Rnbc 纳百川

Maximizing Energy Efficiency

Battery Energy Storage Thermal Management System Solutions

Rnbc New Energy Co., Ltd.

RNBC
2024

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Maximizing Energy Efficiency

Background

In 1998, we embarked on our journey in the thermal management industry, founding Rnbc in 2004. Rnbc is a leading new energy thermal management manufacturer that integrates R&D, sales, and production, providing cooling plates, housing solutions, and services to customers worldwide.

161 Patents

Over$100 Million Gross Revenue in 2023

Accumulated Supply 11,000,000 pieces

*The above content is based on 2023 data.
No end user quality complaints to date.

www.Rnbc.com

Locations

Production Bases in Taishun, Maanshan, Chuzhou and Meishan, 3 R&D centers

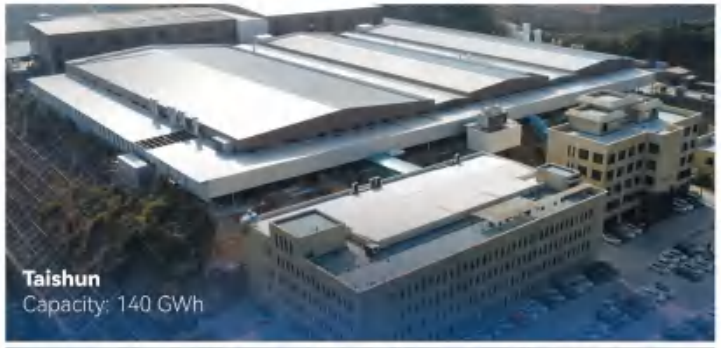
Total Size

330,000 m²

Total Capacity

500GWh


Shanghai Headquarters

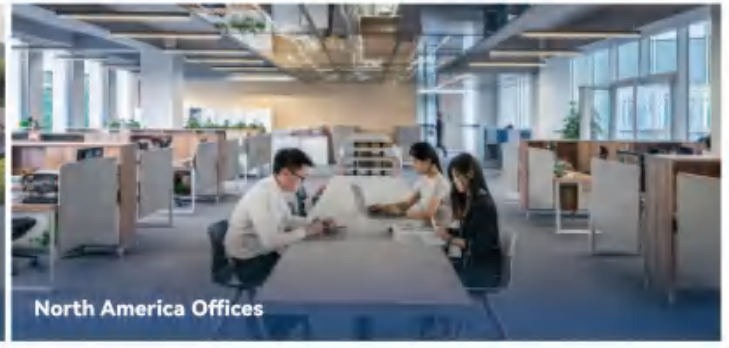

Taishun
Capacity: 140 GWh


Maanshan
Capacity: 70 GWh


Europe Offices


Chuzhou
Capacity: 200 GWh


Meishan(Under construction)
Capacity: 100 GWh


North America Offices

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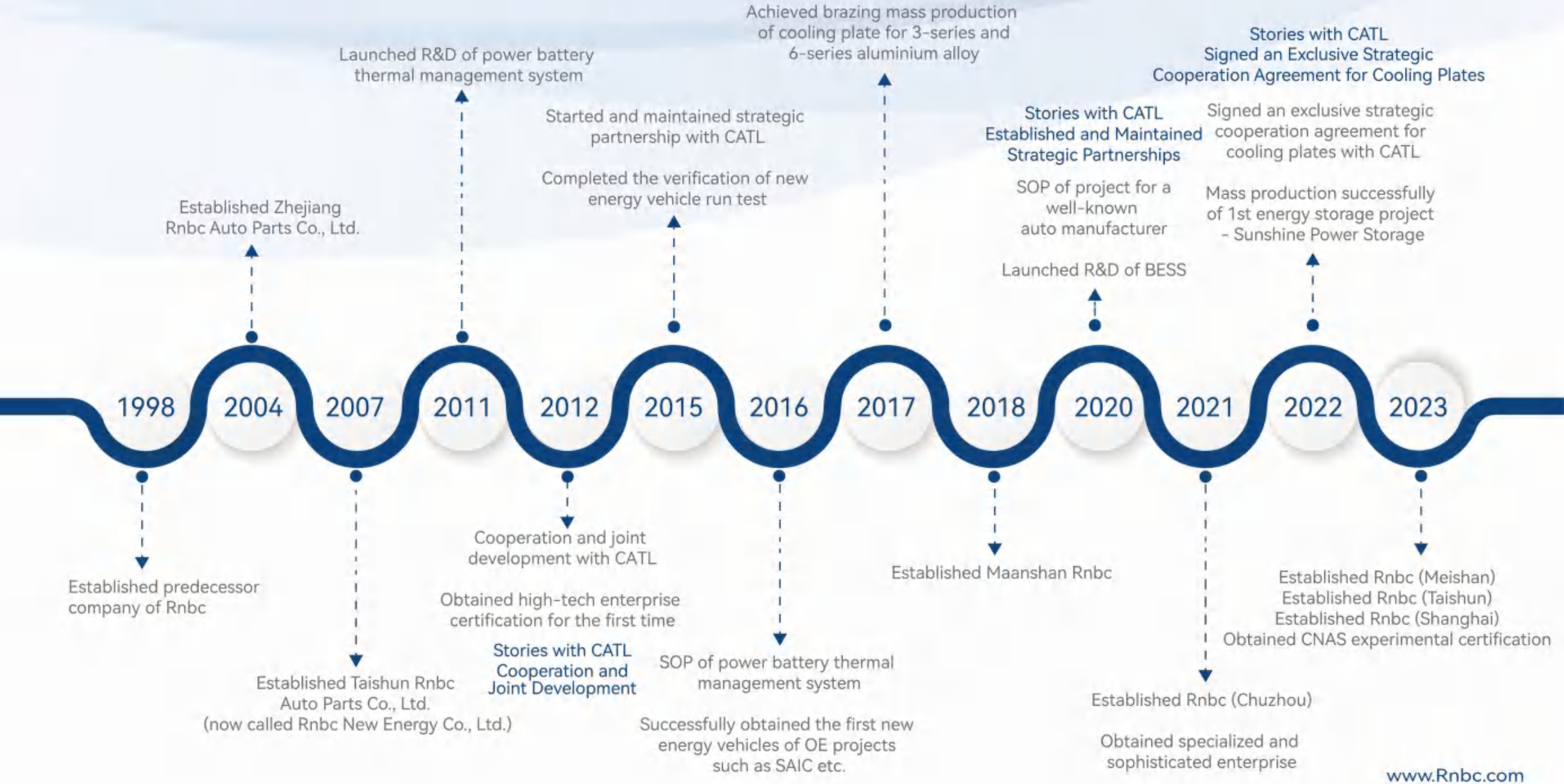

Innovation

Industry Standard

- Rnbc Simulation Standards
- 2*10^(-8) Pa.m^3/s leakage rate detection standards

Supply

- Embracing a collaborative approach with material and equipment suppliers to develop products that elevate performance in every aspect

Speed

- Complete samples in as fast as 7 days
- Complete PPAP in as fast as 100 days

Quality

- Defect rate of a single product reduced to PPM
- 300+ validated projects, fully validated by multiple levels, dimensional and scenarios.

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Advanced Technology

Temperature Control

Heat Conduction Distribution

Maximizing the uniform heating of the battery module and overcoming the problem of uneven heating caused by conventional methods.

Thermal Simulation

Reducing the deviation between simulation and actual heat distribution temperature to ≤3 ℃, and maintaining zero customer complaints based on accumulated measured data of 300+projects.

Fluid Simulation

The flow resistance deviation is generally controlled at 15% in the industry, while Rnbc's technology stabilizes it within 5%.

Structure

Deformation Detection

100% detect and identify deformation and bulging problems based on a large amount of measured data.

Lightweight

Realize lightweight pack through structural restructuring.

High Structural Density Ratio

Redefining the structure and raw materials to enhance the overall structural strength of PACK.

Performance Safety

10000 times sealing

Rnbc's standard helium molecule density(0.178 kg/m^3) vs. industry standard air molecule density (1.29 kg/m^3) makes all leaks detectable.We use over ten thousand quality standards to ensure your safety.

Accumulated supply of 11 million pieces

As of 2023, Rnbc has supplied over 11 million pieces in total. Our quality standards are based on the summary of 11 million experiences and the firm choice of 11 million times from customers.

Safety Insulation Coating

We redefine film thickness, adhesive force, and drying time to achieve more uniform adhesion and stronger insulation to optimize safety.

Extended Warranty

15 years

Designed life up to 15 years.

Up to 8 years or 150,000 kilometers

Up to 8 years or 150,000 kilometers warranty, durable and cost-effective.

Extreme Manufacturing

Automation

Fully Automated Production Line

The entire process flow is automated, with the ultimate goal of product consistency and quality.

Core Equipment >5 years of Independent R&D

Over 5 years of experience in independent R&D of core equipment, as well as independent development of core components, to achieve technological closed-loop between various devices.

Leading Production Efficiency

Self developed seventh generation fully automatic nocolok brazing system, with a 280% increase in production efficiency.

Fully Automated Spraying Flux Equipment

Integration of automatic proportioning, mixing, spraying and visual inspection functions.

Intelligent

Traceability Accuracy of 1 s

We promise to trace the product to an accuracy of 1 seconds on the day of occurrence, ensuring that every production step is traceable.

Monitor and control our operations at all levels

Rnbc has established a group private cloud, a fully connected SAP, a comprehensive MES manufacturing system, and a powerful FMEA comprehensive database. We use a highly integrated data management system to monitor and control our operations at all levels.

Extremizing

PPM

Defect rate of a single product reduced to PPM

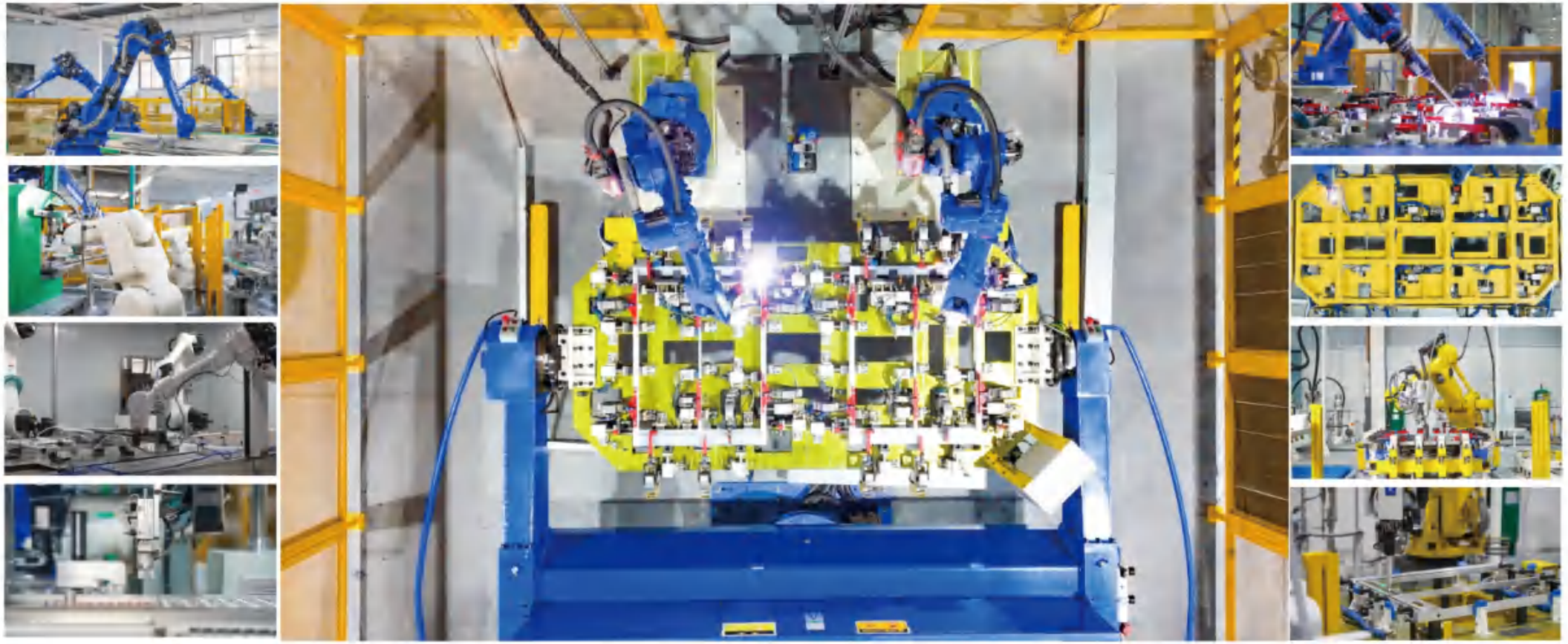
500+ Quality Control Standards

We comprehensively cover all aspects of product quality, including dimensions, appearance, function, performance, process parameters, inspection fixtures, and equipment, with over 500 quality control standards, ensuring that we can detect every defects.

Brazing Parameters

We conducted cross validation at multiple levels, dimensions, and scenarios. 300+validated projects and hundreds of thousands of brazing parameters accumulated, allowing any form of product to be traceable.

Extreme Manufacturing



Laboratory Capability

300+ Validated projects

More than 160 Models successfully running

30+ Items testing phase

50+ Testing equipment

CNAS certification, CATL & Mercedes & Volkswagen car brand approved

Quality Advantage

Quality Policy

IATF 16949:2016 ISO 14001:2015

GBT 45001:2002 ISO 45001:2018

Quality Control Process

New Product QC ▶ Supplier QC ▶ In-process QC ▶ Finished Goods QC ▶ Aftersales QC

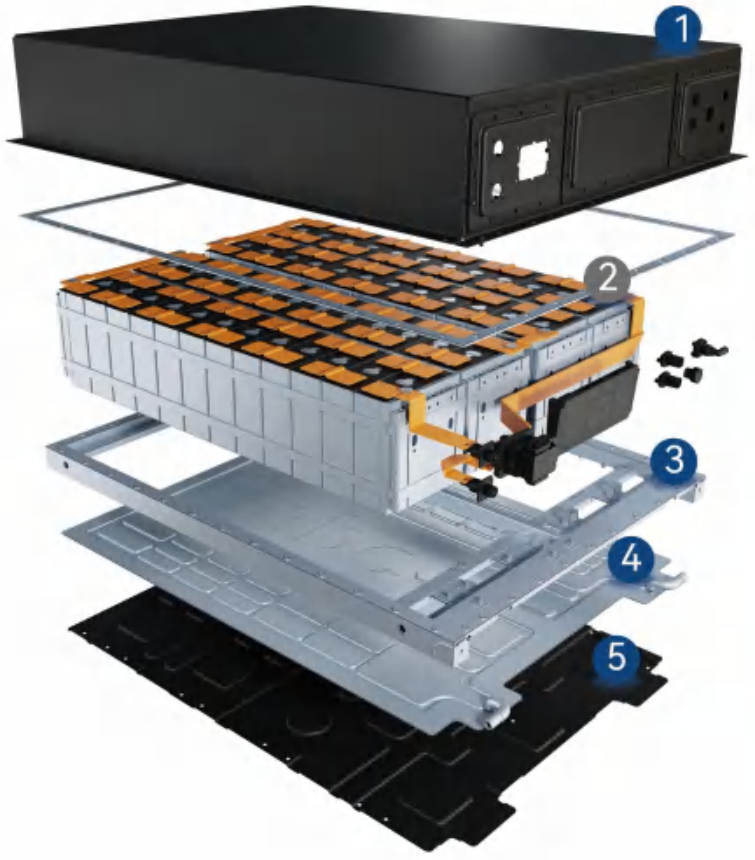
Quality Control System

Similar Components Management POKA YOKA Standardized and Platformized Management

Quality Improvement System

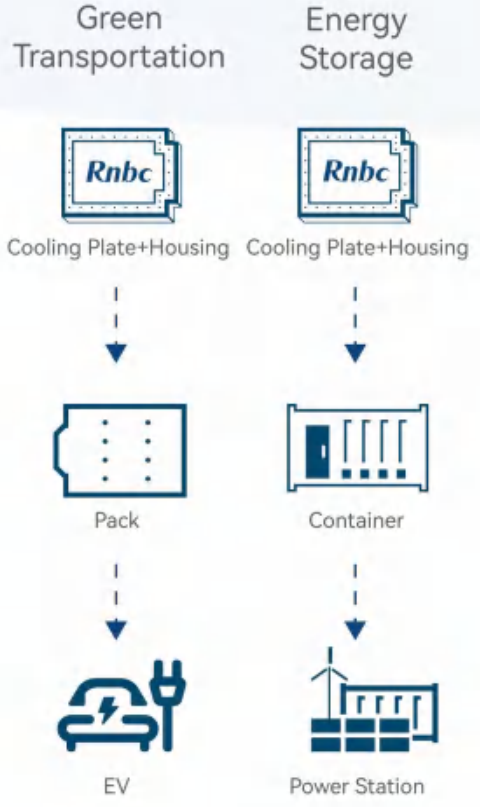
Visual Data Management LLC Database QCDS Evaluation System

Structure Analysis



1. Upper Plate
2. Cell Module
3. Housing
4. Cooling Plate
5. Protection Plate

Business Model



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Liquid-cooled VS Refrigerant Direct-cooled

	Liquid-cooled	Refrigerant Direct-cooled
Heat Exchange Efficiency	Indirect battery pack cooling by coolant, low capacity utilization.	Direct battery pack cooling by refrigerant.Reduce primary heat exchange and improve efficiency.
System Cost	Including pumps, piping and other components.Higher cost.	Reduce liquid cooling circuit and some components.Lower cost and lighter weight.
Heating Method	PTC or other method.	Refrigerant direct-cooled plate itself or PTC.
Design Cycle	Less design complexity, shorter design cycle.	More design complexity, longer design cycle.
Average Temperature Verification	High accuracy of thermal simulation,short cycle.	Low accuracy of multiphase flow simulation, long cycle.
Structure Strength	Lower pressure resistance requirement.	Higher pressure resistance requirement.

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Cooling Plate

Light weight High safety Long lifespan

Harmonica Tube

Advantages:
Provides lightweight and cost-effective solutions with fast cooling rate. Extended warranty quality technology verified in the market period.

Basic parameters

Max dimension: 2000*1300mm
Flow: 1-25L/min
Flow resistance≤30Kpa
Cell temperature difference≤5℃

Stamping

Advantages:
Applicable to various vehicle models and energy storage products. Strong platform application ability, high utilization rate of battery pack, long service life, acceleration of 30% -80% charging time, and application range greater than 800 km.

Basic parameters

Max dimension: 2500*1500mm
Flow: 1-25L/min
Flow resistance≤30Kpa
Cell temperature difference≤5℃

Extrusion

Advantages:
Applicable to hybrid and full electric range solutions. Offers high structural strength, long warranty and fast temperature rise and fall rate.

Basic parameters

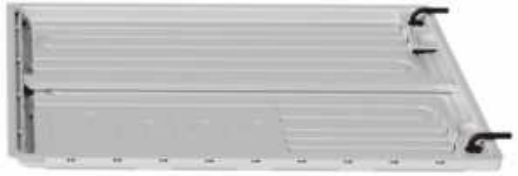
Max dimension: 2250*500mm
Flow: 1-25L/min
Flow resistance≤30Kpa
Cell temperature difference≤5℃

Housing

Light weight High safety Long lifespan

Roll-in

Advantages:
Excellent structural strength and impact resistance, fully covering low and middle-end products, provides cost-effective solutions and platformized solutions.



Stamping

Advantages:
Lightweight and with excellent anti-corrosion performance, provides platformized solutions.

Extrusion

Advantages:
Lightweight and with excellent anti-corrosion performance, provides platformized and cost-effective solutions.

Basic parameters

1P52S	Housing dimension:	Length1100-1300mm, Width780-820mm
1P104S	Housing dimension:	Length2100-2300mm, Width780-820mm
1P48S	Housing dimension:	Length1050-1150mm, Width780-820mm

Application

CATL energy storage system major global supplier

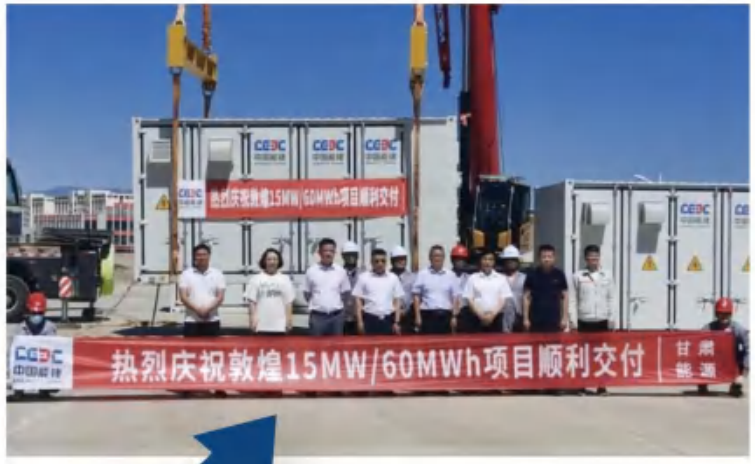
Sungrow energy storage system major global supplier

HTHIUM energy storage system major supplier

Rnbc's Advantage: 0.5C Difference of 2 ℃

1 C Difference of 3 ℃

Application



Energy storage power station in Gansu, China.

Scale: 15MW / 60MWh

Energy storage power station in Xizang, China.

Scale: 40MW / 193MWh

Rnbc's Advantage: 0.5C Difference of 2 ℃

1 C Difference of 3 ℃

Brand Partnership

Disclaimer:

Rnbc New Energy Co., Ltd. (Rnbc) has made this brochure as comprehensive and accurate as possible on the basis of existing information, but reserves the right to modify the data, parameters and other information without further notice.

Rnbc reserves the right of final interpretation of this brochure.

Some pictures from freepik

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