

WHITE PAPER

330+

Units deployed

100k+

tons of CO₂ removed

Ampd Energy enables leading construction and industrial players transition to cleaner, more efficient power.

Redefining Charging Speed: Ampd Energy's Blueprint for Smarter, Safer ESS

Battery Energy Storage Systems (ESS) are at the heart of today's clean energy transformation—powering everything from grid stability to construction electrification. A critical design factor in any ESS is **charging speed**: how quickly the batteries can safely and reliably recharge.

At Ampd Energy, we know charging speed isn't just an engineering detail—it directly impacts system uptime, project efficiency, and ultimately, customer ROI. That's why our engineers design a **charging framework** that balances performance, safety, and durability, ensuring every Ampd ESS delivers maximum value in the field.

How it Works

1C charging enables very rapid recharging—typically from 10% to 90% in about one hour—allowing customers to quickly top up during breaks, power high-energy-demand equipment efficiently, and reduce generator runtime and maintenance frequency, which is especially beneficial for remote sites using Ampd's ESS portfolio.

Put simply: higher charging power means faster turnaround times. But faster isn't always better—if the charging power isn't matched to the battery and system design, reliability and lifespan suffer. Ampd Energy's approach optimizes this balance, giving customers faster charging **without compromising long-term performance.**

Why Charging Speed Matters to Customers

A **high-capacity cooling system** to keep the PCS and batteries cool; **liquid-cooled batteries** for highly effective heat removal and even temperature distribution without hot spots; **high-precision temperature sensors** with 240 sensors dedicated to the batteries and **CATL battery cells** with exceptional manufacturing consistency to eliminate any weak links. All of these components work together as an integrated system—drop any one, and the whole solution fails.

Five Commercial Considerations

1. Battery Chemistry

Push batteries beyond their chemical limits and you risk irreversible damage. Ampd ESS products use advanced lithium iron phosphate (LFP) cells—known for their safety, durability, and tolerance to regular 100% charging—backed by smart controls that prevent costly failures.

2. Heat Management

Overheating reduces battery lifespan and reliability. Ampd integrates intelligent thermal management to maintain safe operating temperatures, ensuring consistent performance across project lifecycles.

3. State of Charge (SOC)

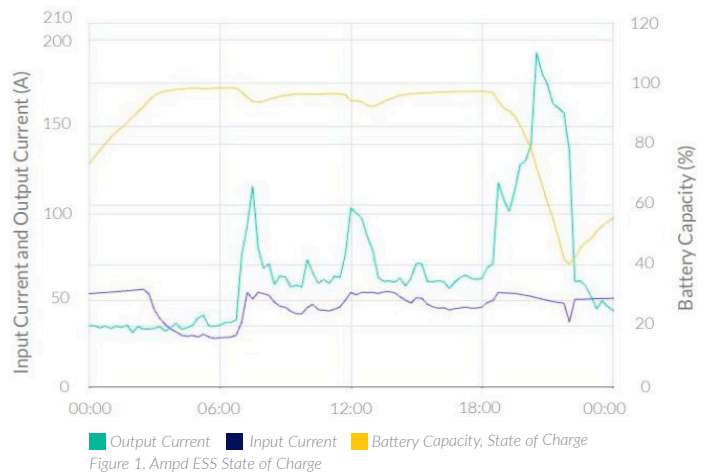
Charging behavior changes as batteries approach full capacity. Our systems dynamically adjust charging profiles to protect batteries at all SOC levels—delivering predictable performance day after day.

4. Charging System & Infrastructure

More chargers don't always mean better performance. Ampd applies a holistic systems-engineering approach, ensuring chargers, switchgear, and supporting components are optimized as a whole. This reduces downtime, lowers service costs, and maximizes reliability.

5. Generator Integration

For hybrid setups, running a generator at its limits accelerates wear and drives up OPEX. Ampd's experts help customers size generators correctly, ensuring optimal efficiency, reduced fuel costs, and longer generator lifespans.



Real World Success Story

Residential Complex UAE

Site Setup



354 tons

CO₂ reduction per year¹ (72% reduction)

1.7 Year Purchase Payback

OR

14% Rent Vs Rent Savings

¹ Assuming a CO₂ emission intensity of 2.64 kg per litre.

The Ampd Energy Advantage

Designing the right charging speed framework isn't just about technical compliance—it's about:

Maximizing uptime – Faster, reliable recharging keeps projects moving

Reducing lifetime costs – Preventing premature wear extends system life

Enhancing ROI – Smarter charging means fewer interruptions and better productivity

About Ampd Energy

Ampd Energy is pioneering a more sustainable and prosperous future for heavy industries globally by delivering mobile ESS products which deliver cleaner, quieter and more efficient power.

When it comes to ESS performance, charging speed can make or break a project. Ampd Energy's holistic approach ensures customers get the **safest, most reliable, and most commercially efficient** ESS on the market.

Ready to optimize your project's power strategy?
Contact our sales team today.

Why not join them?

An emission-free future for industries.



If you're interested in using an ESS for your project or company, contact Ampd Energy at contact@ampd.energy to book a 30mins consultation with one of our experts.

