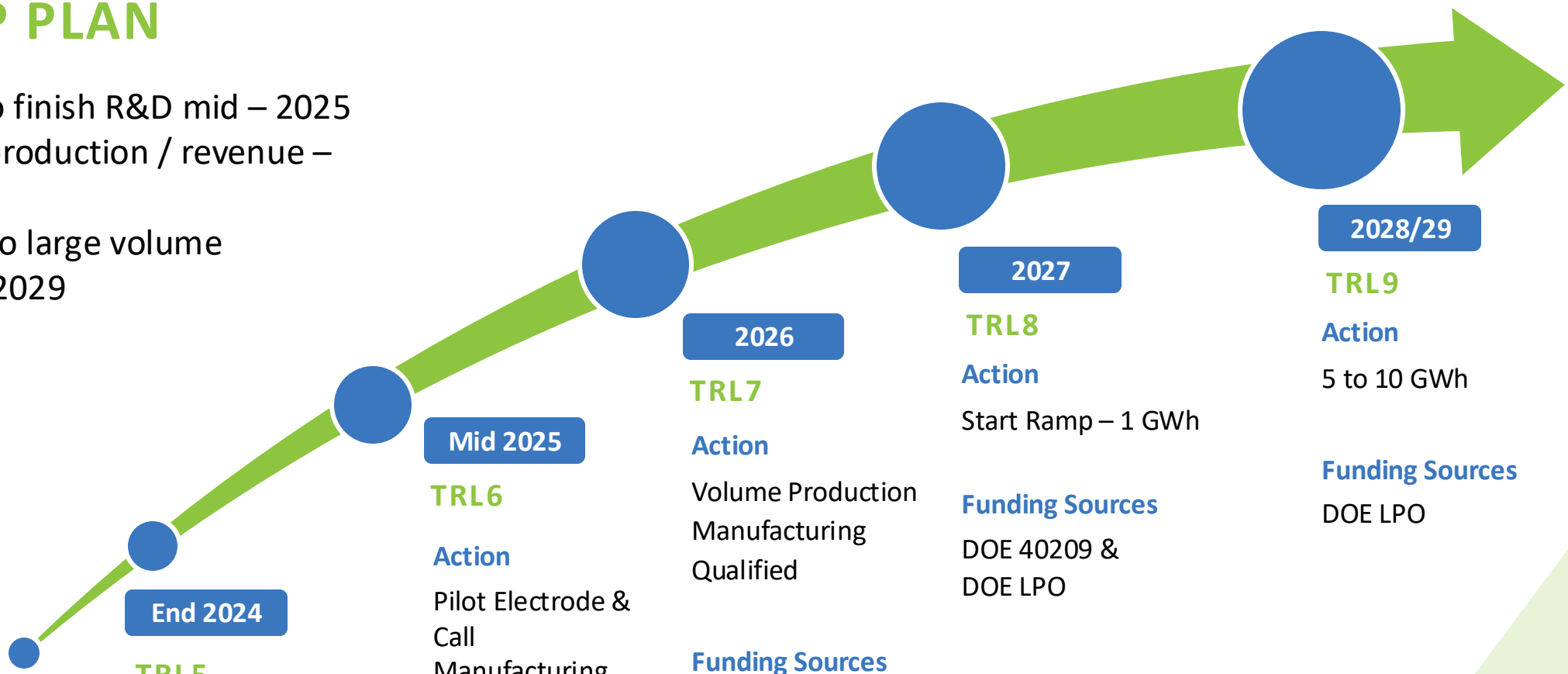
- Own no factories and use contract manufacturers.
- Work with supplier to retrofit existing lithium-ion and lead-acid factories to build our batteries.
- Offer drop-in replacements with no modification needed by customer
- Provide a subscription or rental model to solar installers, etc.
- Offer battery replacements and recycling as a service. Use a franchise model that is set up by region.

Two Revenue Streams

- Merchandising – 80%
- License our technology – 20%

RAMP PLAN

- Plan to finish R&D mid – 2025
- Early production / revenue – 2026
- Scale to large volume 2028/2029



NOW

TRL4

Action

Pouch Cell Lab Work

Funding Sources

Founders & IC

End 2024

TRL5

Action

5Ah Pouch Cells – 1k Cycles Tested

Funding Sources Grants & Equity

Mid 2025

TRL6

Action

Pilot Electrode & Call Manufacturing Qualified

Funding Sources

DOE 40209 & Equity

2026

TRL7

Action

Volume Production Manufacturing Qualified

Funding Sources

DOE 40209 & Equity

2027

TRL8

Action

Start Ramp – 1 GWh

Funding Sources

DOE 40209 & DOE LPO

2028/29

TRL9

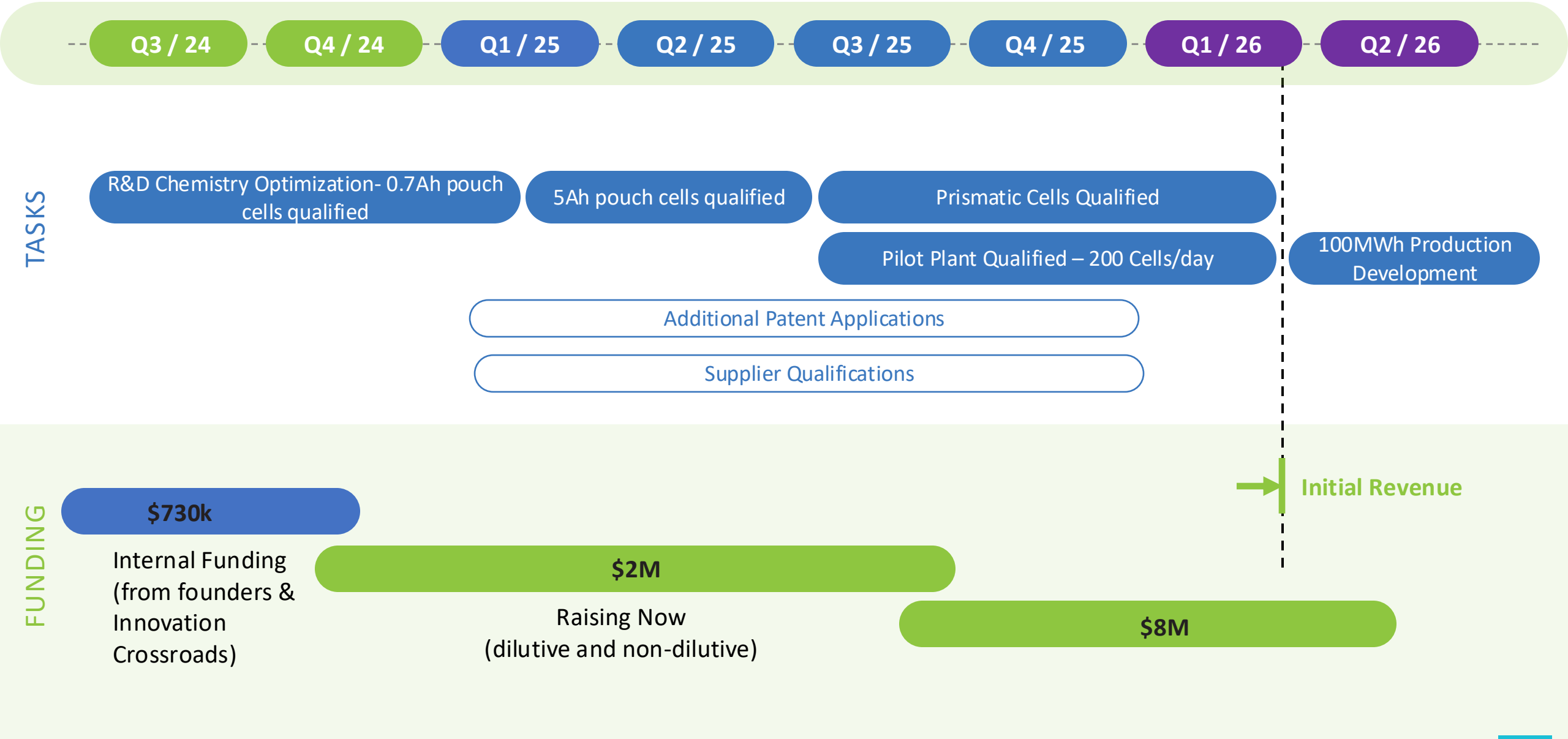
Action

5 to 10 GWh

Funding Sources

DOE LPO

FUNDING MILESTONES



Our Lab Qualifies for New Jersey New Business Incentives
(Available to any investor located anywhere world-wide)

Angel Tax Credit Program –

Any investor eligible for **20% tax credit** up to **$500k** per investor.

Investment Insurance –

Guaranteed payment **up to 80%** of investment to **max $400k** for 1 year

Innovation Evergreen Fund –

Match up to $6.25M if VC join program

Net Operating Loss Offset –

Start-up can sell **10% of losses** per year

SBIR Grant Match –

Up to **$25k**

LEADERSHIP TEAM

Combined 71 Years of Energy/ Battery Experience

Tim Vosburgh

Founder & CEO - MBA

30 years of experience. Started a solid-state battery company back in 2009.

Matthew Kim

PhD – Scientist

6 years of MnO2 battery development experience

Allen Charkey

Acting CTO / Board Advisor

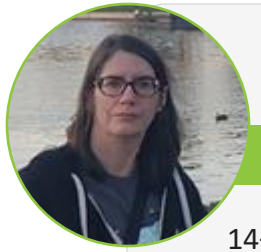
45 years in aqueous zinc battery development.

Successful zinc battery exit

Xiaoran Yang

PhD – Scientist

5 years of battery development experience.



Stefanie Goldman

PhD – Consulting Scientist

14+ years of zinc battery development experience.

Successful zinc battery exit

Amir Chamaani

PhD – Scientist

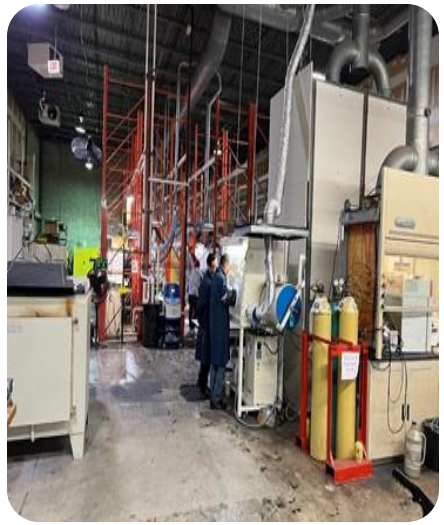
7 years in battery development, including aqueous MnO2

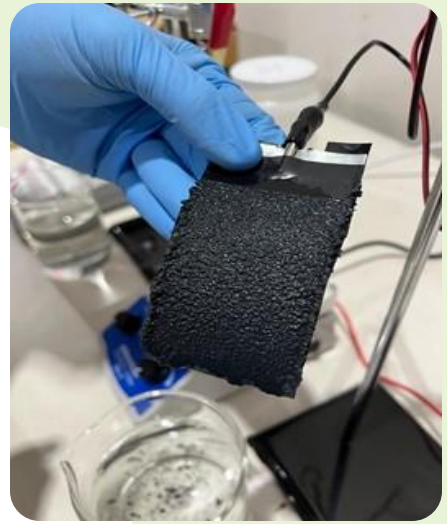
OUR LAB











SUMMARY

Aqueous Zinc-Ion Rechargeable Battery Technology

Enormous market ($100B TAM, $1B SOM) ripe for disruption.

Breakthrough, patent-pending technology.

Experienced & committed development team & development partners.

Balance sheet light business model.

Raising $2M to finish R&D and start prismatic cell development.

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Investor Relations
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Backup

BUSINESS MODEL CANVAS – E-MOBILITY MARKET

8. Key Partners

- *Grant and Investor partners so we can hire more scientists*
- *low-cost lab partnerships to finish our development*
- *pilot manufacturing partners to make our initial 20Ah cells*
- *Close with early adopters*

7. Key Activities

- *Customer samples with 5Ah pouch cell at 150Wh/kg and 200 cycles*
- *Customer evaluation*
- *Manufacturing partnerships*

6. Key Resources

Battery development lab, scientists, supply chain, pilot manufacturing

Outsource model - 10 GWh factory utilizing existing LFP and Lead-acid equipment

2.Value Propositions

- *We are replacing lead-acid and LFP (lithium) batteries with safer, lower-cost (<$50/kWh), earth -abundant zinc-ion batteries*
- *Drop in replacement*
- *Be the battery provider for life*
- *lower LCOS via less up- front costs, less thermal management equipment, and lower insurance costs.*

4. Customer Relationships

- *Develop deep direct relationships with each customer*
- *Build trust and maintain excellent customer support*

3. Key Channels

- *Pilot development plan w/ OEMs*
- *Direct sales with OEM's as each customer we are targeting is very high volume.*
- *Attend tradeshows, use referrals, LinkedIn, etc.*
- *Online advertising*
- *Distribution land retail like, tractor supply store, powersport stores, county co-ops, etc*

1. Customer Segments

E-mobility customers

- *Golf carts - Club car, EZGo, Yamaha, AMC, Garia, Polaris, Cushman*
- *Bass Boats - Skeeter & Triton, Bass Pro Shop / Cabellas*
- *Mining - CAT, Joy Mfg*
- *Powersport Companies - Honda, Yamaha, Polaris, BRP, Kawasaki*

Decision makers:

- *Start w engineers*
- *Then procurement and supply chain*
- *Then CTO*
- *Channel partners*
- *Retail partners*

9. Cost structure

- *R&D costs*
- *Contract Manufacturers*
- *Material*
- *mktg, sales etc*

5. Revenue Streams

We have a direct sales and channel partner model. Revenue from warranty. 15% net margin goal. Our long- term goal is $25/kWh where our zinc competitors are >$100/kWh now. We expect recurring orders from our customers

Business Model Generation Osterwalder & Pigneur

BUSINESS MODEL CANVAS – ENERGY STORAGE MARKET

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- *Pilot development plan w/ system integrators*
- *Direct sales*
- *Attend tradeshows, use referrals, LinkedIn, etc.*
- *Online advertising*
- *Distribution land retail like, home depot, Costco, etc*

1. Customer Segments

Energy Storage customers

- *Energy providers*
- *System integrators*
- *Solar Installers*
- *Retail and channels*

Decision makers:

- *Start w engineers*
- *Then procurement and supply chain*
- *Then CTO*

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