How Can the U.S. Catch Up in Battery Manufacturing and Lead in Next-Gen Technologies?

Ampcera®

Volta Foundation | Battery forum, April 10th 2025

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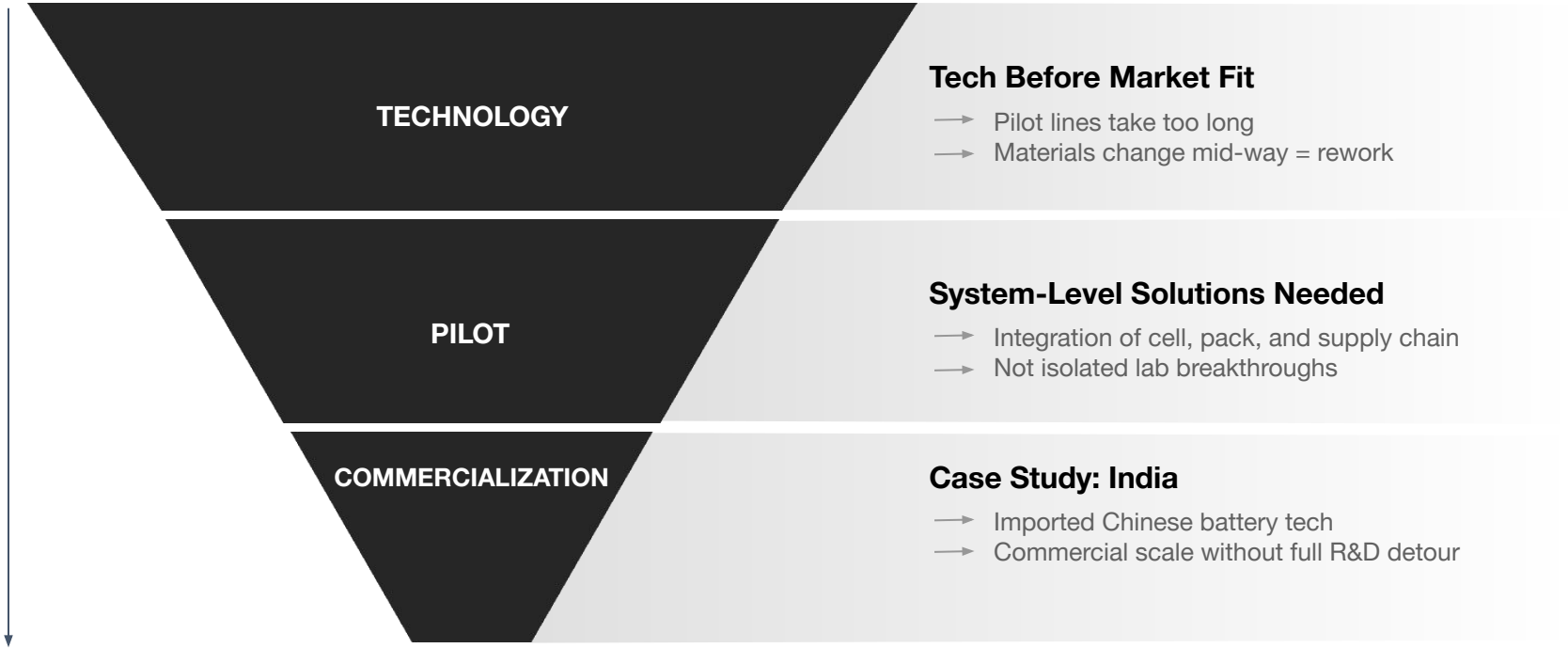
The Real Cost of Offshoring Manufacturing

Manufacturing Exodus
- U.S. offshored hardware & supply chains
- Loss of industrial expertise

Innovation Transfer
- Loss of IP & know-how, not effective protection
- Erosion of U.S. first-mover advantage

China's Rise
- Batteries: CATL, BYD dominance
- Vertical integration, cost efficiency
- EVs: end-to-end value chain, exports booming

Why the U.S. Struggles: Innovation Obsolescence Before Commercialization



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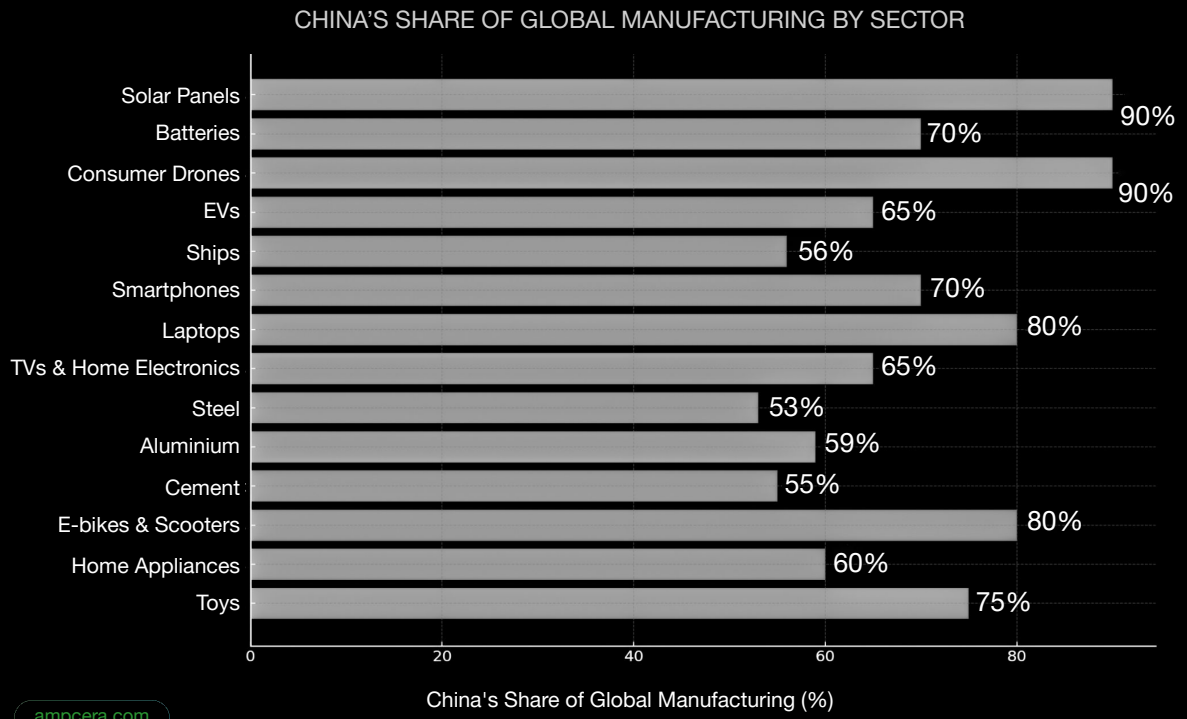
China Has Rewritten the Rules of Scale & Innovation



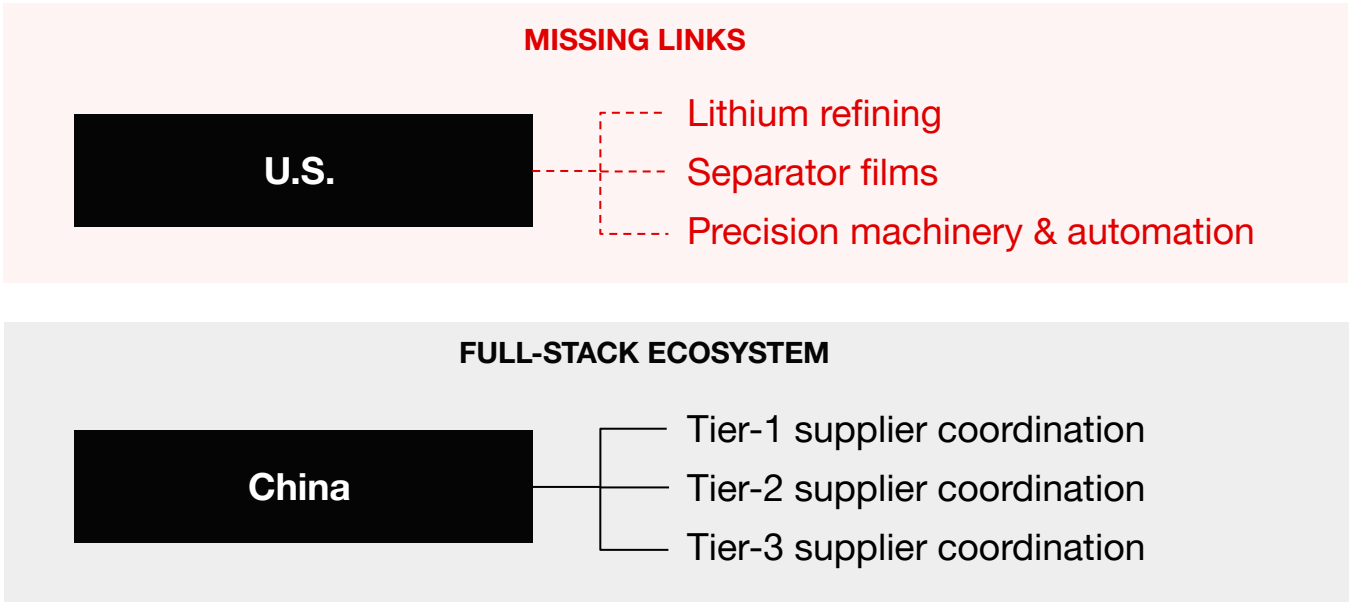
China owns a majority of the manufacturing of everything

Speed: 18-24 month facility deployment

Cost: vertical integration, labor advantage

Innovation: fast IP cycles, production-led R&D

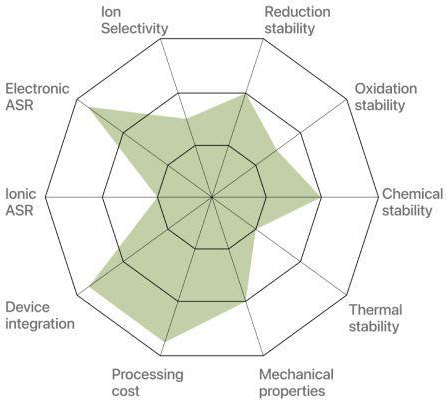
The Missing Capability: Depth in the Supply Chain



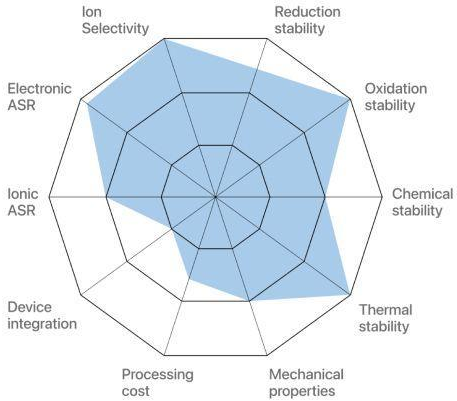
Only firms solving end-to-end pain points will scale

Asian giants are implementing sulfide—U.S. can still lead

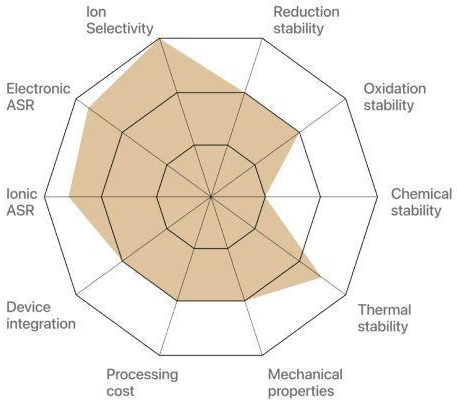
Polymer



Oxide



Sulfide



Sulfide ionic conductivity is on par with organic liquid electrolytes (1-10 mS/cm).

Device integration and processing cost are improving with manufacturing optimization.

Redox and chemical stability are improved with proper active material coatings as well as with proper solvent, binder, and electronic conductive additive selection.

Ampcera solutions

Ampcera's electrolyte technology platform for driving commercialization has four segments

Solid electrolytes

("component")

ENGINEERED ARCHITECTURE

Cell integration

("tailor-made")

CELL ECOSYSTEM DESIGN

Battery cell

("system")

HIGH ENERGY DENSITY & FAST CHARGING

Process technologies

("manufacturing")

SCALABILITY AND REPRODUCABILITY

50+ patents and **90+ trade secrets** covering materials, manufacturing, and cell designs

Foundational building blocks and areas of synergy

Solid electrolytes

("component")

MATERIAL ARCHITECTURE ENGINEERING: Precisely control material properties to customize physical attributes and characteristics, thereby meeting electrochemical performance requirements.

BENCHMARKING: Systematic integration of a diversity of electrolyte materials variants or other next-generation materials in cell systems that meet end user needs.

INNOVATION STRATEGY: Drives innovation through close collaboration, key stakeholder in-licensing, and strategic partner out-licensing.

ENGINEERED ARCHITECTURE

Cell integration

("tailor-made")

SYNERGIZING MATERIAL DESIGN: System-level understanding to reach customers required battery performance

DESIGN: Optimize cell structure via material screening for peak electrochemical performance.

ECOSYSTEM TAILORABILITY STRATEGIES: Development of information packages for integrating new solid electrolytes and other next-generation materials into customer-specified cell systems.

MATERIAL ENGINEERING: Solid electrolytes and other next-generation materials for diverse cell chemistries, sizes, and formats.

CELL ECOSYSTEM DESIGN

Battery cell

("system")

SYSTEMATIC ENGINEERING: Optimized cell architecture for best-in-class energy density and fast charging.

BATTERY SOLUTIONS INFRASTRUCTURE: Ampcera provides leading cell design, prototyping, and electrolyte solutions, leveraging in-house development and strategic partnerships.

CUSTOMIZED TURN-KEY SOLUTIONS: Next-generation batteries and building structured datasets with performance metrics that meet customer needs.

DRY MANUFACTURING: Strategy to enhance energy density and lower production cost.

HIGH ENERGY DENSITY & FAST CHARGING

Process technologies

("manufacturing")

DESIGN: Manufacturing line for safety, scale, and capital efficiency

ADVANCED ENGINEERING OF MATERIALS AND CELLS: Process optimization, process integration, process development, and equipment customization.

SCALE-UP: Engineering strategies to meet current and future demand.

EQUIPMENT SELECTION: Development strategies to meet manufacturing requirements.

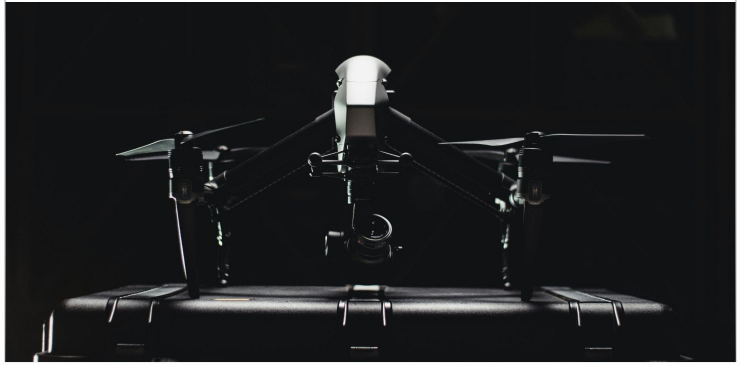
D-FMEA AND P-FMEA: Achieve commercial ready cell solutions.

SCALABILITY AND REPRODUCABILITY

The Urgency to Lead in Next-Gen Tech

New technologies

Focus on new technologies—not copies of Chinese playbooks



Business

Build scale, cost, and innovation from Day 1

The Path Forward

1. U.S. must pursue **system-level scale** in battery manufacturing

2. Build what China hasn't: **next-gen at scale**

3. Companies like **Ampcera** are setting the blueprint

Ampcera's commitment to commercializing ASSB through innovation, cost reduction, and strategic partnerships

Ampcera

Let’s connect for building a sustainable future

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