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中北润良新能源（济宁）股份有限公司
ZHONGBEI RUNLIANG NEW ENERGY (JINING) CO., LTD.

INTRODUCTION MANUAL
企业介绍

让每个人都能够方便、容易、可持续地使用清洁能源
Let everyone use clean energy conveniently, easily and sustainably

小鲁锂电
XIAO LU LI-BATTERY

中北润良新能源（济宁）股份有限公司
Zhongbei Runliang New Energy (Jining) Co., Ltd.

BRIEF INTRODUCTION

中北润良新能源（济宁）股份有限公司 于 2019 年 7 月在济宁经开区成立，注册资本 2.52 亿元，现有员工 400+，是一家专业从事锂离子电池研发、生产、销售和应用的新能源科技企业。

Zhongbei Runliang New Energy (Jining) Co., Ltd. was established in July 2019 in Jining Economic Development Zone, with a registered capital of 252 million yuan and more than 400 employees. It is a new energy technology enterprise specializing in the research and development, production, sales, and application of lithium-ion batteries.

公司投资建设的中北润良锂离子电池生产基地，位于济宁经济技术开发区中科北大新能源产业基地内，项目规划产能 10GWh，项目占地 600 亩，预计年实现锂离子电池及产业链销售收入 60 亿元，利税 12 亿元；一期建设 4GWh，占地 200 亩，预计年实现动力电池及产业链销售收入 24 亿元，利税 4.8 亿元。

The Zhongbei Runliang lithium-ion battery production base invested and constructed by the company is located in the Zhongke Beida New Energy Industry Base of Jining Economic and Technological Development Zone. The project has a planned production capacity of 10GWh and covers an area of 600 acres. It is expected to achieve an annual sales revenue of 6 billion yuan for lithium-ion batteries and the industry chain, with a profit and tax of 1.2 billion yuan; The first phase of construction covers an area of 200 acres, with a capacity of 4GWh. It is expected to achieve an annual sales revenue of 2.4 billion yuan for power batteries and industrial chains, and a profit and tax of 480 million yuan.

对于加快地方经济转型升级、改善产业结构、培育新的经济增长点、增加就业等具有重要意义。项目于 2019 年列入济宁市新旧动能转换重大项目，2020 年列入山东省新旧动能转换重大项目库第一批优选项目。

It is of great significance for accelerating local economic transformation and upgrading, improving industrial structure, cultivating new economic growth points, and increasing employment. The project was listed as a major project for the conversion of new and old kinetic energy in Jining City in 2019, and was included in the first batch of selected projects in the Shandong Province's major project library for the conversion of new and old kinetic energy in 2020.

公司拥有国内一流的 18650 圆柱型锂电自动化生产线，公司设计开发的电芯和电池模组产品，涵盖动力、电动工具、数码家电、储能等多个领域，具有高安全可靠性、高比能量、长循环寿命、高性价比等多重优势，投产以来产品供不应求。

The company has a first-class 18650 cylindrical lithium battery automation production line in China. The battery cells and battery module products designed and developed by the company cover multiple fields such as power, electric tools, digital appliances, energy storage, etc., with multiple advantages such as high safety and reliability, high specific energy, long cycle life, and high cost-effectiveness. Since its production, the product supply has exceeded demand.

为满足客户多元化需求，公司加大产品型号投入，公司追加投资 10 亿元，新增 1GWH18650 锂电全自动化生产线一条和 2GWH 的 32140 钠电全自动化生产线一条。生产大圆柱全极 32140-15Ah 的磷酸铁锂储能电池和 32140-10Ah 的钠离子储能电池，项目全部达产后，预计实现营业收入 30 亿元以上。

In order to meet the diversified needs of customers, the company has increased investment in product models, with an additional investment of 1 billion yuan. The company has added a 1GGWH18650 lithium battery fully automated production line and a 2GWH 32140 sodium battery fully automated production line to produce large cylindrical full pole 32140-15Ah lithium iron phosphate energy storage batteries and 32140-10Ah sodium ion energy storage batteries. After all projects are completed, it is expected to achieve operating revenue of over 3 billion yuan.

公司锂电池产品定位高端，采用自主知识产权的成熟生产技术，以生产的电池电芯和电池包产品为依托，具备高安全性、高比能量、低成本、长循环等多重保证，产品性能领先国内水平 2-3 年，市场竞争优势明显，市场前景十分广阔。

The company's lithium battery products are positioned as high-end and adopt mature production technology with independent intellectual property rights. Based on the produced battery cells and battery pack products, they have multiple guarantees such as high safety, high specific energy, low cost, and long cycle. The product performance is leading the domestic level for 2-3 years, with obvious market competitive advantages and a very broad market prospect.

成为中国锂电行业的代表，打造新能源行业的标杆品牌，用产品品质和优质服务成就我们的卓越人生。

Becoming a representative of China's lithium battery industry, building a benchmark brand in the new energy industry, and achieving our outstanding life with product quality and high-quality services.

—— 中北润良新能源（济宁）股份有限公司总经理　鲁忠建

—— Zhongjian Lu , General Manager of Zhongbei Runliang New Energy (Jining) Co., Ltd

发展战略
ENTERPRISE STRATEGY

以创新变革为己任　以专业服务为宗旨　以诚信共赢为本心

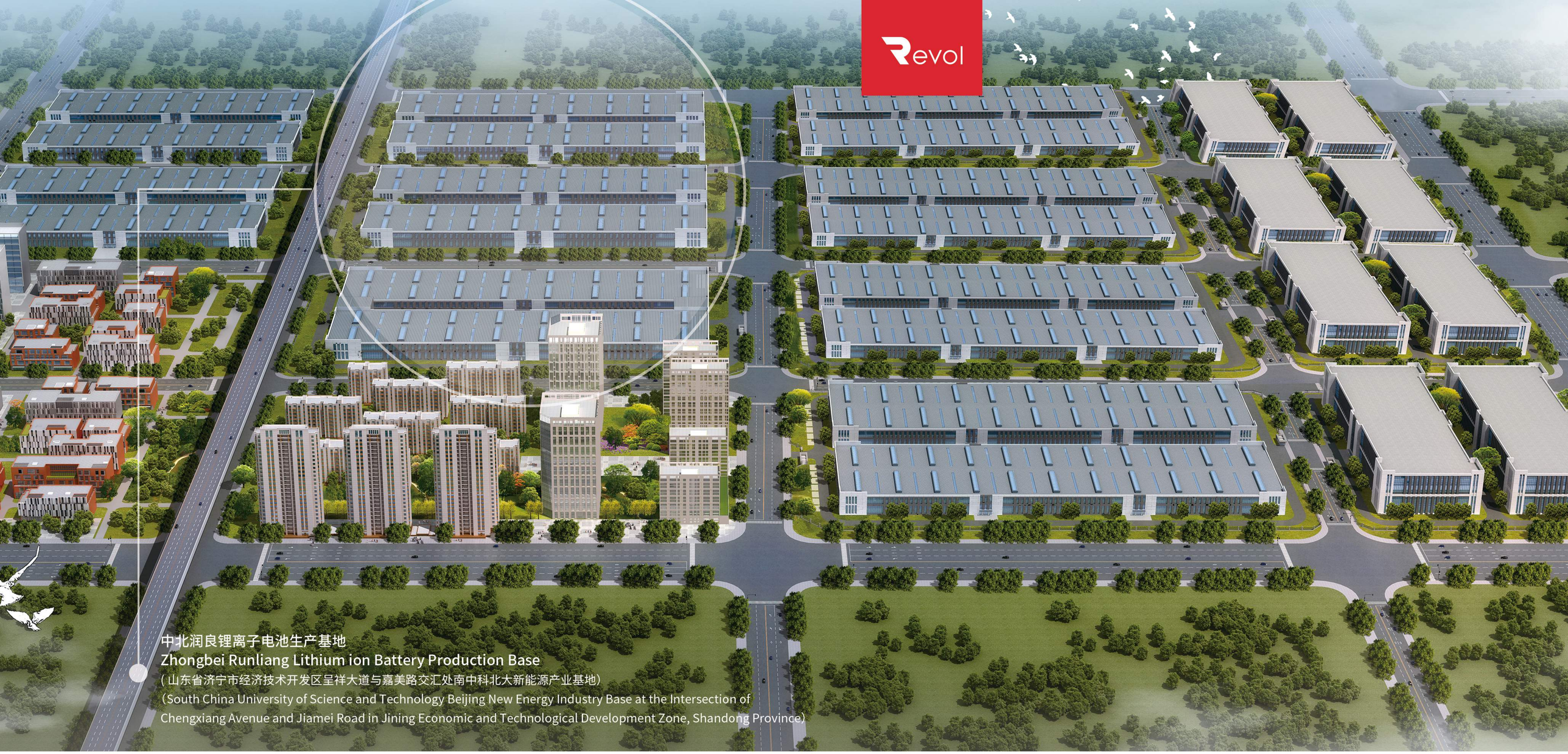
Taking innovation and transformation as our responsibility, professional service as our purpose, integrity and win-win cooperation as our core

大幅降低锂电池的成本和使用门槛

Significantly reduce the cost and usage threshold of lithium batteries

• 应用先进工艺与专利技术　• 降低成本推动锂电替换铅酸　• 深耕渠道拓展下沉市场

Applying advanced processes and patented technologies to reduce costs and promote the replacement of lead-acid with lithium batteries. Deeply cultivate channels and expand sinking markets



中北润良锂离子电池生产基地
Zhongbei Runliang Lithium ion Battery Production Base
（山东省济宁市经济技术开发区呈祥大道与嘉美路交汇处南中科北大新能源产业基地）
（South China University of Science and Technology Beijing New Energy Industry Base at the Intersection of Chengxiang Avenue and Jiamei Road in Jining Economic and Technological Development Zone, Shandong Province）

生产基地
PRODUCTION BASE

中北润良锂离子电池生产基地
Zhongbei Runliang Lithium ion Battery Production Base

中北润良锂离子电池生产基地首期项目占地 600 亩，按照高标准、现代化、智能化的要求，建有锂离子电池工厂、原料仓库、成品仓库、综合办公楼、物流中心、锂电池研发中心等多个配套单元。项目规划产能达 10GWh。

The first phase of the Zhongbei Runliang Lithium ion Battery Production Base covers an area of 600 acres. In accordance with the requirements of high standards, modernization, and intelligence, it has built multiple supporting units such as a lithium-ion battery factory, raw material warehouse, finished product warehouse, comprehensive office building, logistics center, and lithium battery research and development center. The planned production capacity of the project is 10GWh.

技术研发
TECHNICAL EXPLORATION

公司设立产品研发中心，每年投入大量资金，用于产品的研发和系统升级。公司积极培养并吸收国内外高端技术研发人才组成强大的研发队伍，结合行业最新趋势，为满足市场需求不断创新，开发出多项具有独立知识产权、达到国际先进水平的核心技术，在多方面突破了行业技术瓶颈，为参与国际竞争打造绝对优势。

The company establishes a product research and development center and invests a large amount of funds annually for product research and system upgrades. The company actively cultivates and absorbs high-end technology R&D talents from both domestic and foreign sources to form a strong R&D team. In combination with the latest trends in the industry, it continuously innovates to meet market demand, develops multiple core technologies with independent intellectual property rights and reaches international advanced levels, breaks through industry technology bottlenecks in multiple aspects, and creates absolute advantages for participating in international competition.

于华 首席科学家 /Chief Scientist Hua Yu

英国皇家化学会会士、国家级人才项目（工信部）、四川省千人计划 创新领军人才、科技部火炬计划
淄博市“三个一百”高层次创新创业领军人才。
Fellow of the Royal Society of Chemistry, National Talent Program (MIIT), Sichuan Province Thousand Talents Plan Innovation Leading Talents, Ministry of Science and Technology Torch Plan Zibo City "Three Centenaries" High level Innovation and Entrepreneurship Leading Talents.

夏定国 教授 高级研究员 /Professor Dingguo Xia , Senior Researcher

北京大学教授、博士生导师，先进电池材料理论与技术北京市重点实验室主任。研究方向为二次锂离子电池电极材料研究，水中微量有机物的电化学处理。
Professor and Doctoral Supervisor at Peking University, and Director of the Beijing Key Laboratory of Advanced Battery Materials Theory and Technology. Research direction: Research on electrode materials for secondary lithium-ion batteries, electrochemical treatment of trace organic compounds in water.

孙洁 教授 高级研究员 /Professor Jie Sun, Senior Researcher

天津大学教授，博士生导师。主要研究方向是锂离子电池正负极材料的合成、性能调控和能源存储与转换应用，在钠离子电池、锂硫电池和二维材料的研究方面建树颇丰。
Professor and doctoral supervisor at Tianjin University. The main research direction is the synthesis, performance control, and energy storage and conversion applications of positive and negative electrode materials for lithium-ion batteries, with significant achievements in the research of sodium ion batteries, lithium sulfur batteries, and two-dimensional materials.

周震 教授 高级研究员 /Professor Zhen Zhou, Senior Researcher

南开大学教授、博士生导师，南开大学新能源材料化学研究所所长，教育部“新世纪优秀人才支持计划”入选者。主要研究方向是通过实验与高性能计算相结合设计纳米结构新能源材料及能源存储体系。
Professor and Doctoral Supervisor at Nankai University, Director of the Institute of New Energy Materials Chemistry at Nankai University, and Selected Member of the Ministry of Education's "New Century Excellent Talent Support Program". The main research direction is to design nanostructured new energy materials and energy storage systems through a combination of experiments and high-performance computing.

王兆翔 博士 特别研究员 /Dr. Zhaoxiang Wang, Special Researcher

中国科学院物理研究所研究员、博士生导师。研究领域包含二次电池与燃料电池材料的结构设计与性能预测、材料合成与表征、电子离子在电池材料中的输运，电极材料与电解质的相互作用、材料内部及表面发生的物理化学过程的表征。
Researcher and doctoral supervisor of Institute of Physics, Chinese Academy of Sciences. Research areas include structural design and performance prediction of secondary and fuel cell materials, material synthesis and characterization, electron ion transport in battery materials, interaction between electrode materials and electrolytes, and characterization of physical and chemical processes occurring inside and on the surface of materials.

杨文胜 教授 高级研究员 /Professor Wensheng Yang, Senior Researcher

北京化工大学教授，博士生导师。在锂离子电池正极材料，特别是尖晶石型锰酸锂正极材料和高镍三元正极材料方面具有独特的技术优势和多项发明专利。
Professor and Doctoral Student at Peking University of Chemical Technology. It has unique technological advantages and multiple invention patents in the field of lithium-ion battery cathode materials, especially spinel type lithium manganese oxide cathode materials and high nickel ternary cathode materials.

专利技术

CORE TEC

序号	专利名称	授权公告日	专利号	申请人	序号	专利名称	授权公告日	专利号	申请人
1	锂电池包	2021年2月26日	202030552652	中北润良新能源（济宁）股份有限公司	20	一种锂电池	2023年5月9日	2022229219500	中北润良新能源（济宁）股份有限公司
2	多功能充电器	2021年2月26日	2020305520189	中北润良新能源（济宁）股份有限公司	21	一种锂电池涂布浆料处理系统	2023年5月12日	2022231914273	中北润良新能源（济宁）股份有限公司
3	一种安全可靠的动力电池箱体的固定结构	2021年3月9日	2020220368799	中北润良新能源（济宁）股份有限公司	22	一种动力电池检测方法	2023年4月3日	2023103425163	中北润良新能源（济宁）股份有限公司
4	一种圆柱型锂离子电池模块	2021年3月9日	2020220335028	中北润良新能源（济宁）股份有限公司	23	圆柱形锂离子电池注液渗透测试机构	2023年1月3日	2021219555017	中北润良新能源（济宁）股份有限公司
5	一种可调式极片分切刀架	2021年5月25日	202022204950X	中北润良新能源（济宁）股份有限公司	24	一种二次锂电池正极盖帽焊接机构校准装置	2023年3月28日	202222957216X	中北润良新能源（济宁）股份有限公司
6	一种二次锂电池涂布洗箔预处理装置	2021年6月11日	2020222049497	中北润良新能源（济宁）股份有限公司					
7	一种锂电池吸液率的测试装置	2021年5月11日	2020223660204	中北润良新能源（济宁）股份有限公司					
8	一种二次锂电池清洗机油烟回收处理装置	2021年7月13日	202022430778X	中北润良新能源（济宁）股份有限公司					
9	一种圆柱形锂离子电池组	2021年5月18日	2020225400517	中北润良新能源（济宁）股份有限公司					
10	一种锂离子电池封口机构	2021年5月18日	2020225399859	中北润良新能源（济宁）股份有限公司					
11	锂离子动力电池系统	2021年4月27日	2020307300662	中北润良新能源（济宁）股份有限公司					
12	一种锂电池盖帽超声波焊接装置	2021年11月19日	2021210269541	中北润良新能源（济宁）股份有限公司					
13	一种新型高能量低成本电池	2022年8月12日	2022201852028	中北润良新能源（济宁）股份有限公司					
14	一种高能量密度低温锂电池制造用压盖装置	2022年6月3日	202220185199X	中北润良新能源（济宁）股份有限公司					
15	一种高性能锰酸锂电池制造用废物回收利用装置	2022年11月29日	2022219403432	中北润良新能源（济宁）股份有限公司					
16	一种废旧新能源锂电池回收分类装置	2022年12月9日	2022225947655	中北润良新能源（济宁）股份有限公司					
17	一种便于安装的锂电池防护壳	2023年1月3日	2022225948183	中北润良新能源（济宁）股份有限公司					
18	一种二次锂电池负极耳焊接焊针垂直度检测装置	2023年3月17日	2022229572121	中北润良新能源（济宁）股份有限公司					
19	船舶动力电池检测设备及系统	2023年4月7日	2022115922389	中北润良新能源（济宁）股份有限公司					

生产设备
PRODUCTION EQUIPMENT

工欲善其事，必先利其器

Good tools are prerequisite to the successful execution of a job

中北润良智慧工厂的建设基于大数据智能制造系统，并采用全球一流的自动化生产设备，配备全新高速生产线，通过智能化制造体系对产品制造的各项数据进行监测、采样、分析、处理，利用大数据处理平台实现实时统计、分析及管理。

The construction of Zhongbei Runliang Smart Factory is based on the big data intelligent manufacturing system, and adopts world-class automated production equipment, equipped with new high-speed production lines, and monitors, samples, analyzes and processes various data of product manufacturing through the intelligent manufacturing system. Utilize big data processing platform to achieve real-time statistics, analysis and management.

可靠、安全、一致

Reliable, secure and consistent

中北润良全工序高速自动化生产线，配备全球一流的高速自动连续匀浆设备、高速自动连续涂布设备、高速自动连续极片加工设备、高速自动连续检测设备、高速自动连续转运设备，为电池产品的可靠性、安全性、一致性保驾护航。

Zhongbei Runliang's full-process high-speed automated production line is equipped with the world's first-class high-speed automatic continuous homogenization equipment, high-speed automatic continuous coating equipment, high-speed automatic continuous pole piece processing equipment, high-speed automatic continuous detection equipment, and high-speed automatic continuous transfer equipment for batteries. Product reliability, safety and consistency are guaranteed.

高速挤压涂布 /High speed extrusion coating

中北润良采用全球领先的高速挤压涂布设备，其精度高、效率快，可有效保障电池的一致性。

Zhongbei Runliang uses the world's leading high-speed extrusion coating equipment, which has high precision and high efficiency, and can effectively ensure the consistency of the battery.

电池密封 /Battery seal

电池密封性直接影响到电池的性能，密封性差的电池漏液会导致电池寿命终止。在电池的密封方面，中北润良采用直线式自动封口机，对完成封口的电池进行真空存储试漏，将有问题的电池及时挑出，从而保证电池的密封性。

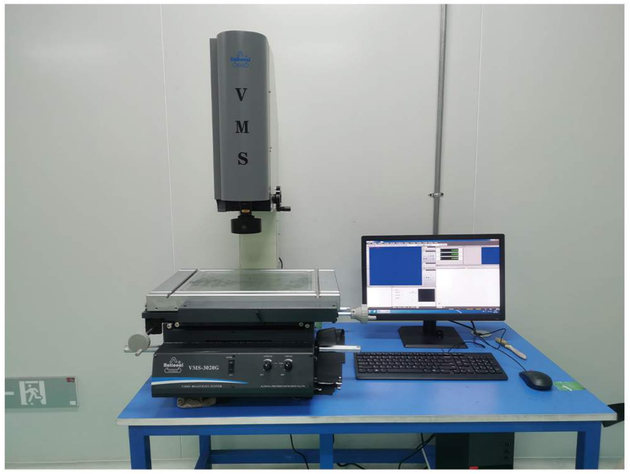
The sealing of the battery directly affects the performance of the battery. Battery leakage with poor sealing will cause the battery to
End of life. In terms of battery sealing, Zhongbei Runliang uses a linear automatic sealing machine to conduct vacuum storage leak tests on the sealed batteries, and pick out problematic batteries in a timely manner to ensure the sealing of the batteries.

电池注液 /Battery filling

针对材料吸液性能相对较差的情况，采用 专用注液机进行真空吸附注液，既解决了吸液问题，又确保了注液量的准确性。

In view of the relatively poor liquid absorption performance of the material, a special liquid injection machine is used for vacuum adsorption liquid injection, which not only solves the liquid absorption problem but also ensures the accuracy of the liquid injection amount.

BATTERY RELIABILITY TEST
电池可靠性测试



智能 3D 显微镜 /Smart 3D microscope

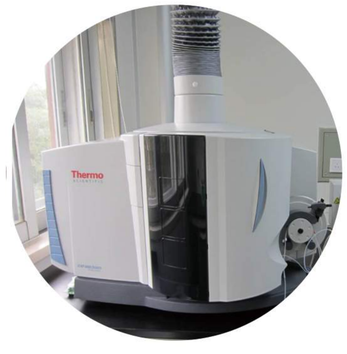
极片的加工效果将直接影响电池的安全性。在极片分切方面，中北润良采用智能 3D 显微镜测试极片毛刺，全方位检测极片分切不良，从而保证电池的安全性。
The processing effect of the pole pieces will directly affect the safety of the battery. In terms of pole piece slitting, Zhongbei Runliang uses an intelligent 3D microscope to test pole piece burrs and comprehensively detect poor pole piece slitting to ensure the safety of the battery.

扫描电镜 /Scanning electron microscope

材料的一致性将直接决定电池的一致性。扫描电镜可以对电池原材料进行表面形态的测试，从源头上对原材料进行每批测试，严把电池质量关。
The consistency of the material will directly determine the consistency of the battery. Scanning electron microscopy can test the surface morphology of battery raw materials, and test each batch of raw materials from the source to strictly control battery quality.

ICP

痕量元素分析检测是评估一个公司问题解决能力的关键。ICP 普遍应用于各种材料中元素成分定性和定量分析，能快速地对问题本质提供科学的判断依据。Trace element analysis and testing are key to assessing a company's problem-solving capabilities. ICP is widely used in qualitative and quantitative analysis of elemental components in various materials, and can quickly provide a scientific basis for judgment on the nature of the problem.



热冲击测试
Thermal shock test

高低温测试
High and low temperature testing

恒湿恒温测试
Constant humidity and temperature test

重物冲击测试
Impact Test

盐雾测试
Salt Spray Test

高温老化试验
high temperature operating life test

中北润良可靠性测试设备齐全、测试精度高，通过开展热冲击、高低温、恒温恒湿、重物冲击、盐雾等多种测试，有效确保产品的安全性、可靠性。
Zhongbei Runliang has complete reliability testing equipment and high testing accuracy. It effectively ensures the safety and reliability of products by carrying out various tests such as thermal shock, high and low temperature, constant temperature and humidity, impact , and salt spray.

小鲁锂电
XIAO LU LI-BATTERY

品牌关键词：亲民　柔和　易用　真诚

Brand keywords: Folksy , soft, easy to use, sincere

用户感知：持久耐用　安全节能

User perception: User perception: durable, safe and energy-saving

产品特性：创新科技　可联动　体验好

Product features: Innovative technology, linkable, good experience

品牌诉求：高性价比　差异化　科技精品

Brand demands: Cost-effective, differentiation, high-quality technology

产品系列
XIAO LU PRODUCTION

三元锂离子电芯系列
Ternary lithium-ion battery series

1、能量密度高：三元锂电池的能量密度较高，能够提供较高的储能容量，适合于一些对能量密度要求较高的应用，比如电动汽车。

2、充放电循环寿命长：三元锂电池具有良好的循环寿命，充放电循环次数较多，可达到几千次以上，适合长周期使用的场景。

3、充电速度快：相对于其他类型的锂离子电池，三元锂电池具有更快的充电速度。

1、High energy density: Ternary lithium batteries have high energy density and can provide high energy storage capacity.Suitable for some applications that require higher energy density, such as electric vehicles.

2、Long charge-discharge cycle life: Ternary lithium batteries have a good cycle life, with many charge-discharge cycles, up to several thousand times, and are suitable for long-term use scenarios.

3. Fast charging speed: Compared with other types of lithium-ion batteries, ternary lithium batteries have faster charging speeds.

磷酸铁锂锂离子电芯系列 /Lithium iron phosphate lithium ion battery series

1、安全性好：磷酸铁锂电池在高温环境下的安全性相对较高，具有较好的热稳定性。

2、成本低：相比于三元锂电池，磷酸铁锂电池的制造成本较低。

3、环保：磷酸铁锂电池材料成本较低，且不含重金属，属于环保型电池。

1. Good safety: Lithium iron phosphate batteries are relatively safe in high temperature environments and have good thermal stability.

2. Low cost: Compared with ternary lithium batteries, the manufacturing cost of lithium iron phosphate batteries is lower.

3. Environmental protection: Lithium iron phosphate battery materials have low material costs and do not contain heavy metals, making them environmentally friendly batteries.

32140 锂离子电芯系列 /32140Lithium ion battery series

• 1、在工艺、设备验证上已完成高良率、高一致性、标准化攻关，且圆柱电池卷绕工艺较为成熟、自动化程度高、一致性好，成本方面可以降低 10% 以上。

2、高度自动化，激光焊接、激光切割模式可以实现自动化操作，并解决毛刺、露白、掉粉等一系列问题，为电池性能一致性的提供保障。

3、性能优化上，全极耳结构强化了 32140 大圆柱钠电在大容量、高功率等方面的性能。

1. High yield, high consistency, and standardization research have been completed in process and equipment verification, and the cylindrical battery winding process is relatively mature, highly automated, and has good consistency, and the cost can be reduced by more than 10%.

2. Highly automated, laser welding and laser cutting modes can realize automated operations and solve a series of problems such as burrs, whitening, and powder loss, ensuring the consistency of battery performance.

3. In terms of performance optimization, the full lug structure enhances the performance of 32140 large cylindrical sodium batteries in terms of large capacity and high power.

32140 系列

ELECTRIC CELL

32140-15Ah

优势 / 特点（Advatanges/Features）

1. 全极耳低阻值、低温升；
2. 长寿命、高性能 LFP32140-15Ah；
3. 产品应用广泛，产品系统涵盖电动乘用车、低速电动车、电动物流车、储能等市场；
4. 产品型号多，主打产品：LFP32140-12.5Ah、

1.All-pole low resistance, low temperature rise；
2.Long cycle life, high performance LFP32140-15Ah;
3.The products are widely used, and the product system covers electric passenger cars, low-speed electric vehicles, electric logis tics vehicles, energy storage and other markets；
4.Many product models, main products：LFP32140-12.5Ah、LFP32140-15Ah、LFP32140-17.5Ah.

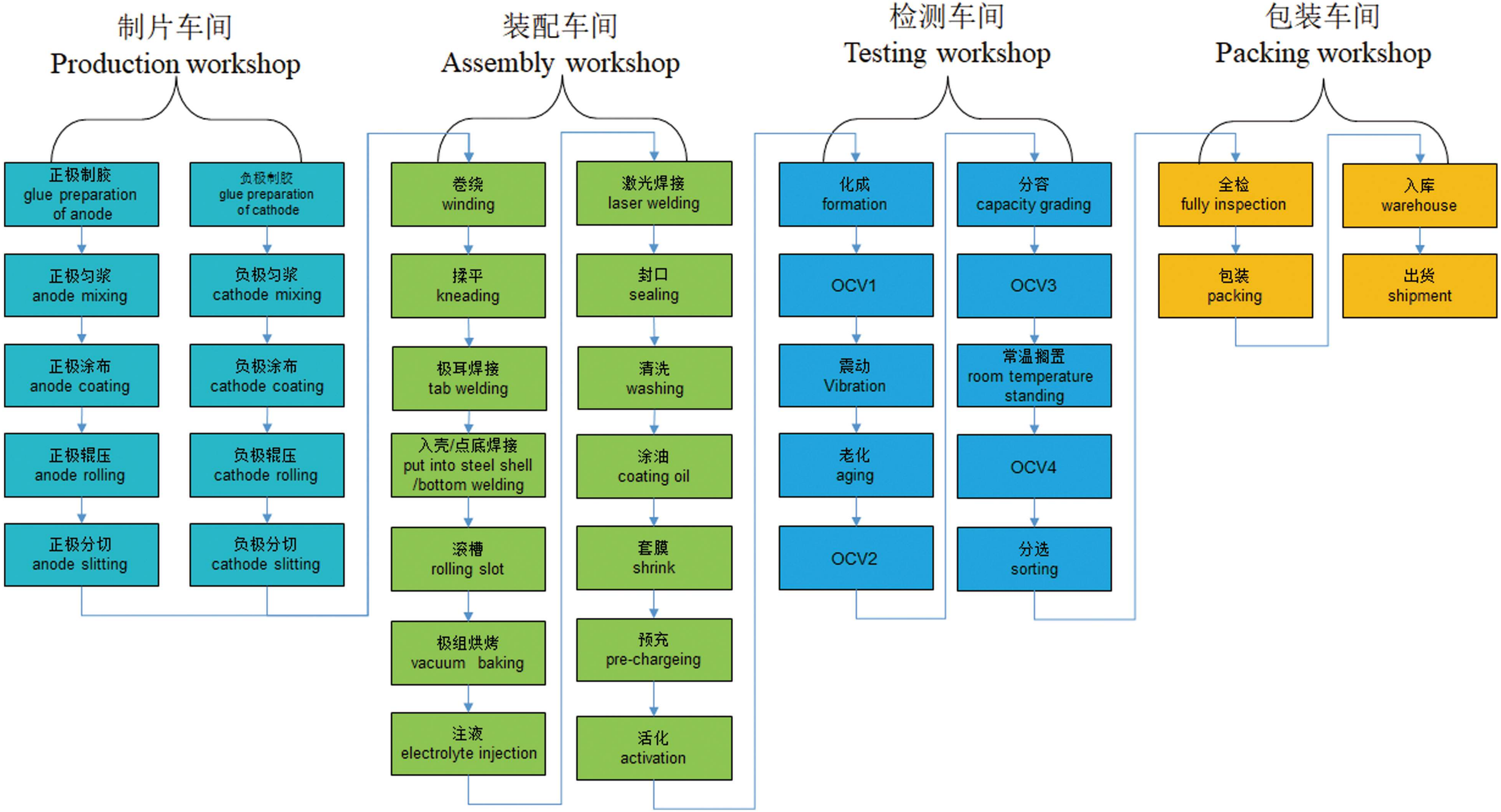
动力 / 储能（Power/Stored energy）

外 壳 材 质：镀镍钢 Shell material：Nickel-plated steel	标 称 容 量：15000mAh Nominal capacity：15000mAh
额 定 电 压：3.2V Rated voltage：3 .2V	充电截止电压：3.65V Charge cut-off Voltage：3.65V
放电截止电压：2.0V Discharge cut-off Voltage：2.0V	重　　量：≤320g Weight：≤320g

32140 工艺流程图

32140 PROCESS FLOW DIAGRAM

ELECTRIC CELL

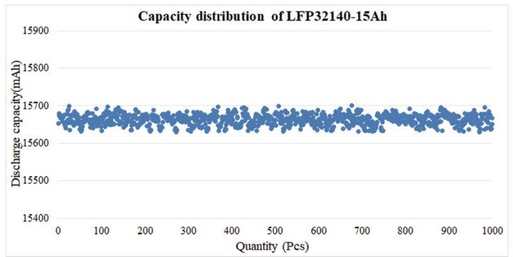


锂离子电芯
ELECTRIC CELL

• 采用高品质电芯原材和自动化产线工艺，有力保障电芯一致性和安全性能
The use of high-quality battery cell raw materials and automated production line technology effectively ensures the consistency and safety performance of the battery cells
• 利用高性能结构设计，实现产品能量密度的大幅度提升
Utilize high-performance structural design to significantly increase product energy density
• 满足高端客户对电芯高容量、长循环寿命的要求
Meet the requirements of high-end customers for high battery capacity and long cycle life

LFP32140-15AH

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
15000	3.2	⩽ 3	⩽1C	2C	3.65	2.0

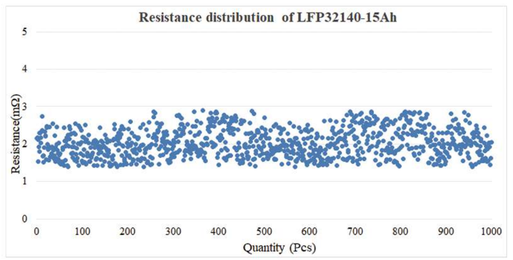


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

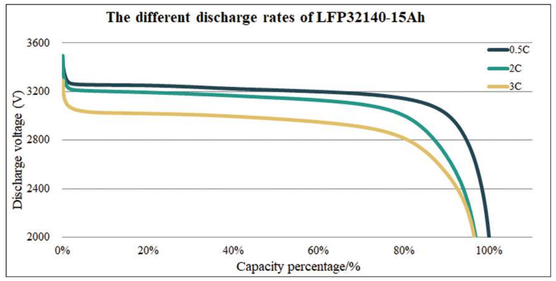


内阻一致性曲线

批次内阻一致性保持在 3mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 3m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 95% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

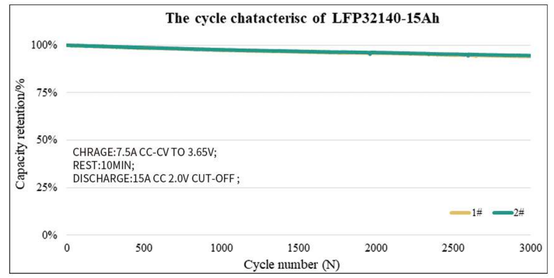
The retention rate of high rate discharge capacity is more than 95%, which can meet the needs of customers for various rates of cell.

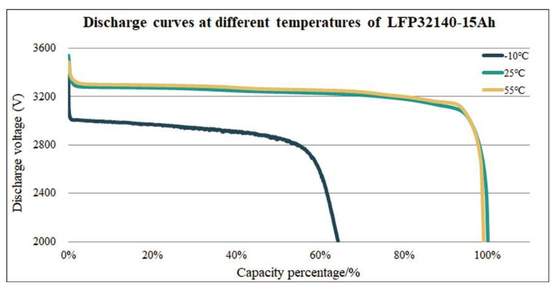
循环曲线

0.5C 充电 1C 放电电池循环寿命 1500 次，容量保持率在 80% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of a 0.5C charging 1C discharging battery is 1500 times, with a capacity retention rate of over 80%. Meet the scenario requirements of customers for long cycle life of battery cells.





不同温度放电曲线

在 -10°C下放电容量保持在 75% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

The discharge capacity can be maintained above 75% at - 10 ℃, which can meet the scene application in low temperature environment.

钠离子电芯
ELECTRIC CELL

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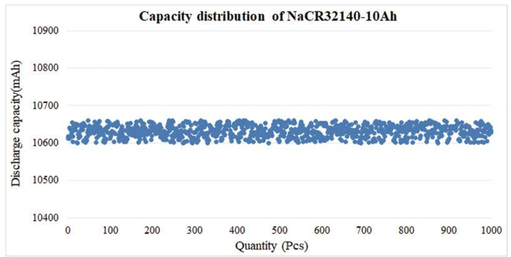
The use of high-quality battery cell raw materials and automated production line technology effectively ensures the consistency and safety performance of the battery cells
• 利用高性能结构设计，实现产品能量密度的大幅度提升
Utilize high-performance structural design to significantly increase product energy density
• 满足高端客户对电芯高容量、长循环寿命的要求
Meet the requirements of high-end customers for high battery capacity and long cycle life

NaCR32140-10Ah

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
10000	3.05	⩽ 3	⩽3C	3C	4.0	2.0

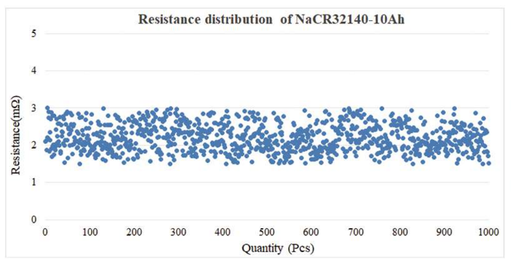


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

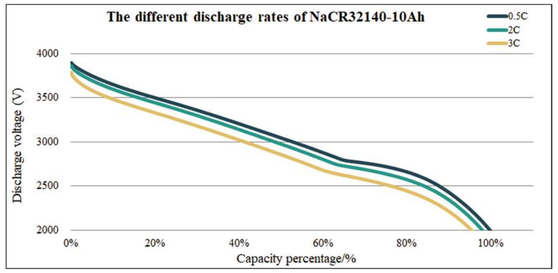


内阻一致性曲线

批次内阻一致性保持在 3mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 3m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 95% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

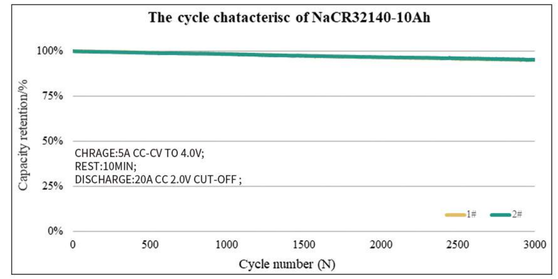
The retention rate of high rate discharge capacity is more than 95%, which can meet the needs of customers for various rates of cell.

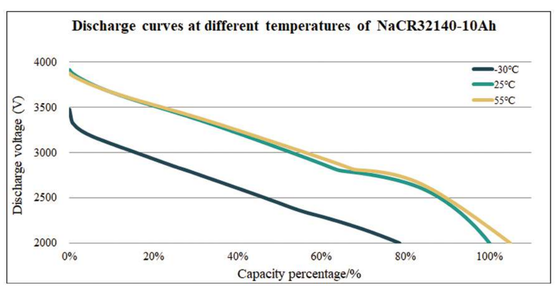
循环曲线

0.5C 充电 2C 放电电池循环寿命 1500 次，容量保持率在 80% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of a 0.5C charging 2C discharging battery is 1500 times, with a capacity retention rate of over 80%. Meet the scenario requirements of customers for long cycle life of battery cells.





不同温度放电曲线

在 -30°C下放电容量保持在 75% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

The discharge capacity can be maintained above 75% at - 30 ℃, which can meet the scene application in low temperature environment.

锂离子电芯
ELECTRIC CELL

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• 利用高性能结构设计，实现产品能量密度的大幅度提升

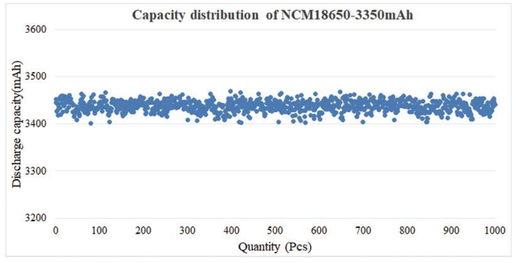
Utilize high-performance structural design to significantly increase product energy density

• 满足高端客户对低温电芯的要求

Meet the requirements of high-end customers for high battery capacity and long cycle life

INR18650-3350IL

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
3350	3.6	⩽ 20	⩽1C	3C	4.20	2.5

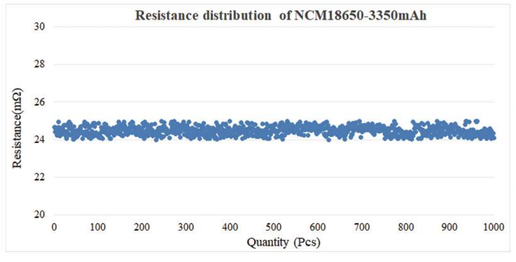


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

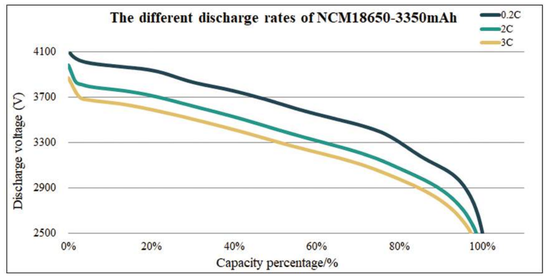


内阻一致性曲线

批次内阻一致性保持在 20mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 20m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 90% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

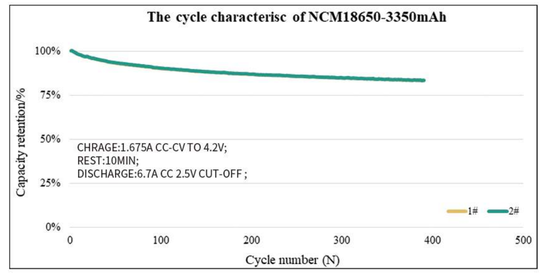
The retention rate of high rate discharge capacity is more than 90%, which can meet the needs of customers for various rates of cell.

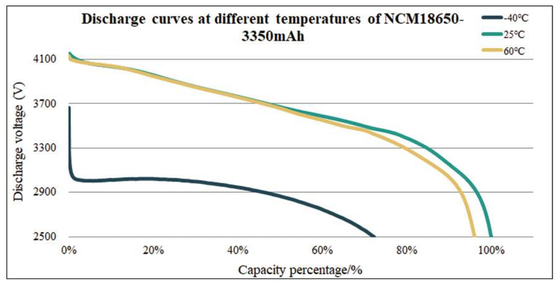
循环曲线

0.5C 充电 2C 放电电池循环寿命 300 次，容量保持率在 70% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of a 0.5C charging and 2C discharging battery is 300 times, with a capacity retention rate of over 70%. Meet the scenario requirements of customers for long cycle life of battery cells.





不同温度放电曲线

在 -40°C下放电容量保持在 70% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

The discharge capacity can be maintained above 70% at - 40 ℃, which can meet the scene application in low temperature environment.

锂离子电芯
ELECTRIC CELL

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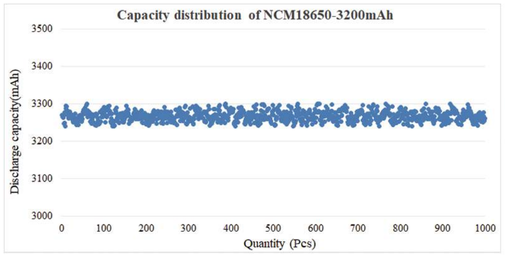
The use of high-quality battery cell raw materials and automated production line technology effectively ensures the consistency and safety performance of the battery cells
• 利用高性能结构设计，实现产品能量密度的大幅度提升
Utilize high-performance structural design to significantly increase product energy density
• 满足高端客户对电芯高容量的要求
Meet the requirements of high-end customers for high battery capacity and long cycle life

INR18650-3200HA

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
3200	3.6	⩽ 20	⩽1C	3C	4.20	2.5

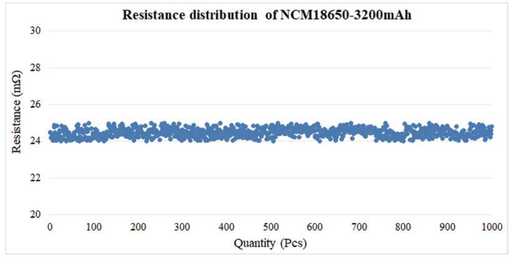


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

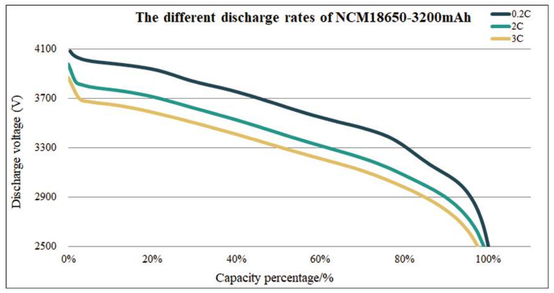


内阻一致性曲线

批次内阻一致性保持在 20mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 20m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 90% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

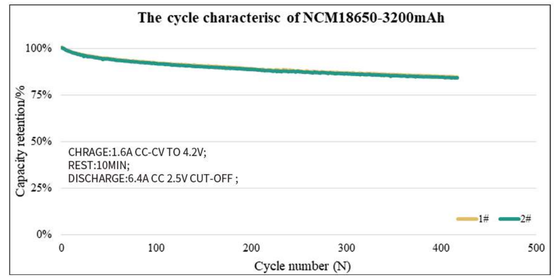
The retention rate of high rate discharge capacity is more than 90%, which can meet the needs of customers for various rates of cell.

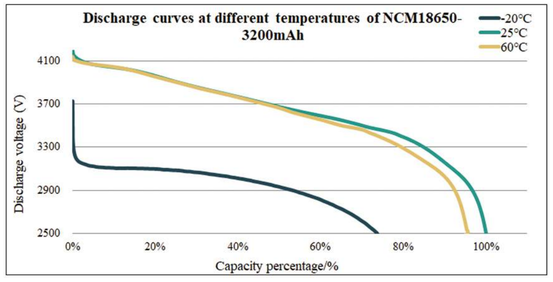
循环曲线

0.5C 充电 2C 放电电池循环寿命 300 次，容量保持率在 70% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of a 0.5C charging and 2C discharging battery is 300 times, with a capacity retention rate of over 70%. Meet customer demand for long cycle life scenarios of battery cells.





不同温度放电曲线

在 -20°C下放电容量保持在 60% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

The discharge capacity can be maintained above 60% at - 20 ℃, which can meet the scene application in low temperature environment.

锂离子电芯
ELECTRIC CELL

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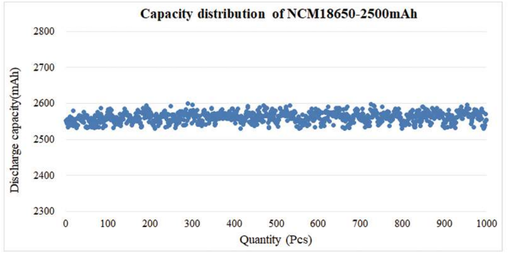
• 利用高性能结构设计，实现产品能量密度的大幅度提升
Utilize high-performance structural design to significantly increase product energy density
• 满足高端客户对电芯高倍率的要求
Meet the requirements of high-end customers for high battery capacity and long cycle life

NCM18650-2500DC

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
2500	3.6	⩽ 18	⩽1	8C	4.20	2.5

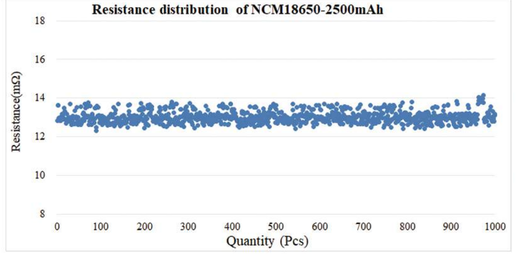


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

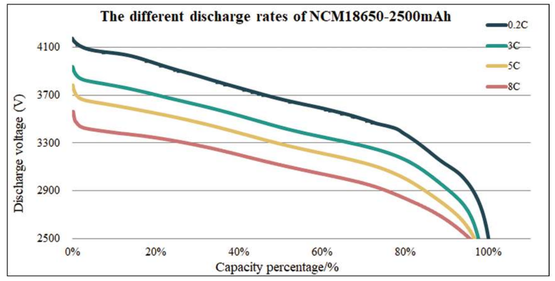


内阻一致性曲线

批次内阻一致性保持在 18mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 18m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 95% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

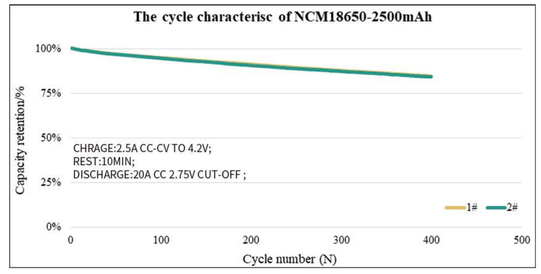
The retention rate of high rate discharge capacity is more than 95%, which can meet the needs of customers for various rates of cell.

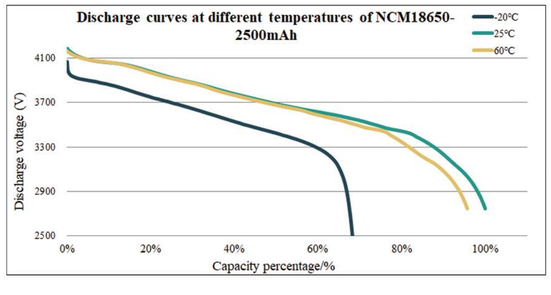
循环曲线

1C 充电 8C 放电电池循环寿命 300 次，容量保持率在 80% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of 1C charging 10C discharging battery is 300 times, and the capacity retention rate is more than 80%. Meet the needs of customers for long cycle life scenarios.





不同温度放电曲线

在 -20°C下放电容量保持在 60% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

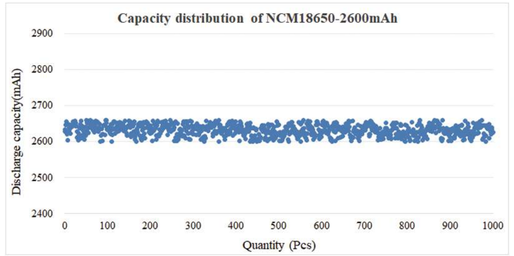
The discharge capacity can be maintained above 60% at -20 °C, which can meet the scene application in low temperature environment.

锂离子电芯
ELECTRIC CELL

• 采用高品质电芯原材和自动化产线工艺，有力保障电芯一致性和安全性能
The use of high-quality battery cell raw materials and automated production line technology effectively ensures the consistency and safety performance of the battery cells
• 利用高性能结构设计，实现产品能量密度的大幅度提升
Utilize high-performance structural design to significantly increase product energy density
• 满足高端客户对电芯高容量、长循环寿命的要求
Meet the requirements of high-end customers for high battery capacity and long cycle life

NCM18650-2600EA

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
2600	3.6	⩽ 20	⩽1C	3C	4.20	2.75

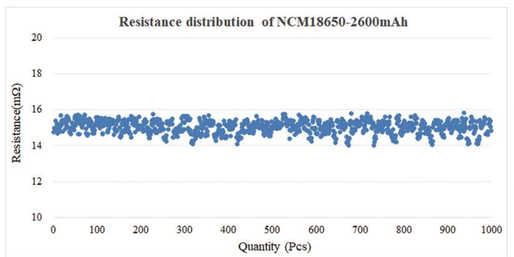


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

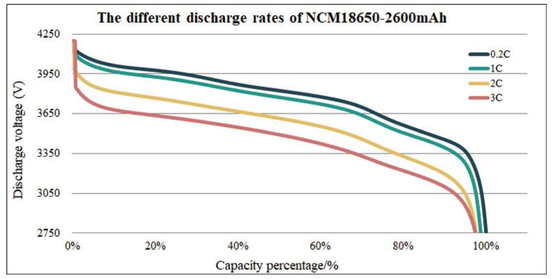


内阻一致性曲线

批次内阻一致性保持在 2mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 2m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 90% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

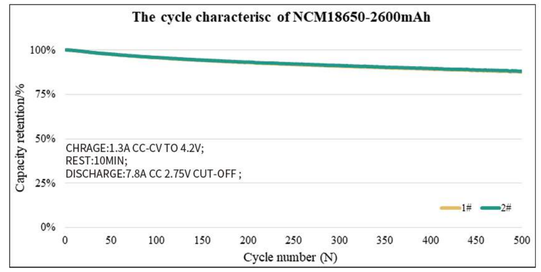
The retention rate of high rate discharge capacity is more than 90%, which can meet the needs of customers for various rates of cell.

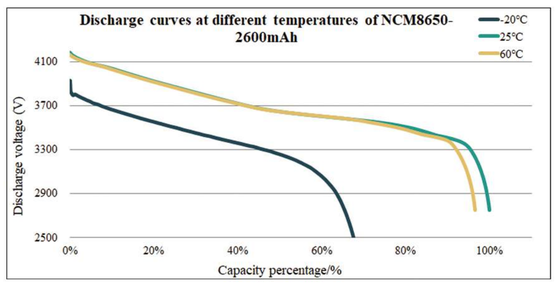
循环曲线

0.5C 充电 3C 放电电池循环寿命 500 次，容量保持率在 80% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of 0.5C charging 3C discharging battery is 500 times, and the capacity retention rate is more than 80%. Meet the needs of customers for long cycle life scenarios.





不同温度放电曲线

在 -20°C下放电容量保持在 60% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

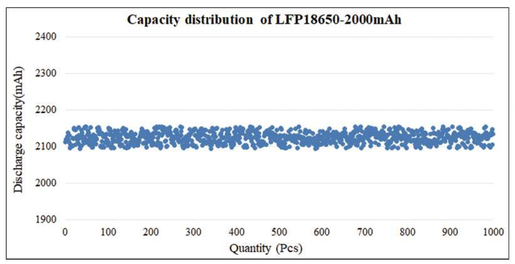
The discharge capacity can be maintained above 60% at -20 °C, which can meet the scene application in low temperature environment.

锂离子电芯
ELECTRIC CELL

• 采用高品质电芯原材和自动化产线工艺，有力保障电芯一致性和安全性能
The use of high-quality battery cell raw materials and automated production line technology effectively ensures the consistency and safety performance of the battery cells
• 利用高性能结构设计，实现产品能量密度的大幅度提升
Utilize high-performance structural design to significantly increase product energy density
• 满足高端客户对电芯长循环寿命的要求
Meet the requirements of high-end customers for high battery capacity and long cycle life

LFP18650-2000BA

容量 Capacity (mAh)	电压 VOLTAGE (V)	内阻 Internal Resistance (mΩ)	最大充电电流 Maximum charging current (A)	最大持续放电电流 Maximum continuous discharge current (A)	最大充电电压 Maximum charging voltage (V)	放电终止电压 Discharge cut-off voltage (V)
2000	3.2	⩽ 18	⩽1C	3C	3.65	2.0

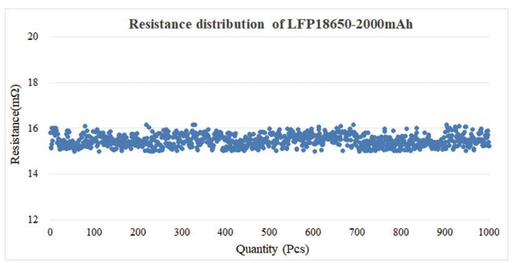


容量一致性曲线

批次容量一致性保持在 3% 以内。

Capacity consistency curve

The consistency of batch capacity was kept within 3%.

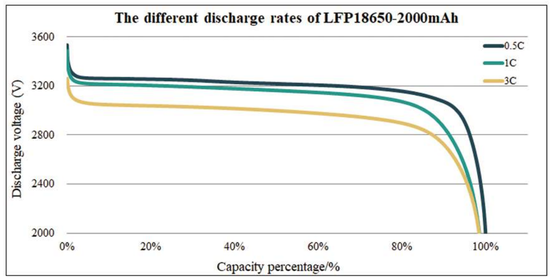


内阻一致性曲线

批次内阻一致性保持在 2mΩ以内。

Internal resistance consistency

The internal resistance consistency of the batch was kept within 2m Ω.



不同倍率放电曲线

高倍率放电容量保持率在 90% 以上，满足客户对电芯各种倍率的需求。

Discharge curves at different rates

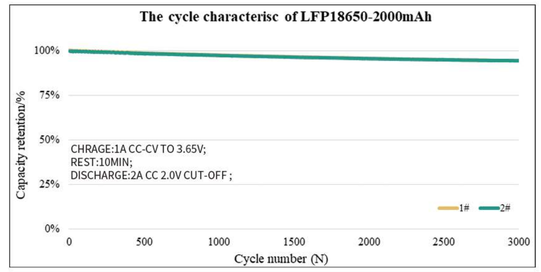
The retention rate of high rate discharge capacity is more than 90%, which can meet the needs of customers for various rates of cell.

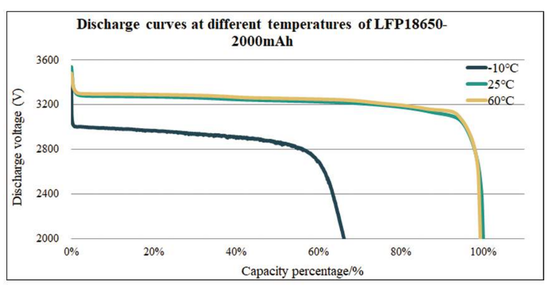
循环曲线

0.5C 充电 1C 放电电池循环寿命 1500 次，容量保持率在 80% 以上。满足客户对电芯长循环寿命的场景需求。

Cyclic curve

The cycle life of 0.5C charging 1C discharging battery is 1500 times, and the capacity retention rate is more than 80%. Meet the needs of customers for long cycle life scenarios.





不同温度放电曲线

在 -10°C下放电容量保持在 60% 以上，满足低温环境下的场景应用。

Discharge curves at different temperatures

The discharge capacity can be maintained above 60% at - 10 °C, which can meet the scene application in low temperature environment.

储能产品
ENERGY STORAGE

储能 / 控制 / 逆变柜
Energy storage/control/inverter cabinet

太阳能电池板
Solar panels

家用电器
HOUSEHOLD APPLIANCES

光伏 - 储能一体化系统
Photovoltaic-energy storage integrated system

• 操作方便快捷，即插即用

Easy and quick to operate, plug and play

• 高效节能稳定供电，高性能高安全磷酸铁锂储能电池

Efficient, energy-saving and stable power supply, high performance and high safety lithium iron phosphate energy storage battery

• 智能化设计，高可视度，可直观显示系统各项运行状态

Intelligent design, high visibility, can intuitively display various operating status of the system

• 日夜不间断供电，削峰填谷

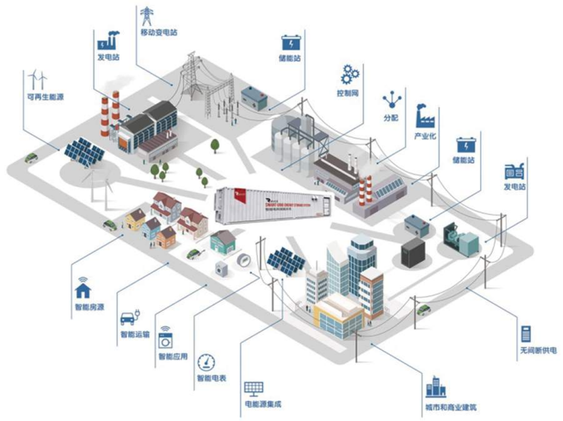
Uninterrupted power supply day and night, peak shaving and valley filling

• 人性化报警功能和完善的在线保护功能，具有可靠性

Humanized alarm function and complete online protection function, which are reliable

• 可并网或离网运行

Can be operated on-grid or off-grid



智能电网储能系统
Smart grid energy storage system

中北润良具备端对端的储能产品设计与研发能力，从电芯与模组到中型储能柜和大型智能储能系统均可定制生产。
Zhongbei Runliang has end-to-end energy storage product design and R&D capabilities, and can customize production from batteries and modules to medium-sized energy storage cabinets and large-scale intelligent energy storage systems.

智能工业储能柜
Intelligent industrial energy storage cabinet

CLOUD SECURITY SYSTEM
云端服务保障体系

云上数据 /Data on the cloud

中北润良实时采集电池的现场运行数据，并把数据传输到服务器上，为用户提供各种云上数据服务。
Zhongbei Runliang collects on-site battery operation data in real time and transmits the data to the server to provide users with various cloud data services.

云上服务 /Cloud services

为了让电池的维保服务过程更透明、更高效，中北润良提供全程可视化的维保管控服务。
In order to make the battery maintenance service process more transparent and efficient, Zhongbei Runliang provides full-process visual maintenance and control services.

云上文库 /Yunshang Library

中北润良的知识文库系统，提供关于电池的维保视频教程、电池原理介绍以及电池使用问题汇总等相关文档，让用户更专业更放心地使用电池。
Zhongbei Runliang's knowledge library system provides relevant documents such as battery maintenance video tutorials, introduction to battery principles, and summary of battery usage issues, allowing users to use batteries more professionally and with confidence.

中北润良云端保障体系可以连接用户、经销商和服务中心，在线实时查看电池状态；智能检测电池状况，实现电池生命周期的全程监控。
Zhongbei Runliang's cloud assurance system can connect users, dealers and service centers to check battery status online in real time; it can intelligently detect battery status and realize full monitoring of the battery life cycle.

技术服务
TECHNICAL SERVICE

钠电项目规划
SODIUM POWER PROJECT PLANNING

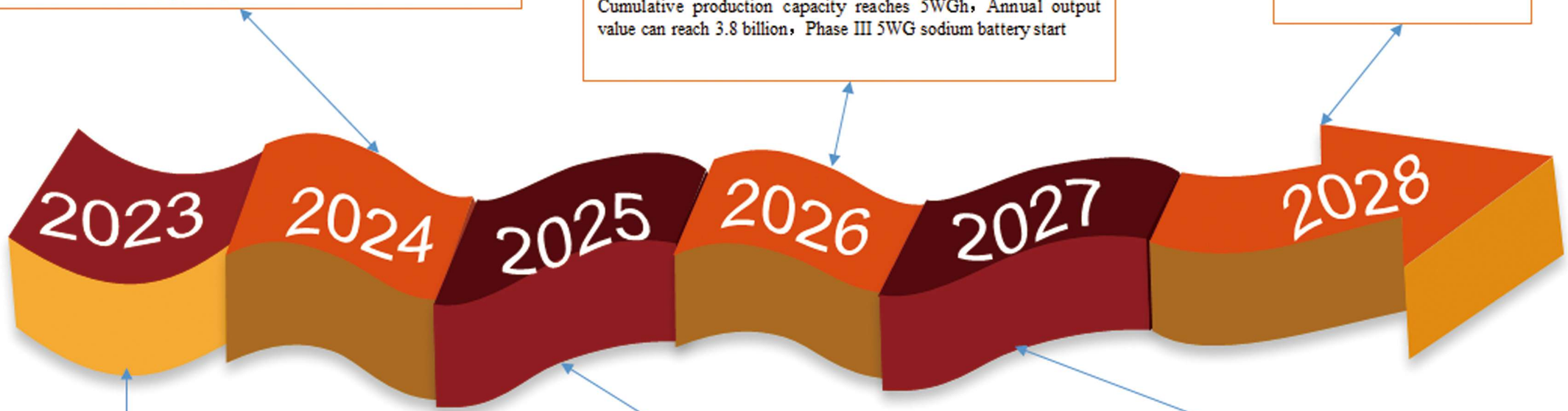
一期钠电项目投产
Phase I sodium Sodium-ion battery project put into operation

2GWh钠电投产
2GWh Sodium-ion battery put into production

一二期销售额突破38亿元
Sales of the first and second phases Exceeded 3.8 billion yuan
三期钠电项目扩建
Phase Ⅲ Sodium-ion batteryProject Expansion

3GWh钠电满产，累计产能达5WGh，年产值可到38亿，三期5WG钠电启动
3GWh sodium-ion battery production reaches full capacity，Cumulative production capacity reaches 5WGh，Annual output value can reach 3.8 billion，Phase III 5WG sodium battery start

IPO上市
IPO listing
After 5 years of operation, the market value reached 50 billion to 100 billion



公司正式成立
Project started and established

2023年小鲁锂电钠电项目启动
Xiaolu lithium battery and sodium battery project launched in 2023

一期销售额突破15.2亿元
Sales in the first phase exceeded 1.52 billion yuan
二期钠电项目扩建
Phase II Sodium Power Project Expansion

2GWh钠电项目满产，年产值可达15.2亿元，二期3GWH钠电启动
The annual output value of the 2GWh sodium battery project at full production can reach 1.52 billion yuan.
Phase II 3GWH sodium battery start-up

满产销售额突破76亿元，同时启动上市
Full production sales exceeded 7.6 billion yuan
Launch of listing at the same time

5GWh钠电满产，累计产能达10WGh，年产值可到76亿
5GWh sodium battery production at full capacity，Cumulative production capacity reaches 10WGh，Annual output value can reach 7.6 billion

钠电项目规划
SODIUM POWER PROJECT PLANNING

专业团队
Professional team

- 高层管理人员在国内知名企业/上市公司从业10余年
- Senior management personnel have been working in well-known domestic enterprises/listed companies for over 10 years

海外市场
Overseas market

- 海外市场200%增量
- 200% increase in overseas markets
- 市场退税13%
- Market tax rebate 13%

市场增量大
Large market growth

- 轻型电动车：复合增长约为7%
- Light electric vehicles: compound growth of approximately 7%
- 储能，复合增长54.8%
- Energy storage, compound growth of 54.8%

自动化设备
Automation equipment

- 全线配备全自动化生产设备
- The entire line is equipped with fully automated production equipment
- 关键控制点采用CCD检测，100%全检
- Critical control points are detected using CCD, 100% fully inspected

先进工艺
Advanced technology

- 工艺对标与日韩三星、LG、松下、sony，国内力神、BAK、亿纬
- Process benchmarking with Japanese and Korean Samsung, LG, Panasonic, Sony, domestic Lishen, BAK, and Yiwei
- 过程采用SPC控制，全线1%RH湿度控制
- The process adopts SPC control, and the entire line has 1%RH humidity control

企业愿景：完成绿色中国梦，实现碳中和、碳达峰，打造新
Corporate Vision: Complete the Green China Dream, achieve carbon neutrality and carbon peak, build a new energy
能源小镇，让钠电走进千家万户！
town, and let sodium power enter every household!

经销商服务
DEALER SERVICE

中北润良在每个服务终端均提供不同层级的专业检测维修设备。
Zhongbei Runliang provides different levels of professional testing and maintenance equipment at each service terminal.

便携式
PORTABLE

标准化
STANDARDIZATION

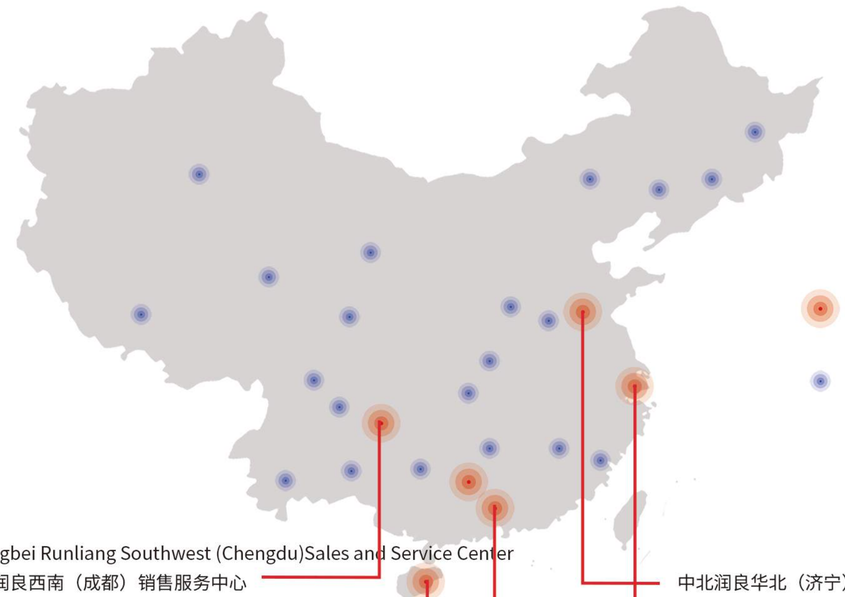
智能式
INTELLIGENT

完善的服务体系
SERVICE GUARANTEE

售前 /PRE-SALES
提供完备的产品培训、工艺流程及人力资源配置等服务，提供门店管理、销售服务、营销创新咨询等服务。
PROVIDE COMPREHENSIVE PRODUCT TRAINING, PROCESS FLOW, AND HUMAN RESOURCE ALLOCATION SERVICES, AS WELL AS STORE MANAGEMENT, SALES SERVICES, MARKETING INNOVATION CONSULTING, AND OTHER SERVICES.

售中 /ON SALE
销售服务中心提供全方位的服务，包括 400 电话、网络支持等服务。
THE SALES SERVICE CENTER PROVIDES COMPREHENSIVE SERVICES, INCLUDING 400 PHONE CALLS, NETWORK SUPPORT, AND OTHER SERVICES.

售后 AFTER SALES
遍布全国的售后服务中心支持本地化服务，云端检测服务与本地化服务相结合，全面满足您的需求。
OUR AFTER-SALES SERVICE CENTERS THROUGHOUT THE COUNTRY SUPPORT LOCALIZED SERVICES, COMBINING CLOUD DETECTION SERVICES WITH LOCALIZED SERVICES TO FULLY MEET YOUR NEEDS.



电池培训 对经销商进行电池培训 Battery training for dealers

门店管理 对经销商进行门店管理培训 Provide store management training to dealers

营销创新 对经销商进行营销方式培训 Provide marketing training to dealers

养护维修 对经销商进行保养、维护、维修培训 Provide maintenance, maintenance and repair training to dealers

郑重承诺
本公司贯彻执行“ 诚信正直、成就客户、完善自我、追求卓越 ”的宗旨，本着精益求精的精神，对于售出的产品进行质量追踪，努力为客户奉献一流的产品和一流的服务。

solemn commitment
The company implements the purpose of "integrity, customer success, self-improvement and pursuit of excellence". In the spirit of excellence, we track the quality of sold products and strive to provide customers with first-class products and first-class services.

营销与售后服务网络
MARKETING AND AFTER SALES

产品认证体系
PRODUCT CERTIFICATION SYSTEM

UN38.3

保险体系
INSURANCE SYSTEM

本产品由中国人民保险公司承保
PICC 中国人民保险公司
中北润良·小鲁锂电
产品责任险

Revol

公司历程
COMPANY HISTORY

2019.6
与济宁经济技术开发区进行项目投资签约
Signed project investment contract with Jining Economic and Technological Development Zone

2019.7
中北润良新能源（济宁）股份有限公司注册成立
Zhongbei Runliang New Energy (Jining) Co., Ltd. was registered and established

2019.11
列入济宁市重点项目
Listed as a key project in Jining City

2019.12
首期生产设备顺利进厂
The first phase of production equipment successfully entered the factory

2020.2
列入山东省新旧动能转换重大项目库第一批优选项目
Listed as the first batch of selected projects in the major project library for the conversion of old and new kinetic energy in Shandong Province

2020.10
电芯产线正式投产
The battery cell production line is officially put into operation

2021
2021年纳入济宁市制造强市建设“助企攀登”重点企业。
In 2021, it will be included in Jining City's construction of a strong manufacturing city as a key enterprise to "help enterprises succeed".

2022
成立东莞市山海创新科技有限公司
入选国家高新技术企业、济宁市“专精特新”中小企业和济宁市企业技术中心。
Dongguan Shanhai Innovation Technology Co., Ltd. was established Selected as a national high-tech enterprise, Jining City's "Specialized, Special and New" small and medium-sized enterprises and Jining City Enterprise Technology Center.

2023
新增2GWH32140钠电全自动化生产线一条；新增1GWH18650锂电全自动化生产线一条；成立中北润良新能源（济宁）股份有限公司“研究院”
Newly added 2GGWH32140 sodium battery fully automated production line; Add 1 GWH18650 lithium battery fully automated production line; Establishing the "Research Institute" of Zhongbei Runliang New Energy (Jining) Co., Ltd

2024
成立中北润良（河北）国际贸易有限公司
被评为济宁市“绿色工厂”
Zhongbei Runliang (Hebei) International Trade Co., Ltd. was established Rated as Jining City's "Green Factory: