Materials enabling breakthrough battery performance

Ampcera®

Ampcera October Update – M10, 2024

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What’s ahead

INTRODUCTION

Dear reader,

As we continue to drive the transition to clean energy, Ampcera remains dedicated to developing innovative battery solutions.

In October, we advanced the development of our next-generation technology and partnerships. By reducing pressure requirements for solid-state battery stacks and forming strategic alliances across the battery supply chain, we continue to build momentum toward the commercialization of our solid-state electrolyte material technology.

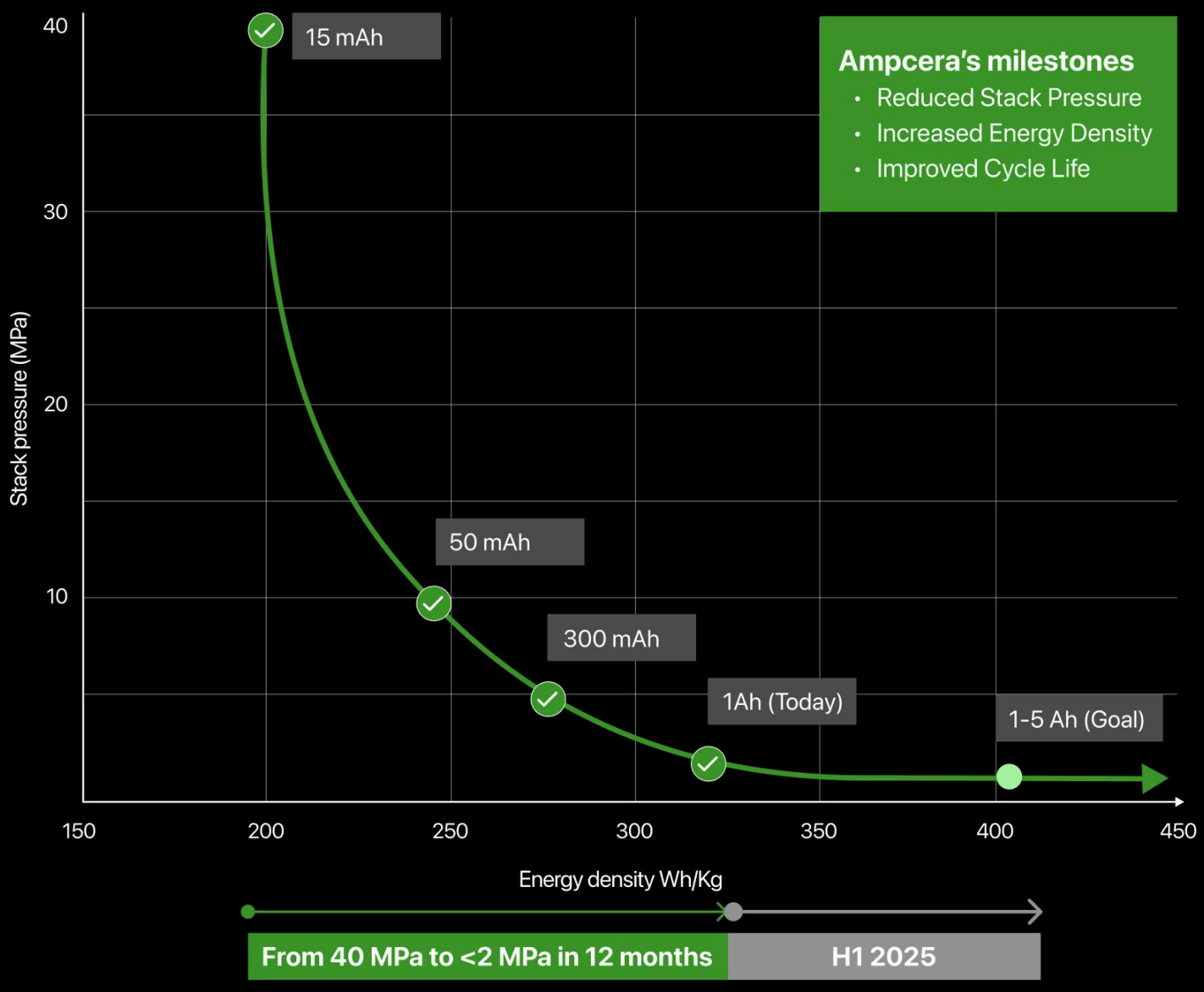
Read more about these updates and other developments in this month's newsletter.

TECHNOLOGY

Delivered cell performance with <2 MPa stack pressure

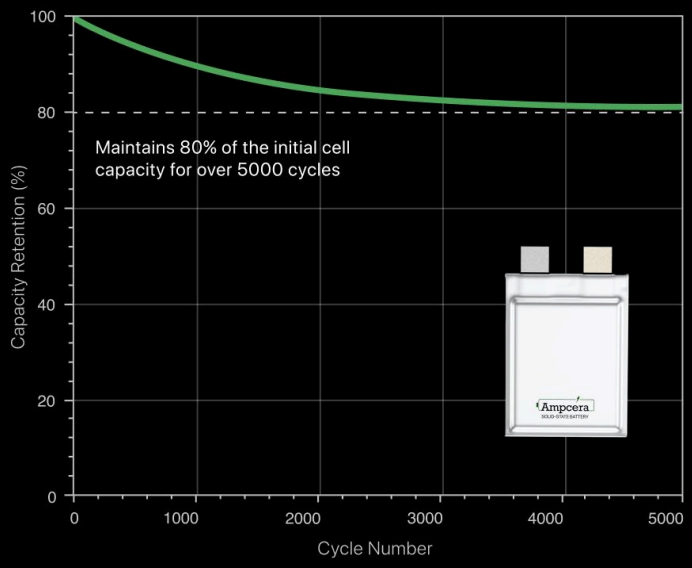
Ampcera's solid-state cells are cycled between plates with a fixed gap to maintain consistent stack pressure, a critical factor for efficient ion transport and conductivity in solid-state batteries. By optimizing high-nickel NMC areal loading and binder formulations, Ampcera has enhanced energy density and achieved 80% state-of-charge in just 15 minutes at higher areal loadings, demonstrating fast-charging capabilities.

Systematic improvements, including reducing sulfide solid electrolyte particle size and refining cathode and anode formulations, have lowered stack pressure from 40 MPa to <2 MPa, with 1 MPa under development. By targeting a D50 particle size of 0.8–1.0 µm by year-end, Ampcera aims to reduce stack pressure to 0.5 MPa by mid-2025, paving the way for further efficiency gains in solid-state battery performance.

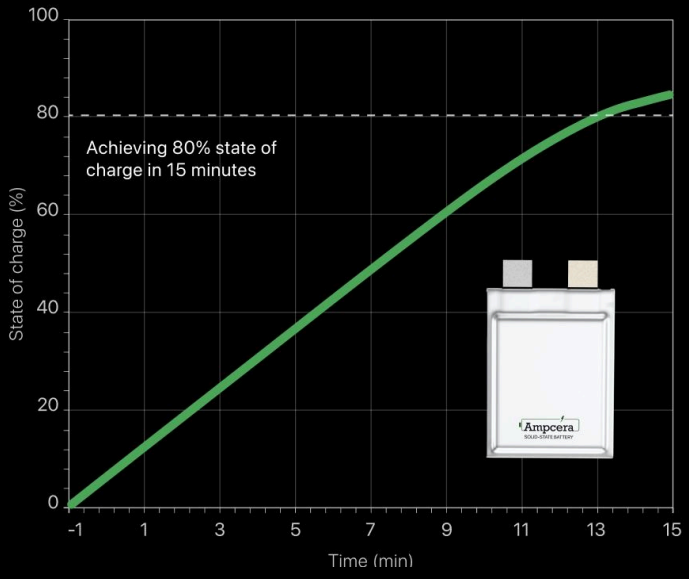


TECHNOLOGY

Cycle life performance



Fast charging



BUSINESS DEVELOPMENT UPDATES

Full-stack cell solution that integrates Ampcera's electrolyte technology

Ampcera has partnered with several Tier 1 organizations across the SSB value chain to initiate the development of a full-stack cell solution integrating Ampcera's advanced electrolyte technology. Collaborating on a full-stack cell solution offers several strategic advantages:

- Ability to scale up the development with the understanding of mass-production requirements and limitations
- Enjoy the economy of scale and EV-grade manufacturing know-how learning curve.
- Provides validation and comfort to battery gigafactories and EV OEMs to embrace solid electrolytes

ELECTRIC VEHICLES

UPSTREAM: RAW MATERIAL SOURCING

Securing raw materials supply chain for Li_2S, P_2S_5 and other critical materials

MIDSTREAM: EQUIPMENT AND PROCESS DEVELOPMENT CELL AND MANUFACTURING PARTNERS

- Equipment and process development and scale-up
- Sulfide solid electrolyte manufacturing
- Establishing strong capabilities in building battery cells via partners

DOWNSTREAM: JOINT DEVELOPMENT PARTNER AND CUSTOMER

EV-grade mass production manufacturing partner helps in swift validation, qualification, and commercialization

CONSUMER ELECTRONICS

MIDSTREAM: CELL PARTNERS

Strong capabilities in building pouch cells for CE

DOWNSTREAM: JOINT DEVELOPMENT PARTNER AND CUSTOMER

Helps Ampcera achieve premium pricing for its SSE-based products

COMPANY PROGRESS

Driving business scale-up

Over the past year, Ampcera has achieved growth across technology, business development, team expansion, and manufacturing capabilities:

Technology

Cell capacity advanced from 15 mAh to 1 Ah, with milestones at 50 mAh and 300 mAh. Stack pressure was reduced from >40 MPa to <2 MPa. Future plans include scaling cell sizes to 1–5 Ah and reducing stack pressure <0.5 MPa.

>40 MPa 2023	**<2 MPa** (In last 12 months)	<0.5 MPa (In next 6 months)

Business Development

Ampcera expanded its network to six, including three customers and three material and cell development collaborations. This number is expected to grow to 10 in the next six months.

1 partner 2023	**6 partners** (In last 12 months)	10 partners (In next 6 months)

Team

The team grew from 20 to 32 members, with plans to further expand to 40 by mid-2025, strengthening expertise across all functions.

20 members 2023	**32 members** (In last 12 months)	40 members (By mid-2025)

Manufacturing

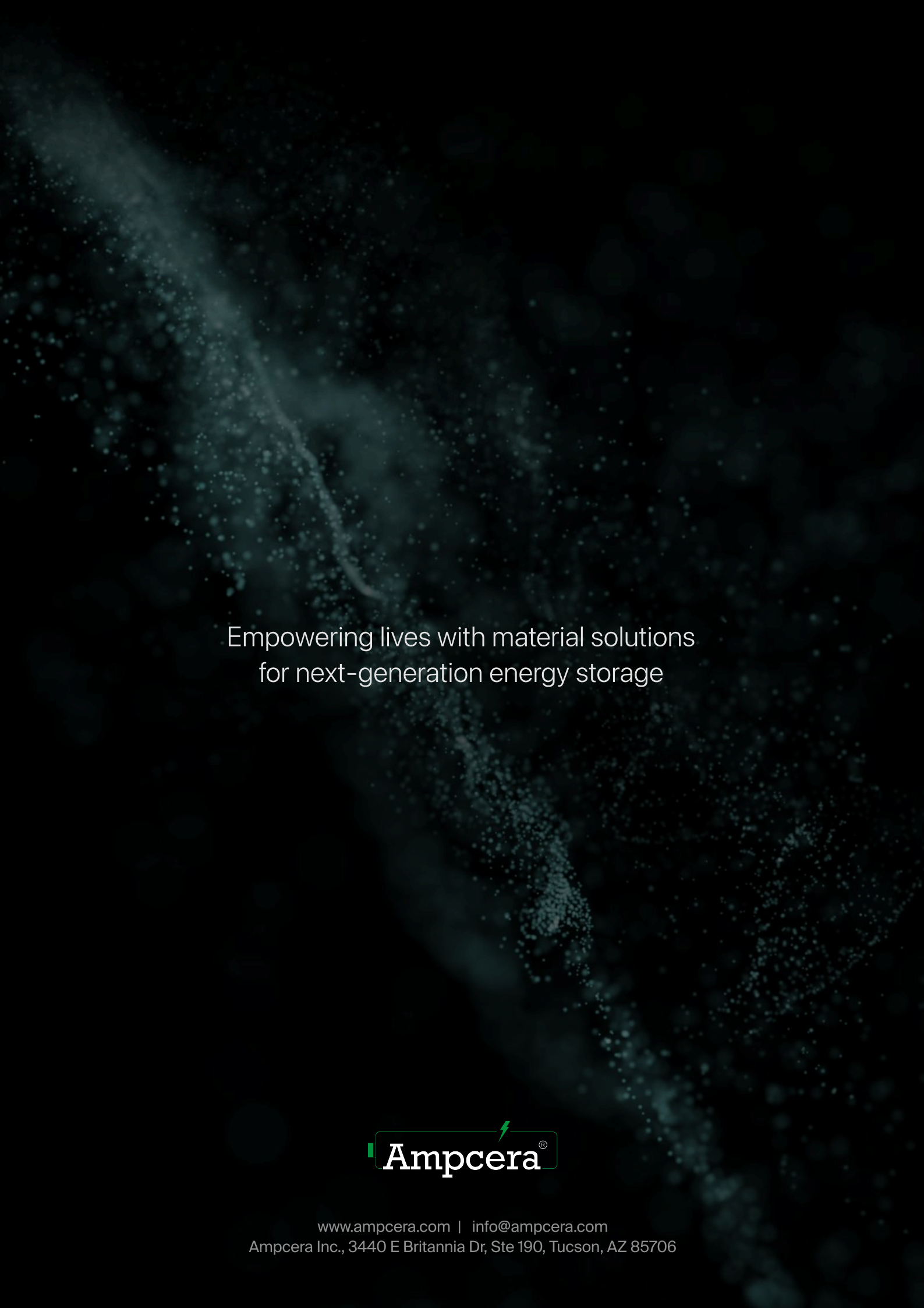
In the last 12 months, annual production capacity increased from 100 kg to over 1 ton with a target to reach 20 tons within six months to meet growing demand.

100 kg 2023	**1 ton** (In last 12 months)	20 tons (in next 6 months)

These advancements position Ampcera as a leader in solid-state battery innovation, driving commercialization and scaling capabilities to deliver on clean energy goals.

AMPCERA'S CORPORATE VIDEO

Ampcera | Powering towards a sustainable future



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