

# Materials enabling breakthrough battery performance



Ampcera Quarterly  
Update — Q4, 2024

TABLE OF CONTENTS

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# What’s ahead

Introduction	PAGE 02
Technology updates	PAGE 03
Business development updates	PAGE 05
Ampcera corporate video	PAGE 08

INTRODUCTION

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Dear reader,

As we close out the year, Ampcera continues to make strides in advancing solid-state battery technology and building a sustainable energy future.

**In this Q4 update**, we are excited to share highlights from our recent developments. From breakthrough progress on all-climate solid-state batteries to scaling our innovative manufacturing processes, our technical advancements are paving the way for next-generation energy storage.

On the business development front, Ampcera's presence at key industry events—including the Plug and Play Silicon Valley Summit, ARPA-E visit to Ampcera in Tucson, and the NAATBatt Committee Meeting—has strengthened our collaborations and expanded our network within the advanced battery ecosystem.

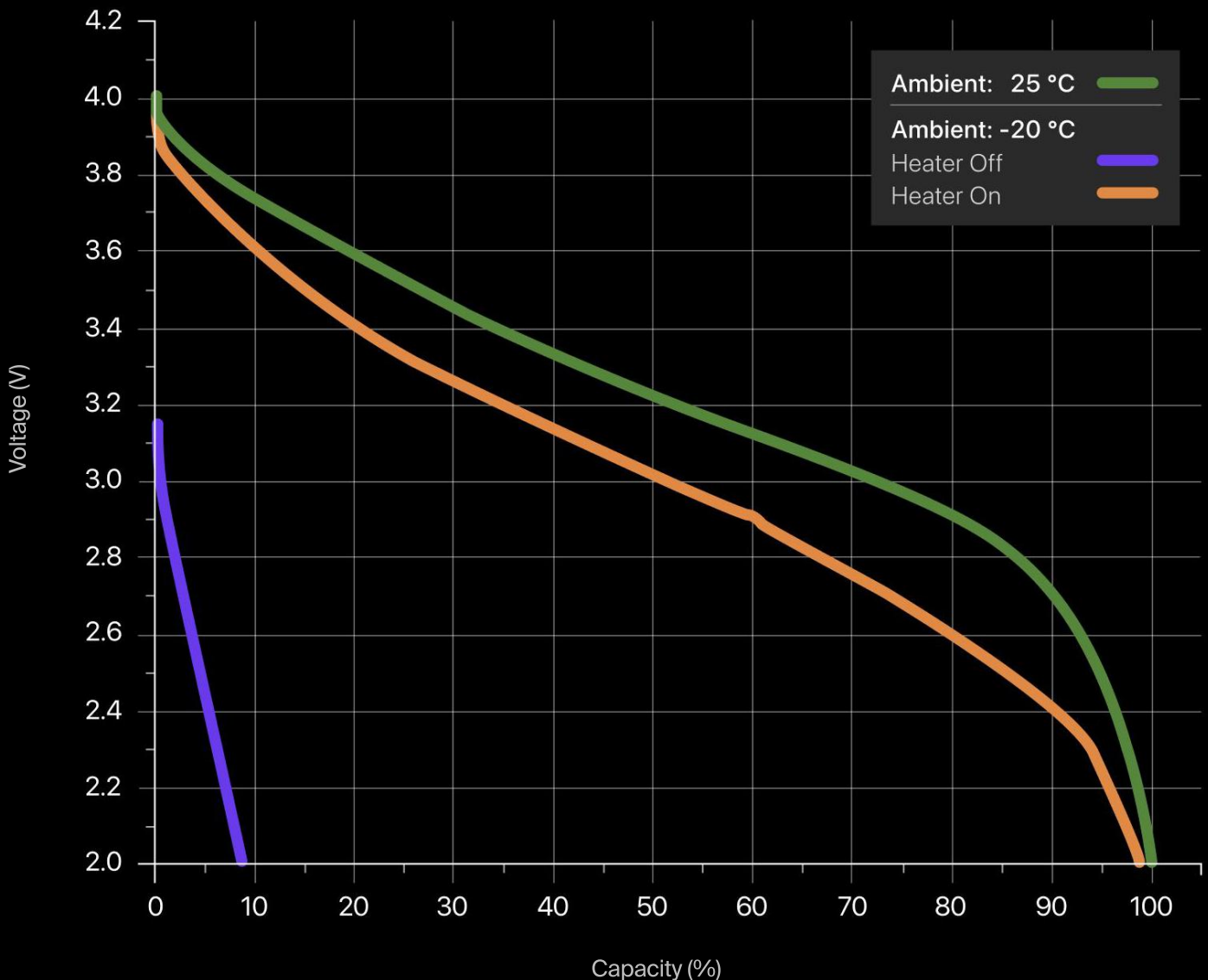
You can read more about these achievements and access detailed summaries in this quarterly edition of the newsletter.

## TECHNOLOGY UPDATES

# All-climate solid-state batteries

The key highlight was a **self-heating SSB cell**, designed to tackle EV winter performance challenges. Breakthroughs were achieved through solid electrolyte spec improvements, strategic equipment acquisitions, and strong collaborations with project partners, marking a major step forward in SSB technology.

Built self-heating SSB cell with 90% energy retention at  $-20^{\circ}\text{C}$  vs.  $25^{\circ}\text{C}$  (@C/3 discharge). Cells are fully charged at  $25^{\circ}\text{C}$  prior to discharge test. The self-heating SSB is developed in collaboration with [FastLion Energy](#) and [Ford Motor Company](#) and is expected to address cold-temperature performance of SSB, resolving winter anxiety of EV owners. The higher heat tolerance of SSB compared to lithium-ion battery, eases the integration of internal heaters, minimizing heat loss compared to external heating methods. Once fully developed, the SSB pack will be operable after several minutes of pre-heating in extreme cold.



TECHNOLOGY UPDATES

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# 2024 milestones

**Advanced cell size** ↗

Advanced solid-state batteries with 2Ah pouch cells

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**Reduced stack pressure** ↗

Reduced stack pressure from 40 MPa to 2 MPa through solid electrolyte optimization and advanced cell integration methods

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**Performance** ↗

Achieved 80% fast charging in under 15 minutes

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**Dry electrode manufacturing process** ↗

Reduced costs and CO<sub>2</sub> emissions by 60% with dry electrode technology

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**Manufacturing batch size** ↗

Scaled solid-state electrolyte production to 100+ kg batch size with 1-3% batch variation

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**Intellectual property portfolio** ↗

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



# Ampcera's participation at three key industry events

In November 2024, Ampcera participated in three key events: the Plug and Play Tech Center Silicon Valley Summit, the ARPA-E EVs4ALL quarterly review meeting and the NAATBatt committee meeting. These events allowed us to engage with industry leaders, foster strategic partnerships, and highlight our progress in advancing energy storage and sustainable transportation.

## Plug and Play Silicon Valley Summit

**PLUGANDPLAY**

November 19-21, 2024 | Sunnyvale, CA



Ampcera participated in the Plug and Play Tech Center Silicon Valley Summit, where over 3,500 innovation leaders gathered to explore the latest advancements in clean energy, mobility, AI, and sustainability. **At the summit, Abhishek Kumar and Emery Brown represented Ampcera**, with Abhishek presenting the company's cutting-edge solid-state battery technology.

This breakthrough innovation, designed to deliver high energy densities, faster charging speeds and extended battery life, promises to redefine energy storage solutions. The summit also served as an excellent platform to engage with industry leaders, investors, and startups, fostering collaborations to drive progress in clean energy and technology.

[Read more ↗](#)

## BUSINESS DEVELOPMENT UPDATES

## ARPA-E visit to Ampcera in Tucson, AZ

December 9, 2024 | Tucson, AZ



Ampcera hosted ARPA-E Program Director [Dr. Halle Cheeseman](#) and Tech-to-Market Advisors [Sean A Vail](#) and [Apoorv Agarwal](#) at our Tucson, AZ offices for the [EVs4ALL](#) quarterly review meeting. Alongside partners [Ford Motor Company](#) and [FastLion Energy Inc.](#), we showcased our R&D labs and shared key milestones in the [EVs4ALL](#) project, focusing on advancements in solid-state battery technology for EV energy storage. All-climate SSB is developed with [Ford](#), [FLE](#) and [ARPA-E](#). We thank ARPA-E for their continued support in driving innovation toward a sustainable energy future.

[Read more ↗](#)

## NAATBatt Committee Meeting

December 18, 2024



[Eongyu Yi](#) (Director, Battery Technology) presented Ampcera's cutting-edge technology at the NAATBatt committee meeting on December 18, 2024. NAATBatt is a trade association dedicated to supporting the commercial interests of its members in advancing battery technology across North America.

[Read more ↗](#)

# 2024 milestones

## Full-stack cell solution ↗

Developed full-stack cell solution by integrating Ampcera's electrolyte technology

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## Technology development and qualification with 6 EV/Cell partners ↗

Expanded partnerships to six, advanced cell capacity to 2Ah, and reduced stack pressure from >40 MPa to <2 MPa

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## Cost model ↗

Targets \$40–45/kg for  $\text{Li}_2\text{S}$ , \$50/kg for solid electrolyte, and <\$100/kWh for solid-state batteries with the U.S. DOE

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## Government grants ↗

Secured \$1.8M in second-phase ARPA-E EVs4ALL funding after Q2 review

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## Participation in 15+ events ↗

Showcased solid-state battery advancements at [NREL Industry Growth Forum](#), [Plug and Play Sustainability Summit](#), [ARPA-E Energy Innovation Summit](#), [Evercore's annual Global Clean Energy & Transition Technologies Summit](#), [Arizona Technology Council's Annual E-Mobility and Clean Energy Summit](#), [Flex & KPMG Automotive Innovation Summit](#), [NAATBatt](#), and [Plug and Play Silicon Valley Summit](#) in 2024



AMPCERA'S CORPORATE VIDEO

# Ampcera | Powering towards a sustainable future



Empowering lives with material solutions  
for next-generation energy storage



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