

this  
**webinar** is powered by  
Rongjie Energy Technology

18 December 2025

10:00 am – 11:00 am | CET, Berlin

5:00 pm – 6:00 pm | CST, Beijing



**Tristan Rayner**

Editor  
pv magazine

pv magazine  
**webinars**

# Next-gen BESS design: Energy density, and the logistics headache



**Lin Li**

Technical Solution Director  
Rongjie Energy Technology

# Welcome!

Do you have any questions?  

Send them in via the Q&A tab.  We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 

We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.  

# Rongjie Energy Product Introduction

**Reporter: Lin Lee**

**Position: Pre-sales manager**

**Date:18.12.2025**

# Catalogue

- 01 Company profile
- 02 Product introduction
- 03 Immersion liquid cooling pack
- 04 Project case

# Company profile

**1995**

Establishment

**650,000**

Employees

**\$83.3 Billion**

Annual Turnover

**\$69.4 Billion**

Asset Scale

**\$125 Billion**

Investment Market Value

## Four Listed Companies with Strategic Investments

Youngy Co., Ltd. / Youngy Health / BYD / BYD Electronics

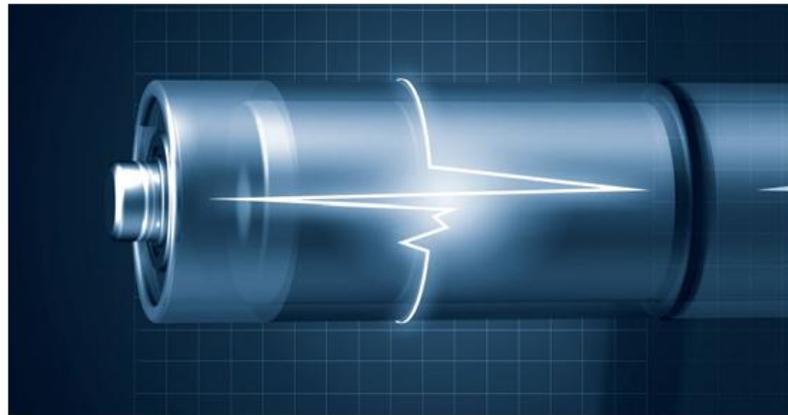




RONGJIE  
**Rongjie 300 Ah & 314 Ah Cells Technology Review**

GUANGZHOU RONGJIE ENERGY TECHNOLOGY CO., LTD.

Document No.: 10504971-SHA-R-01-G  
 Issue: G Status: Final  
 Date: 27 January 2025



Project name: Rongjie 300 Ah & 314 Ah Cells Technology Review  
 Report title: Rongjie 300 Ah & 314 Ah Cells Technology Review  
 Customer: Guangzhou Rongjie Energy Technology Co., Ltd.  
 No.3, Wanxin First Street, Wanqingsha Town, Nansha District Guangzhou, Guangdong 511458, China  
 Contact person: Wangang Huang  
 Date of issue: 27 January 2025  
 Proposal Reference: OPP-00335547  
 Document No.: 10504971-SHA-R-01-G  
 Issue/Status: G / Final

DNV China Company Limited  
 House No. 9, Hongqiao State Guest Hotel, No. 1591 Hongqiao Road, Changning District, 200030, Shanghai

Prepared by: \_\_\_\_\_ Verified by: \_\_\_\_\_ Approved by: \_\_\_\_\_

*Seika Minakoshi* Digitally signed by Minakoshi, Seika  
*Symbol Jialin Zhao* Digitally signed by Zhao, Jialin Symbol  
*Xiao, Yongshan* Digitally signed by Xiao, Yongshan

Seika Minakoshi Senior Consultant, Energy Storage Services APAC  
 Symbol Jialin Zhao Senior Engineer, Energy Storage Services APAC  
 Yongshan Xiao Team Lead, Energy Storage Services APAC

*Kevin Chiu* Digitally signed by Chiu, Kevin  
 Chan Yin Kevin  
 Date: 2025.02.14 16:50:35 +08'00'

Kevin Chiu Engineer, Energy Storage Services APAC

- Strictly Confidential
- Private and Confidential
- Commercial in Confidence
- DNV only
- Customer's Discretion
- Published

© 2021 DNV China Company Limited All rights reserved.  
 Reference to part of this report which may lead to misinterpretation is not permissible.

Issue	Date	Reason for Issue	Prepared by	Verified by	Approved by
A	17 June 2024	Draft	Seika Minakoshi Kevin Chiu		
B	06 August 2024	Draft	Kevin Chiu		
C	30 August 2024	Draft	Kevin Chiu		
D	23 September 2024	Draft	Kevin Chiu Seika Minakoshi		
E	02 October 2024	Final	Kevin Chiu Seika Minakoshi		
F	15 January 2025	Final	Kevin Chiu Seika Minakoshi	Symbol Jialin Zhao	
G	27 January 2025	Final	Kevin Chiu Seika Minakoshi	Symbol Jialin Zhao	Yongshan Xiao

It has been nearly 30 years since YOUNGY GROUP proactively stepped into the lithium battery industry, and now it has formed a complete lithium battery industry chain.



## YOUNGY GROUP New Energy Industries Distribution



**Lithium resource development**  
**Ganzizhou Rongda Lithium Co., Ltd.**

*Methylcarbene Solid Spodumene Mine, #1 in Asia & #2 in the World*



**Cathode materials**

**Rongjie Metal /Youngy Energy Materials**

Lithium Battery Cathode Material and Precursor Production Base



**Recycling of battery**

**Chaohu Anhui**

Second Life Utilization and Regeneration of EV/ESS Battery



**Cathode material precursor**  
**Chengdu Rongda Base**

Lithium Battery Cathode Materials Precursor Production Base



Sichuan

Anhui



**Manufacturing of battery pack**

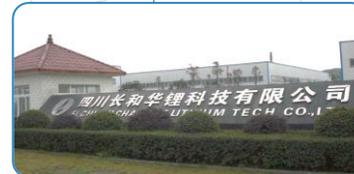
ETC

10GWh Product Capacity for EV and ESS Battery



**Battery grade lithium salt**  
**Rongjie Chengdu/CHANGHE HUALI**

45000 Tons of Lithium Carbonate/Lithium Hydroxide per Year



Guangdong



**Manufacturing of Cell& battery pack & system**  
**RJETech**

266,800sqm, 35GWh Product Capacity for EV and ESS Battery



**Equipment manufacturing**

**Dongguan Derui**

Precision Manufacturing of Consumer and EV Battery Production Equipment



**Date of Establishment:** June 29, 2022

**Location:** Nansha District, Guangzhou (Core Zone of Greater Bay Area)

**266,800m<sup>2</sup>**

Floor Area

**530,000m<sup>2</sup>**

Building Area

**\$3 Billion**

Total Investment

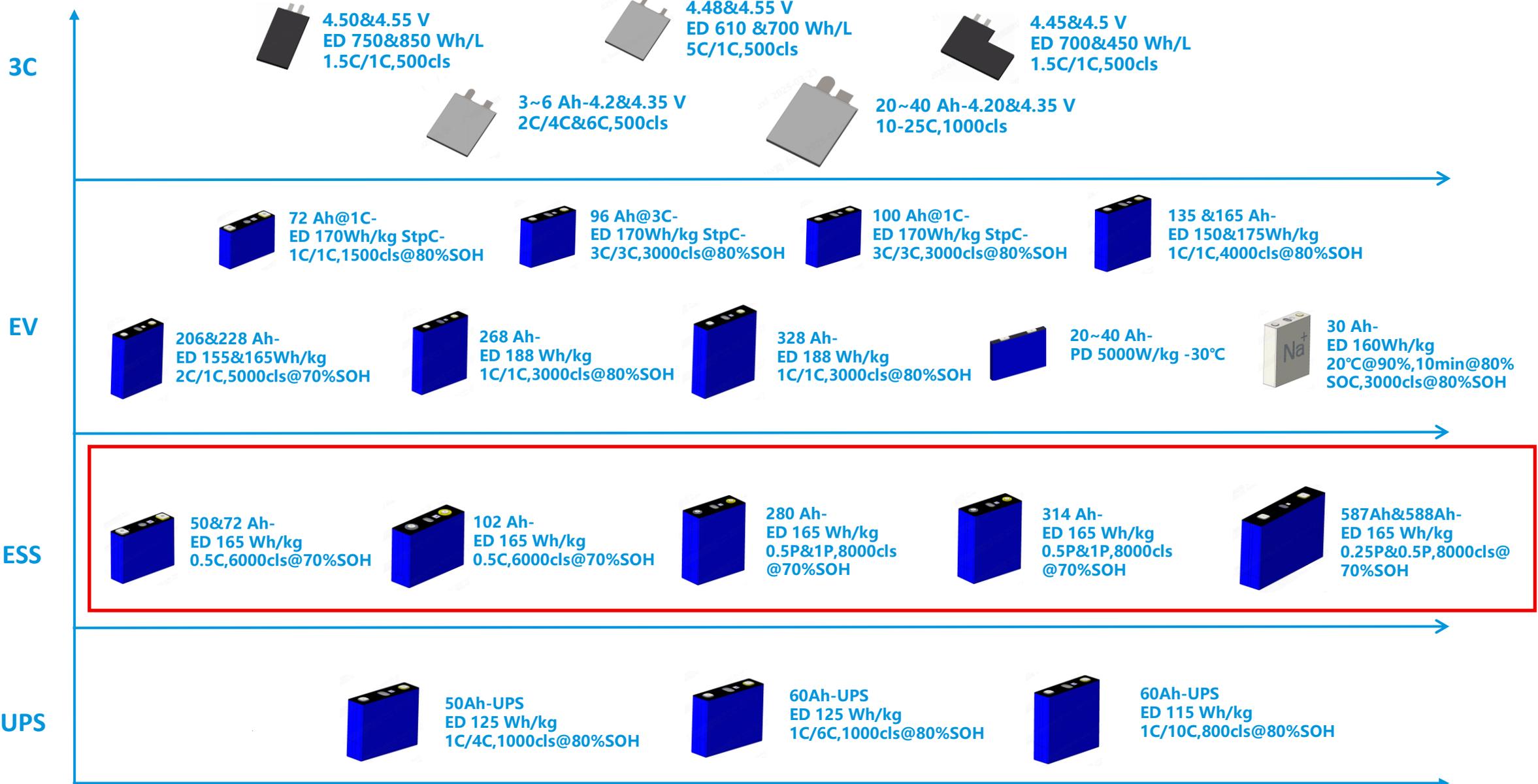
**35GWh**

Cell Capacity  
Planning

**20GWh**

Module & Pack  
Capacity Planning

# *02* Product introduction



Completed

Developing

Under planning

## Containerized BESS roadmap



**DC Centralized type-5MWh-0.5P-CE/UL/GB-2025**

**DC centralized type-4MWh 0.5P/1P-CE/UL**



***DC Centralized type-4.6MWh-0.25P/0.5P-IEC/UL (587/588Ah cell)***

2024

2024.6

2025

2025.6

2026

2026.6

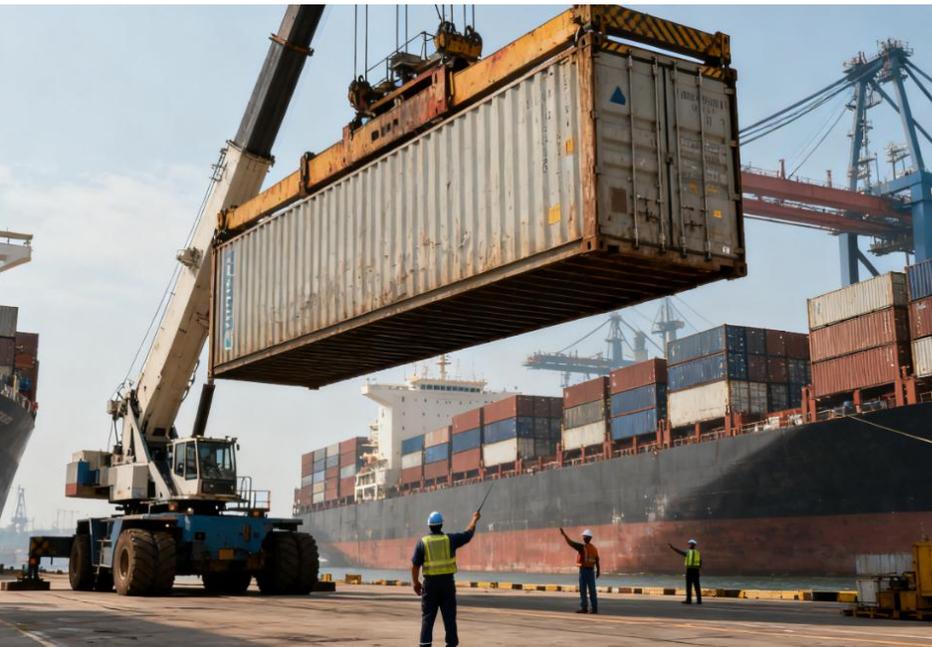
2027

2027.6

2028

## 1. Transportation

	Weight	> 36000kg	≤36000kg
Shipping process			
Shipping by sea		Port lifting equipment weight limit	Can meet the lifting requirements of most ports
Land transportation		Narrow road, suspension bridge has weight limit	Basically meets most of the requirements for land transportation.

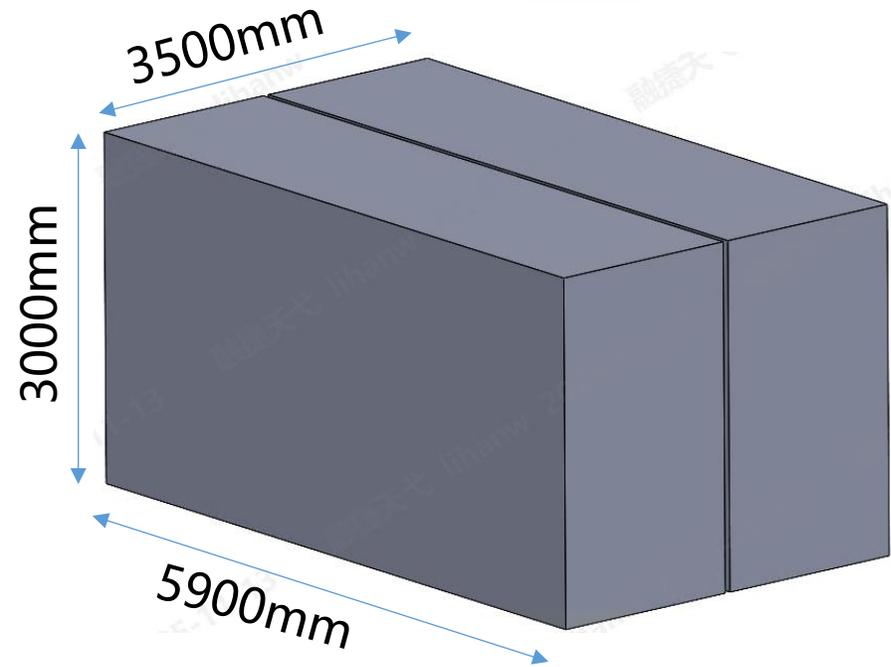


## 2. Depolying and commisioning

10ft will increase the initial cost casue the container enclosure, components will increase; installation work,commissing and price will increase definately.



 **site unit: 9.2MWh**



Item	20ft proposal	10ft container	Nonstandard container
Container size (mm)	6058×2438×2896 (587)	3229×2438×2896 (587)	5900×1700×3000 (587) 8500×1700×2250 (588)
Capacity (MWh)	6.25	3.125	4.6
Weight (t)	≈52	≈28	≈36
PACK assembling method	1P52S (long length PACK)	1P52S (long length PACK)	1P68S
Product cost target (not including cells)/Wh	0.131	0.140	0.130
Transportation cost/Wh	0.0085 (overweight) 0.025 (remove pack)	0.0095	0.0064 0.0084
Advantage	The energy density per unit area is high, and the project's land area is small.	Addressing the serious issue of overweight when transported overseas	
Disadvantage	There is a big risk to transport in overseas port and land transportation due to the heavy weight of container.	EPC work costs is high	No apparently shortage

# *03*

## Immersion liquid cooling pack development

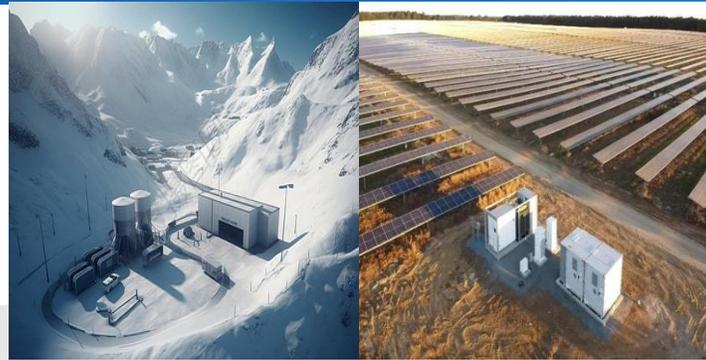
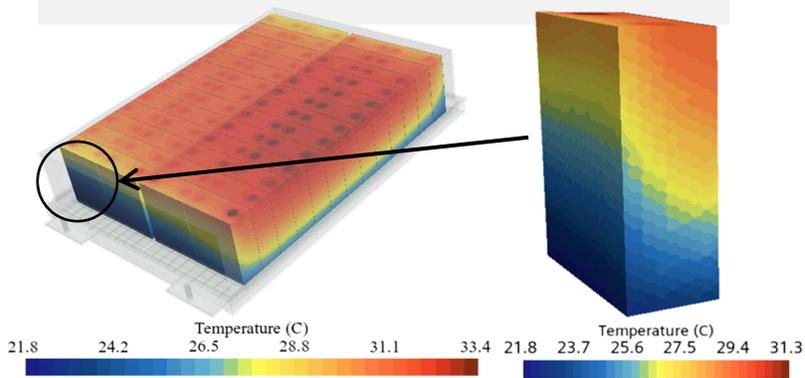
## Temperature uniformity

### ➤ Cell temperature difference:

In the process of battery operation, The different heating generation will be happened in different places. Moreover, the different heating generation will be worse following the cells quantity increasing.

### ➤ Battery pack temperature difference:

After Cells are assembled into modules or PACKs, the temperatures at different positions will be different.



## Adaptability to extreme environments

### ➤ Low temperature scene:

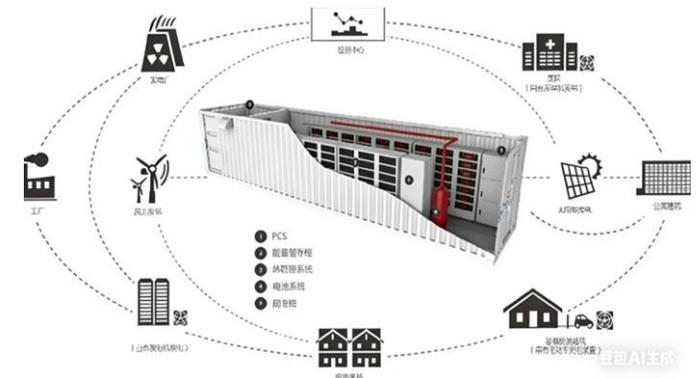
1. When lithium-ion batteries are charged below 0°C, lithium is prone to be released, and heating is required (resulting in an increase of more than 20% in energy consumption).
2. The increase in electrolyte viscosity leads to a sharp rise in internal resistance.

### High temperature scene:

1. The cooling system's heat dissipation capacity is approaching its limit.
2. High temperature accelerates the decomposition of the electrolyte.

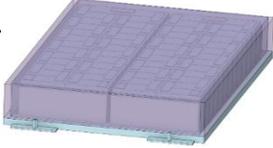
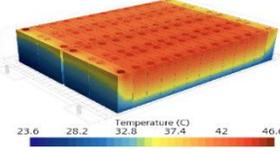
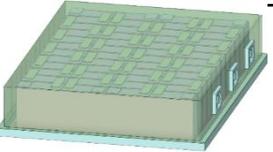
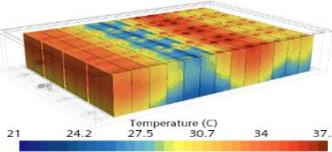
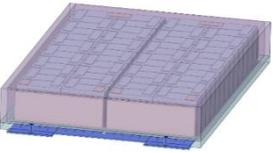
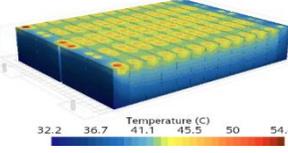
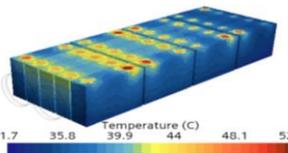
## Balance between safety and energy efficiency

- The power consumption of the liquid cooling system accounts for 5% to 15% of the total energy consumption of the energy storage system. Excessive cooling can lead to a decline in economic efficiency.
- The conservative temperature control threshold set to prevent thermal runaway (such as forcing the temperature to drop below 25°C) limits the performance of the battery.

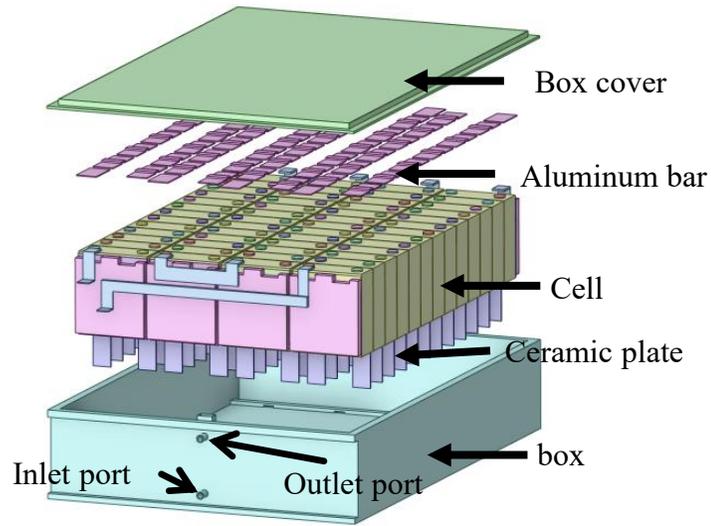


The thermal management system needs to find a dynamic balance point between 'conservative safety' and 'aggressive performance', taking into account factors such as safety, lifespan, performance, and economy.

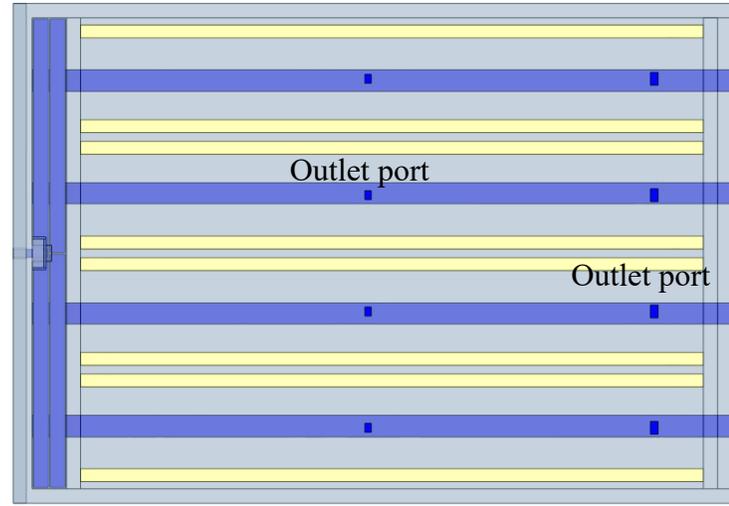
# Different thermal management method competition

Thermal management method	Working theory	Main components	1P operation simulation result					
			Max Temp of NTC/°C	Temp difference of NTC/°C	Temp difference on the top and bottom of one container/°C	Overall Temp distribution	Heat transfer/W	Transfer efficiency/%
Free convection		cell+thermal gel+pack enclosure	54	10	20		40.2	1.6%
Air forced		Cell+air duct+fan	50	8	18		463.8	18.2%
Cooling plate		cell+thermal gel+cooling plate	46	6	23		887.0	34.8%
immersion cooling		cell+immersion liquid+pack enclosure	37	7	10		1650.9	64.8%

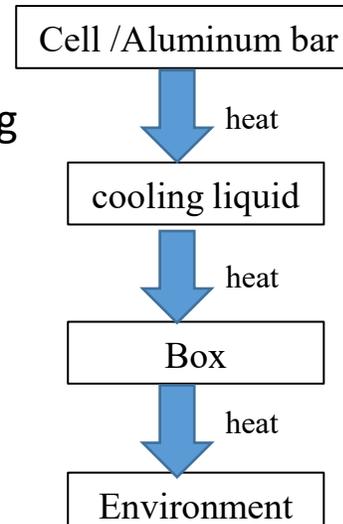
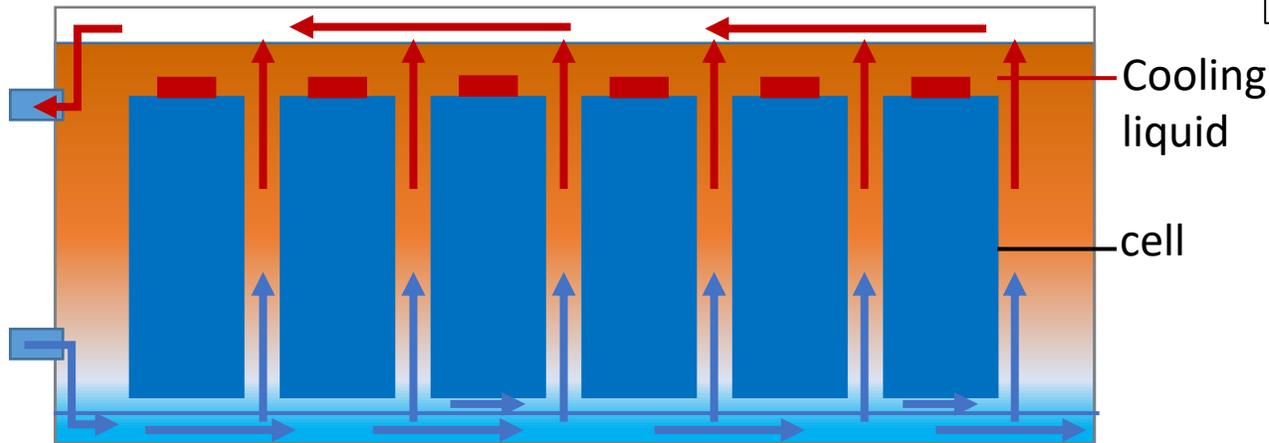
1. The environmental temperature and the initial temperature of the battery pack in the simulation calculation were both 25°C, while the wind temperature and water temperature were both 20°C. 2. The heat generation power of the battery pack was 2496W. The heat removed was calculated using the formula  $P = CM\Delta T/t$ , and the heat exchange efficiency was calculated as the heat removed divided by the heat generation power multiplied by 100%. 3. All calculations were based on 1P charging. 4. In conclusion, immersion liquid cooling is the most efficient heat dissipation method.



Battery pack structure schematic

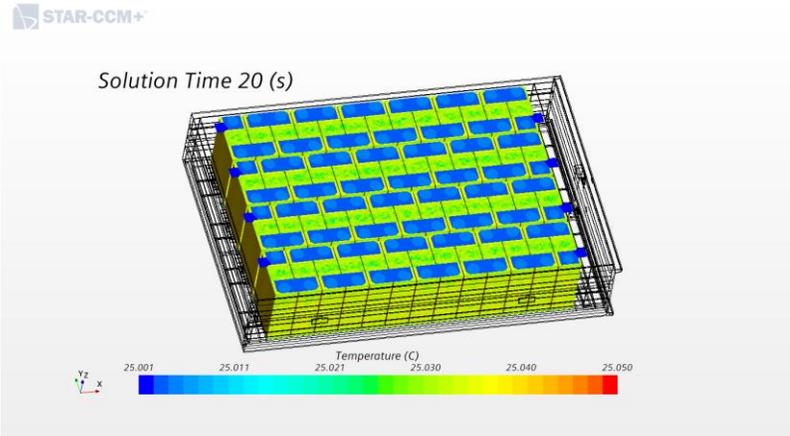


Top view

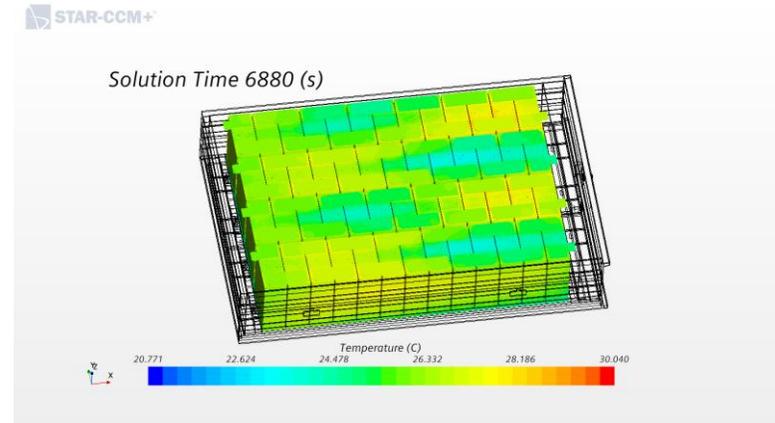


## Proposal profile:

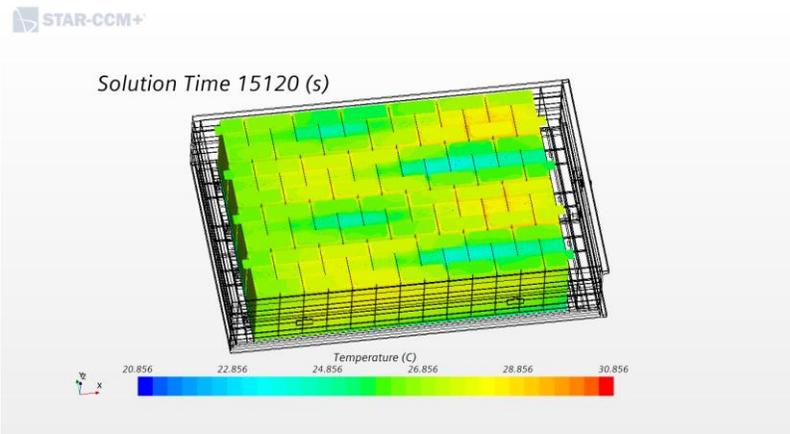
1. The immersion type pack adopts a dynamic scheme of full immersion liquid flow. The immersion liquid flows from the outlet port at the bottom of pack box, passes through the bottom flow channel, flows out through the corresponding holes, and then reaches each cells. Finally, it flows out through the inlet port on the above of pack box. The distance between cells is 2.5mm. On both sides of the pack bottom, epoxy boards with a height of 3mm are placed, and the immersion liquid fully contacts the remaining areas.
2. Rongjie's team is mainly focuses on the analysis of the flow efficiency of the internal flow field in the pack box, as well as the heat transfer efficiency of the immersion liquid.
3. Heat transfer path: The heat generated by the cells and the aluminum busbars is transferred through the immersion liquid, the box, the liquid cooling unit, and finally to the environment.



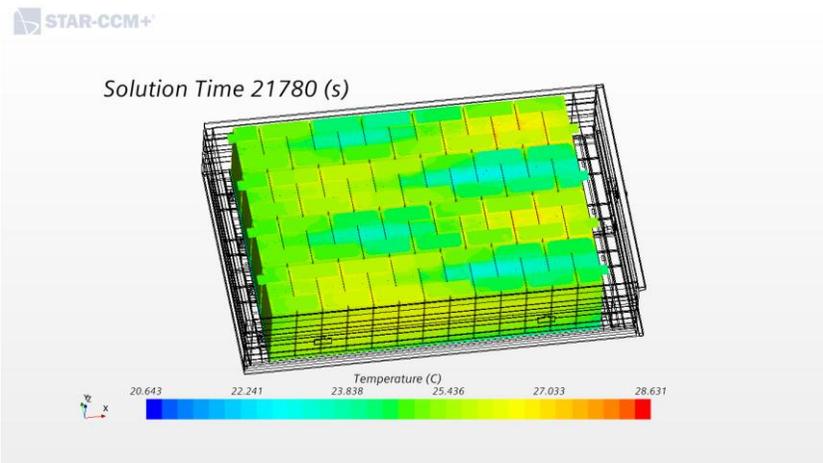
Temperature cloud map in initial stage (20s)



Temperature cloud map at the end of 1st charging complete (6880s)



Temperature cloud map at the end of 1st discharging complete (15120s)

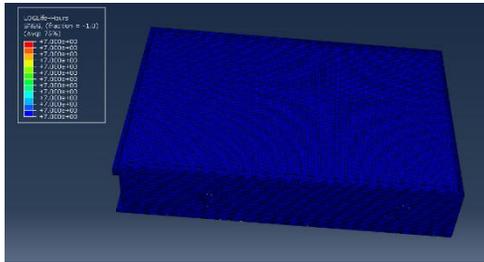


Temperature cloud map at the end of 2nd discharging complete (21780s)

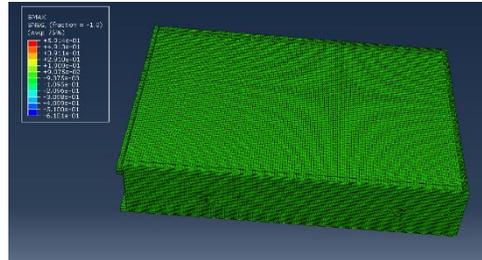
## Cells Temp cloud map

As shown in the figure, based on configured 20°C of immersion cooling liquid, after 2 whole charging cycles in 0.5CP rate, the lowest temperature of position that NTC detect is 25.4°C; the highest temperature of position that NTC detect is 27.9°C, the temperature difference is 2.5°C.

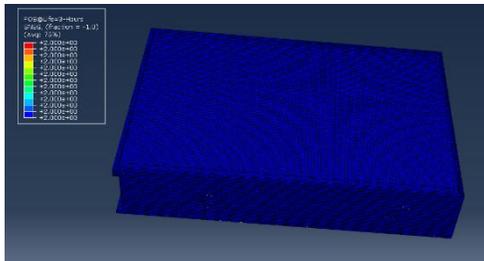
## Result Analysis - Random Vibration Analysis



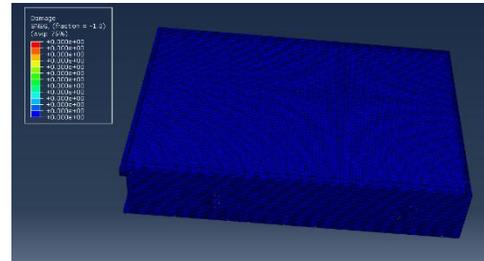
(Life cloud map)



(stress nephogram)



( Safety strength factor cloud map )

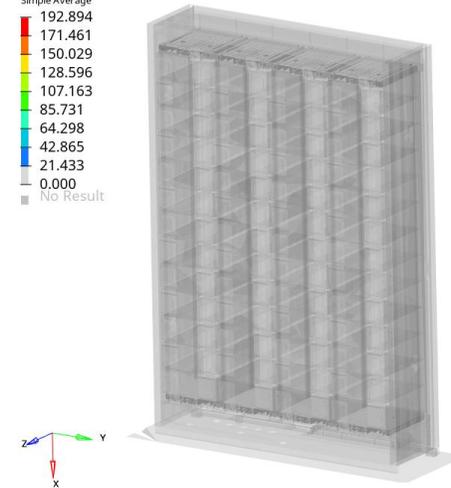
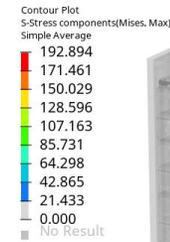


( Damage map )

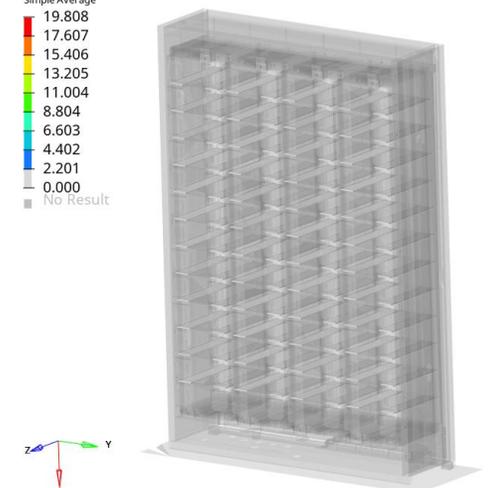
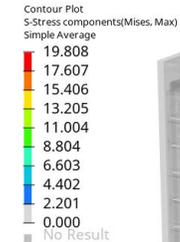
Analysis result: Satisfies the 3H vibration test. The analysis life is 10E7.00 hours and the safety strength factor is equal to 2.  
**Conclusion: OK.**

Analysis result: The equivalent maximum stress is 0.5914 MPa, with no damage.  
**Conclusion: OK**

## Result Analysis - Drop Test



End plate stress cloud map animation



Thermal adhesive stress contour animation

Analysis conclusion: During the fallen process, the end plate did not undergo significant deformation, and the maximum stress was 192.894 MPa; the silicone rubber was compressed by the battery cell, with the maximum stress being 19.808 Mpa.

**Result: There was no risk of failure.**

## immersion battery PACK



Item	Parameter
Nameplate voltage	166.4V
Operation voltage range	104V~189.8V (T≤0°C)
	130V ~189.8V (T > 0°C)
Assemble method	1P52S
Rated capacity	314Ah (0.5P, 25±2°C)
Max constant operation power	0.5P (25±2°C,30%SOC)
Self-discharge rate	≤3%/month
Storage temperature	0 ~ 45°C, RH≤65% (storage time≤3个月, keep SOC30%)
Insulation resistance	≥20MΩ
Protection class	IP68
Cooling method	immersion
Weight	386kg (Including cooling liquid)
Size	(1160±10)×(780±10)×(245±5)mm

### Electrical performance

The nameplate voltage of immersion battery pack is 166.4V, the operation voltage range is 130V~189.8V, assemble method is 1P52S, the rated capacity is 314Ah, the constant charge and discharge power is 0.5P.

### Safety and protection

It has a low self-discharge rate, relaxed storage environment requirements, and a high protection level, ensuring stable operation in harsh environments. The cooling method is immersion, effectively reducing the temperature of the battery cells, improving battery performance and lifespan.

### Dimension and Weight

The dimensions of the electrical box are precise and its weight is moderate, making it convenient for installation and transportation. The weight with liquid is 386kg and without liquid is 360kg, meeting the requirements of different usage scenarios.



AC 261kWh-0.5P-CE/UL-immersed type

## immersion type outdoor cabinet characteristic

- ✓ The system's energy efficiency is no less than 95%, and the maximum temperature difference does not exceed 3°C, ensuring efficient energy conversion and storage.
- ✓ System adopts immersion liquid cooling for heat dissipation, effectively controlling the battery temperature, enhancing battery lifespan and performance. The cycle performance can reach 8,000 times, with 1 cycle per day (@25±3°C, 1C) at 95% DOD, and 70% SOH at end of life.
- ✓ **Next generation AC 511kWh-0.25P/0.5P-CE (587Ah 1P68S Pack) system is under going**



# *04* Project cases

# Part of BESS project application cases

Item	Project name	Capacity	Remark	Photo
1	Sweden project	192MW/192MWh	The combined use of secondary frequency regulation in nuclear power plants and peak-valley arbitrage	
2	Supply of grid-side battery energy storage system in Berlin, Germany	25MW/30.98MWh	The grid-side energy storage system uses lithium iron phosphate batteries with a capacity of 280Ah. The project was signed on January 7, 2022, and the delivery date is June 20, 2022. The current operation is excellent.	
3	Poland Olawa18 MWh	9MW/18MWh	This power generation-side battery energy storage system uses 280Ah of batteries. The battery system is a 1500Vdc high-voltage system, with a total installed capacity of 14.84MWh and a total power of 7MW. The system is used for applications on the photovoltaic power generation side. The project was signed on January 30, 2020, and the project operation period is from June 30, 2020. Currently, the performance of the battery system is excellent.	
4	Boston, USA3MW/6.4MWh Energy Storage System	3MW/6.4MWh	This project was signed in January 2020 and was completed with project delivery and trial operation in August 2020. The system includes the DC side of the battery and the PCS. The energy storage system is applied to smooth the output on the photovoltaic side and provide auxiliary services.	
5	Bavaria 24.17MWh Project	24.17MWh	Supply a 280Ah battery cell containerized energy storage system to Lithium Road 123, Munich Energy Storage Park, Bavaria, Germany	
6	Lithium Storage GmbH 22.56MWh project	22.56MWh	206Ah battery cell containerized energy storage system	

# THANK YOU FOR WATCHING!

Reporter: Lin Lee

Phone number: +86 13111452430

E-mail: [lilin@RJETech.com](mailto:lilin@RJETech.com)

Linkedin: <https://www.linkedin.com/in/lin-li>



Guangzhou Rongjie Energy Technology Co., Ltd.

Location: No. 3 Wanxin 1st Street, Nansha District, Guangzhou City, Guangdong Province, China

Tele: +86 020 55570199

Official Website: [www.rjetech.com](http://www.rjetech.com)

this **webinar** is powered by  
**Rongjie Energy Technology**

18 December 2025

10:00 am – 11:00 am | CET, Berlin

5:00 pm – 6:00 pm | CST, Beijing



**Tristan Rayner**

Editor  
pv magazine

pv magazine  
**webinars**

# Next-gen BESS design: Energy density, and the logistics headache

## Q&A



**Lin Li**

Technical Solution Director  
**Rongjie Energy Technology**

# The latest news | print & online



**10% off**  
your subscription  
with  
**Webinars10**



## Batteries now cheap enough to make dispatchable solar economically feasible

by Uma Gupta



**Most-  
read  
online!**

## Africa's largest off-grid solar-plus-storage project comes online in Angola

by Patrick Jowett



# ESS News | online articles

Most-read  
online!



pv magazine  
energy storage

**Visit our energy  
storage news site**

ess-news.com



**Rystad: 15-minute trading intervals boost BESS profits in Europe by 14% on average**

by Marija Maisch



**Amazon leads US silicon solid-state battery maker's \$80 million fundraise**

by Blathnaid O'Dea



# Coming up next...

## Wednesday, 21 January 2026

9:00 am - 10:00 am CET, Berlin

11:00 am - 12:00 pm, Riyadh

## Wednesday, 28 January 2026

3:00 pm – 4:30 pm GMT, London

4:00 pm – 5:30 pm CET, Berlin

Many more to come!

**Unlocking affordable,  
reliable power for  
Saudi data centers  
with PV & Storage**

### *Webinar+*

**The Solar Module  
Market Playbook:  
managing pricing,  
risks, and other  
procurement  
challenges**

In the next weeks, we will continuously add further webinars with innovative partners and the latest topics.

Check out our pv magazine Webinar program at:

[www.pv-magazine.com/webinars](http://www.pv-magazine.com/webinars)

Registration, downloads & recordings are also be found there.



this  
**webinar** is powered by  
Rongjie Energy Technology

pv magazine  
**webinars**



**Tristan Rayner**  
Editor  
pv magazine

**Thank you for  
joining today!**