CHUNLAN NEW ENERGY

CHUNLAN NEW ENERGY

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春兰动力电池及能量管理系统 产品手册

Chunlan power battery and energy management system product manual

春兰新能源 • 做动力电池优秀供应商
Become excellent power battery supplier

Chunlan

目录 CONTENT

公司简介
Introductione

江苏春兰清洁能源研究院有限公司是集研发、生产、销售于一体的专业生产高能动力蓄电池及其管理系统的高科技企业，春兰（集团）公司全资子公司、江苏省动力电池产业技术创新战略联盟理事长单位、省高新技术企业、软件企业、国家863科技成果转化基地，通过ISO9001:2008质量体系认证、TS16949认证，主营业务为动力镍氢电源系统，动力锂离子电源系统、燃料电池系统及嵌入式软件的开发、生产与销售。

Jiangsu Chunlan Clean Energy Research Institute Co.Ltd., a wholly-owned subsidiary of Chunlan Group,is a hi-tech enterprise, which specialized in R&D, production, sale of high energy power battery and its management system. It is the chairman unit of Jiangsu Province power battery industry technological innovation strategic alliances, the provincial hi-tech enterprise, the software-qualified company, national "863" scientific and technological achievements transform base. it passed the certification of ISO9001:2008 international quality management system and TS16949 system. Its main business includes R&D, production and sales of nickel metal hydride power supply systems, lithium-ion power systems, fuel cell systems and its embedded management software.

从1995年至今，已累计投资8亿多元用于高能动力电池及产业化应用技术的研究。拥有10多名学科带头人，100多名高、中级技术人员和国内第一条自动化大容量动力电池生产线。公司在关键材料、电池配方和产业化技术等方面，掌握了高能动力电池及其管理系统的核心技术，形成了自主知识产权，研发的电动汽车车用动力电源系统产品获得“国家科技进步二等奖”、“国家首批自主创新产品”和“国家重点新产品”等荣誉，并列入国家首批“自主创新标准化试点”项目。目前春兰动力电池已在节能与新能源汽车、矿用救生系统、AGV（自动引导车）、磁浮及有轨机车、电力储能电站、太阳能及风能储能系统、军用电源等领域取得了广泛的应用。

Since 1995, more than 800 million RMB had been invested to R&D of high-energy power battery and industrial application, more than 10 experts and 100 engineers and senior engineers had been attracted to build up the domestic first automated large-scale power battery production line. The core technology and independent intellectual property rights related to key materials, formula and industrialization know-how, etc. were mastered to produce the high-energy power traction battery and its management system. The new developed traction power supply system product for electric vehicle had been awarded national scientific and technological progress second Prize, the first batch of national independent innovation product and national Key New Product, the first batch of national innovation standardization pilot project product and other honors. So far, Chunlan power battery has been widely used in energy-saving and new energy vehicles, mine rescue system, AGV (Automatic Guided Vehicle), maglev levitation train and rail vehicles, energy storage power station, solar and wind energy storage systems and military power supply, etc.

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生产能力和科研装备
Production capacity and Scientific equipment

经过十多年的潜心研究，依托承担的国家科技部863计划“十一五”电动汽车重大专项、“十二五”节能与新能源汽车重大项目课题研发，掌握了镍氢电池和锂离子电池关键材料、配方、结构、热管理系统、能量管理系统、产业化技术等方面的核心技术，形成自主知识产权，建成了国内首条大容量动力镍氢和锂离子电池生产线，年生产配套能力10000套新能源汽车用动力电池及其能量管理系统。

After taking part in the "863" R&D for EV project which organized by Ministry of Science and technology at "11th five-year plan" and energy-saving and new energy vehicles project at "12th five-year plan", The key materials, formula, structure of nickel metal hydride battery and lithium-ion battery, and its thermal management systems, energy management systems and industrialization technology had been mastered, related intellectual properties and patents had been authorized. The first large-capacity nickel metal hydride battery and lithium-ion battery production line in china has the capability to offer more than 10,000 traction battery power supply and its energy management system for new energy vehicle.

春兰大容量动力电源系统生产线
Chunlan large-capacity traction power supply production line

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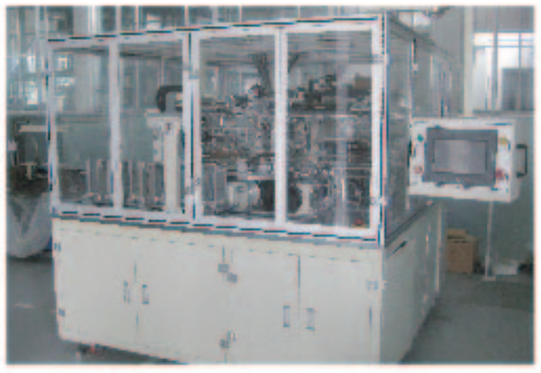
全谱直读ICP等离子体发射光谱仪
The full spectrum of direct-reading ICP-OES

原位分析X射线衍射仪
In situ X-ray diffraction analysis

激光粒度分析
Laser particle size analysis

动力电源总成测试分析设备
Traction power supply test and analysis equipment

动力电池系统测试、分析平台
Power battery test, analysis platform



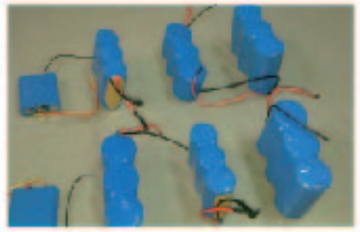
方型镍氢电池极片自动生产线
Prismatic nickel metal hydride battery electrode automatic production line

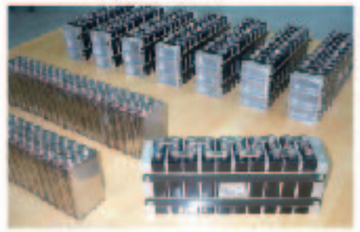
方型锂离子电池极片自动生产线
Prismatic Lithium-ion battery electrode automatic production line

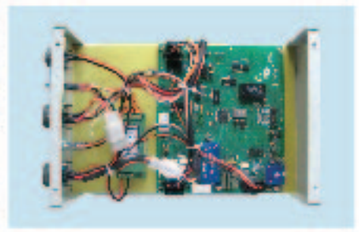
产品规格与性能
Product specification and performance

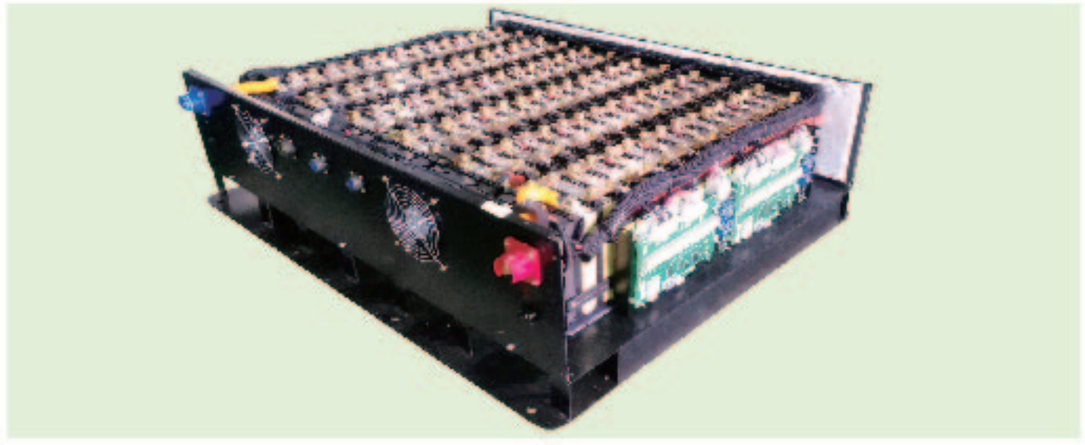
春兰动力电源系统产品具有比功率高、比能量高、耐过充过放、可快速充电、寿命长、无污染免维护、环保绿色、安全可靠等优点。

Chunlan traction power supply product has the characteristic of high specific power, high specific energy, resistance to over-charge and over-discharge, fast charge, long cycle life, maintenance-free, non-detrimental element, safe and reliable, etc.









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1 动力锂离子电池规格图表

Lithium-ion battery specification

A、参数表 Parameters

功率型参数表

High-power Lithium-ion battery specification

Model	Rated voltage (V)	Rated Capacity (Ah)	Dimensions (mm) W * H * D	Weight (kg)	Specific Power (W/kg)	Life cycle (Times)
IFPP25	3.2	25	130*124.6*36	≤0.94	≥1500	≥2000
IFPP35	3.2	35	130*149.6*36	≤1.20	≥1500	≥2000
IFPP42	3.2	42	130*175.6*36	≤1.43	≥1500	≥2000
IFPP50	3.2	50	130*200.6*36	≤1.65	≥1500	≥2000

能量型参数表

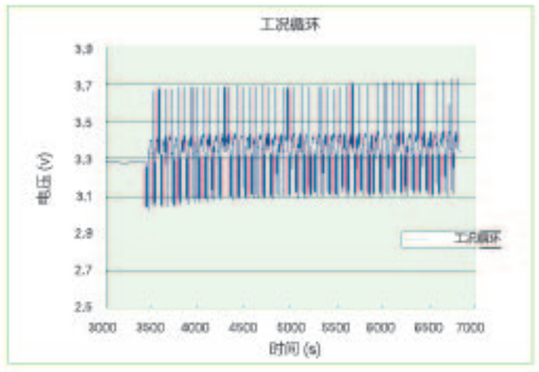
High-Energy Lithium-ion battery specification

Model	Rated voltage (V)	Rated Capacity (Ah)	Dimensions (mm) W * H * D	Weight (kg)	Specific Energy (Wh/kg)	Life cycle (Times)
IFPE10	3.2	10	70*94*27	≤0.37	≥90	≥2000
IFPE13.5	3.2	13.5	70*115*27	≤0.42	≥100	≥2000
IFPE60	3.2	60	130*207.6*36	≤1.78	≥105	≥2000
IFPE85	3.2	85	130*277.6*36	≤2.55	≥105	≥2000
IFPE100	3.2	100	165*255*39	≤3.20	≥105	≥2000
IFPE110	3.2	110	165*255*39	≤3.40	≥105	≥2000

B、特性曲线 Performance Curve

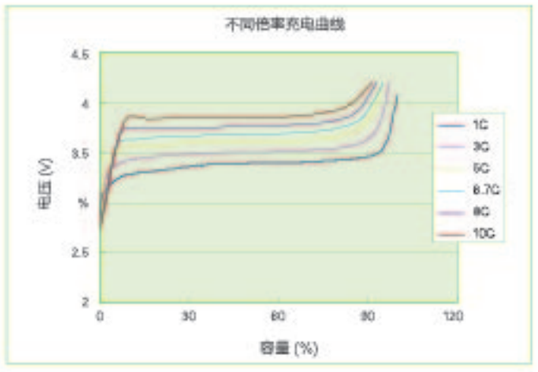
常温25℃条件下的模拟工况循环

Simulation cycle of lithium-ion battery at 25℃



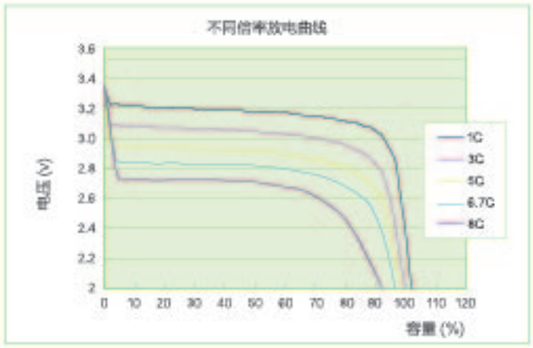
常温25℃条件下的不同倍率充电曲线

Different charge rate curve of lithium-ion battery at 25 ℃



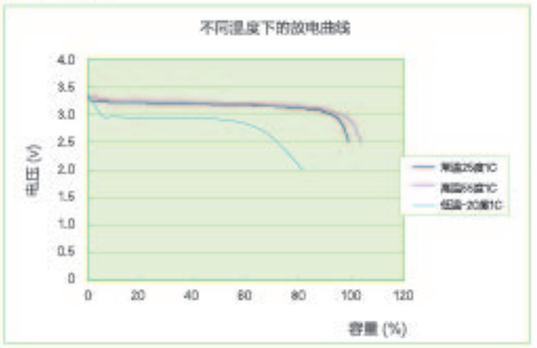
常温25℃条件下的不同倍率放电曲线

Different discharge rate curve of lithium-ion battery at 25℃



不同温度条件下的放电曲线

Discharge curve of lithium-ion battery at different temperature



2 动力镍氢电池规格表

Power nickel metal hydride battery specification

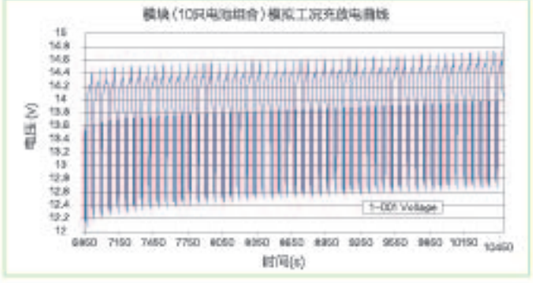
A、参数表 Parameters

Model	Rated voltage (V)	Rated Capacity (Ah)	Dimensions (mm) W * H * D	Weight (kg)	Specific Power (W/kg)	Life cycle (Times)
QNFG40f	1.2	40	82*157.5*27.5	≤1.06	≥800	≥1500
QNFG60f	1.2	60	100.5*185*29	≤1.61	≥600	≥1500
QNFG110f	1.2	110	78*243*48	≤2.91	≥500	≥1500
QNF200f	1.2	200	153*238*48	≤4.70	≥300	≥1500
QNY4	1.2	4	≥Φ26*51	≤0.10	≥400	≥1500
QNY8	1.2	8	≥Φ33*60	≤0.18	≥450	≥1500

B、特性曲线 Performance Curve

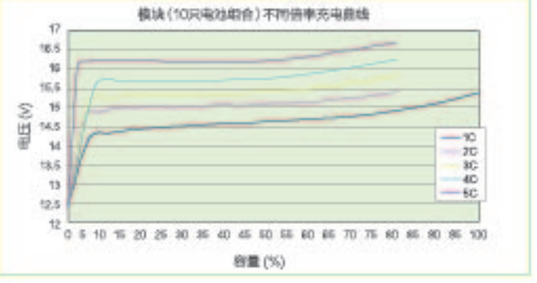
常温25℃条件下模块（10只电池组合）的模拟工况循环

Simulation cycle of Ni/MH Module (10 cells in series) at 25℃



常温25℃条件下的不同倍率充电曲线

Different charge rate curve of Ni/MH Module(10 cells in series) at 25℃



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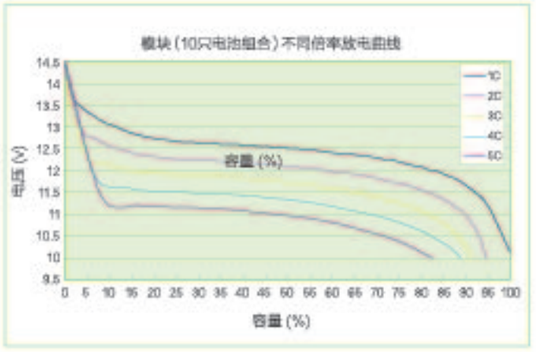
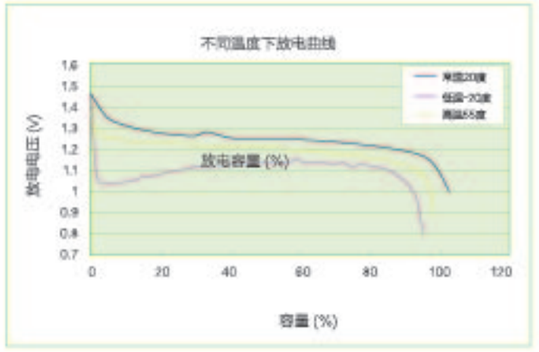
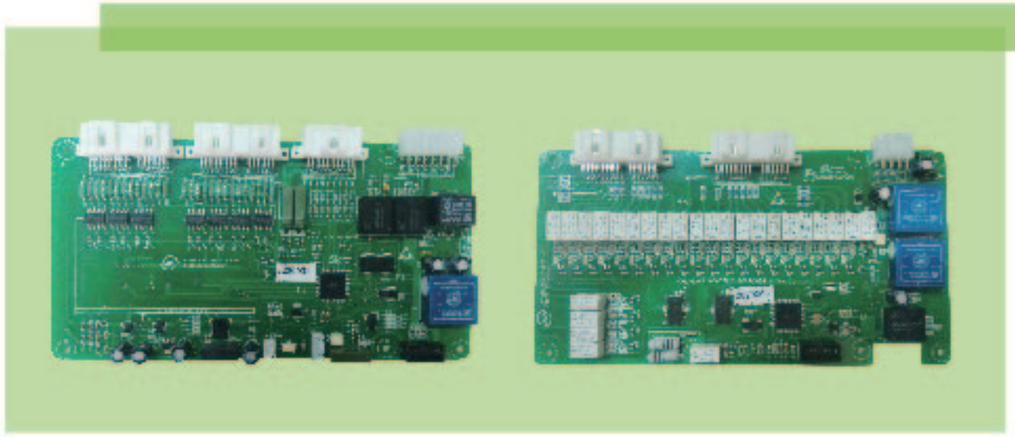
常温25℃条件下的不同倍率放电曲线
Different discharge rate curve of Ni/MH Module (10 cells in series) at 25℃

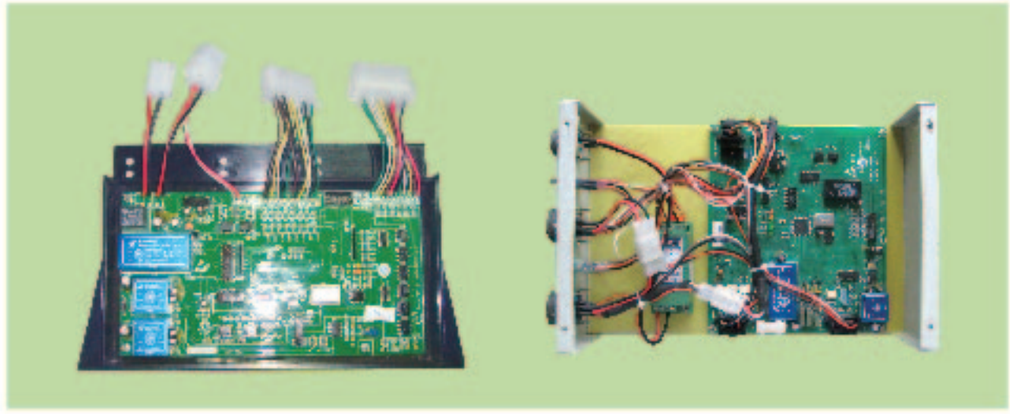


不同温度条件下的放电曲线
Discharge curve of Ni/MH battery at different temperature



3 电池管理系统
Battery Management System(BMS)





①实时监控功能，包括电池组及电池单体电压、电流、温度、电池组绝缘状态。进行电池组荷电状态(SOC)、电池健康度（SOH）估算；
Real-time monitoring voltage, current, temperature and insulation state of the cell and battery system. Battery state of charge(SOC) and state of health(SOH) estimation.

②蓄电池故障诊断、报警功能；
Battery failure diagnosis and alarm.

③自检功能；
Self-diagnosis function.

④蓄电池组的冷却通风控制；
Battery cooling&ventilation control.

⑤高压保护功能。
Over-voltage protection.

⑥有源双向均衡，电流大，可靠性高。
Active equalization, large equalization current, and high reliability.

⑦隔离设计，抗干扰能力强。
Electrical isolation design, strong anti-interference ability.

⑧通讯采用两级CAN通讯方式；
Two level CAN communication mode of BMS.

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成果、荣誉、历程
Achievements, honors and history

- 2000年列入"国家技术创新项目"的20Ah高能动力镍氢电池通过国家经济贸易委员会组织的国家级技术鉴定，并于2002年列入国家级重点新产品试产计划。
  In 2000, the 20Ah high-energy Ni/MH battery, which included in the "National Technical Innovation Project", had been technically authenticated by the State Economic and Trade Commission and listed in state-level key new product trial industrialization plans in 2002.

- 2002年～2005年承担国家十五"863"计划电动汽车重大专项"混合电动客车用高能动力镍氢电池及其能源管理系统"项目。
  From 2002 to 2005, Chunlan had been undertaken the "863" major project of high-energy power MH/Ni battery and its energy management for electric vehicles at 10th five-year plan.

- 2004年～2006年承担国家出口机电产品研发基金项目"混合轿车用动力MH/Ni电池及管理模块"项目。
  From 2004 to 2006, Chunlan had been undertaken the R&D Fund project of national electromechanical products for export: The MH/Ni battery and its management system for hybrid car.

- 2006年～2010年承担国家"十一五"863计划节能与新能源汽车重大项目"混合电动车用镍氢动力电源系统及规模化应用"项目。
  From 2006 to 2010, Chunlan had been undertaken the "863" energy-saving and new energy vehicles major project of nickel metal hydride battery power supply for hybrid electric vehicle and large-scale application at 11th five-year plan.

- 2008年～2011年承担国家重大科技支撑计划"高速磁浮试验车辆蓄电池及管理系统研制"项目。
  From 2008 to 2011, Chunlan had been undertaken the national key technology support program of battery and its BMS for high-speed maglev levitation train.

- 2010年～2012年承担国家电子信息产业发展基金"新能源汽车电子控制系统研发与产业化—动力电池管理系统"项目
  From 2010 to 2012, Chunlan had been undertaken the National Electronic Information Industry Development Fund project of traction battery management system R&D and industrialization for new energy automobile electronic control system.

- 2011年"电力电站镍氢储能电源系统"、"磁悬浮列车用镍氢动力电源系统"、"混合动力轿车用镍氢动力电源系统"、"混合动力客车用镍氢动力电源系统"、"高功率系列镍氢动力电池"、"自动导引车用镍氢动力电源系统"六个系列产品通过中国电池工业协会组织的科技成果鉴定，专家组一致认为6个产品技术上均达到了国际先进水平。
  In 2011, the six new developed products, Ni/MH battery energy storage system for electric power station, Ni/MH battery power supply system for maglev train, Ni/MH battery power supply system for hybrid electric car, Ni/MH power supply system for hybrid electric bus, series high-power Ni/MH batteries, Ni/MH battery power supply system for automatic guided vehicle, were authorized high-tech achievement products by the experts of china battery industry Association, the expert groups agreed that the technology of the 6 products had been reached the international advanced level.

- 2011年～2014年承担国家"十二五"863计划节能与新能源汽车重大项目"节能与新能源汽车用超高功率动力电池研制"、"中度和深度混合动力客车用动力电池及其管系统研制"
  From 2011 to 2014, Chunlan had been undertaken the "863" major project of "ultra-high power traction battery for energy-saving and new energy vehicle" and "traction battery and its management for moderate and deep hybrid bus" at 12th five-year plan.

- 2013年，与南车时代合作承担国家工信部新能源汽车技术创新工程项目"新能源客车技术开发"，开展高效动力电池系统开发，实现整车的储能系统匹配和产业化。
  From 2013, Chunlan had been undertaken technical innovation project "technology development for New Energy Bus" funded by national industry and information technology ministry to develop high efficient traction battery system and industrialization for New Energy Bus.

- 2014年，被认定为国家火炬计划重点高新技术企业
  In 2014, Chunlan was confirmed key hi-tech enterprise by state "Torch plan".

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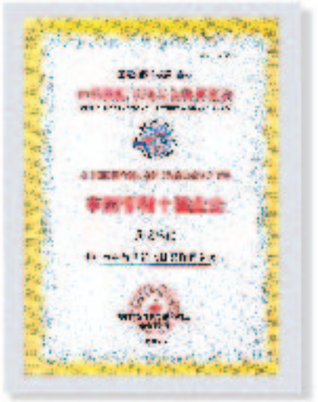
- 2008年12月，春兰车用动力电源新产品获省高新技术产品认定。

  In Dec. 2008, Chunlan traction power supply system for electric vehicle was authorized as provincial high-tech product.



- 2009年12月，春兰高能动力镍氢电池及管理系统项目入选"2009中国50个极具投资潜力的清洁能源项目"。

  In Dec. 2009, Chunlan high-energy power Ni/MH battery and its management system was granted as the most investment potential 50 clean energy projects in China at 2009.

- 2008年11月，春兰"动力镍氢电源系统"入选首批国家自主创新产品名单，"混合动力客车用动力电源系统"获"国家重点新产品"证书。2010年5月"混合动力轿车用DY144-8镍氢动力电源系统"获"国家重点新产品"证书。

  In Nov.2008, Chunlan MH/Ni power supply system was selected as the first national independent innovation product list, traction power supply system for hybrid electric bus was certificated as national key new product. In May 2010, Chunlan DY144-8 MH/Ni traction power supply system for hybrid electric car was certificated as national key new product, too.

- 2010年1月，春兰"混合动力城市客车节能减排关键技术"荣获"2009年度国家科技进步二等奖"，春兰当选"江苏省动力电池产业技术创新战略联盟"秘书处和理事长单位。

  In Jan. 2010, Chunlan energy-saving and emission-reduction key technology for HEV bus won the 2009 National Science and Technology Progressive second prize. Chunlan was elected the secretariat and chairman unit of Jiangsu province power battery industry Technology Innovation strategic Alliance.

- 共授权专利73项，其中发明专利28项，获得软件著作权9项。

  Sum to 73 patents were authorized, including 28 invention patents, and other 9 software copyright.

- 2013年春兰35Ah、60Ah锂离子电池，获得国家矿用产品安全标志中心备案证。

  In Apr. 2013, Chunlan 35Ah and 60Ah lithium-ion battery had been approved the safety certificate by state mining products safety approval and certification center.

CHUNLAN NEW ENERGY

应用领域及效果
Applications

1 新能源汽车
New energy vehicles

北京奥运示范 2008 Beijing Olympic Demonstration

2008年8月北京奥运期间，配置春兰高能动力电源系统的一汽、东风混合动力客车参与奥运场馆线路的成功示范运营，为科技奥运、绿色奥运做出了贡献，得到国家领导人的高度赞扬。

In Aug.2008 Beijing Olympic games, the FAW and Dongfeng HEV bus equipped with Chunlan high-energy traction power supply and its BMS had been run successfully around the Olympic Park. The successful demonstration operation won great praise from public citizens to national leaders.



国家“十城千辆”电动汽车示范 Clean-energy electric vehicle demonstration in 13 cities

国内示范运营最早的火炉城市武汉、海洋城市大连、寒冷城市长春、高原城市昆明、高温高湿城市海口、江南水城苏州等城市新能源车批量使用春兰动力电池极其管理系统。

Most HEV bus running at the first 13 demonstration cities such as Wuhan(hot weather), Dalian(Ocean climate), Changchun(cold weather),Kunming (Plateau climate), Haikou (hot and humid), and Suzhou, etc.were equipped with Chunlan power battery and its BMS.

春兰动力电池及其管理系统累计装车超过8000辆，单车最大运行里程超过70万公里，取得良好的节能减排效果。

More than 8000 HEV buses were equipped with Chunlan power battery and its management system. So far, one of the longest driving mileage of the HEV bus is over 700,000 km, energy-saving and emission-reduction were evidently verified.






CHUNLAN NEW ENERGY

国家新能源汽车示范城市推广应用

2 磁浮列车

Maglev train

十五、十一五、十二五期间，作为国内唯一配套研制单位，上海磁浮交通发展有限公司国产化高速磁浮列车和低速磁浮列车应用春兰镍氢电池，为磁浮国产化项目作出重要贡献。

During 10th & 11th & 12th five-year plan, Chunlan Ni/MH battery and its BMS were selected by Shanghai Maglev train Transportation Development Co., Ltd. as the one and only designated traction power supply for high-speed and low-speed maglev train.

3 电力储能电站

Electric energy storage power station

2008年国内第一个100KW级储能电站产品使用春兰动力电池，并在上海电力公司成功实现试运行，2010年通过国家电网验收，并在上海世博会上成功示范。

In 2008, the first 100kW energy storage power plant running at Shanghai Electricity Company was equipped with Chunlan power battery and its BMS. In 2010, it was successful debugged and merged into the national grid, and demonstration on the Shanghai World Expo.

4 矿用救生系统

Mine rescue system

2010年中煤科工集团井下逃生舱和避难舱后备电源采用春兰镍氢动力电池，并在重庆地区推广使用，获得全国多家矿井救生舱和避难硐研发单位选用。

In 2010, the backup power supply of underground refuge chamber and refuge cabin designed by Coal Science and Industry group was equipped with Chunlan Ni/MH batteries. So far, the rescue system had been widely used in the mining enterprises at Chongqing district. Meanwhile, Chunlan Ni/MH battery & its BMS were priority selected by other domestic mine rescue system R&D institutes.

CHUNLAN NEW ENERGY

5 AGV自动导引车、工业机器人

automatic guided vehicle(AGV), industrial robot

自2007年进口AGV车使用春兰动力电池替代进口镍氢电池、锂电池取得成功。

Since 2007, Chunlan power battery had been widely replaced the import Ni/MH and lithium-ion battery in AGV and industrial robot.

6 通信基站后备电源

back-up power supply for communication base station

春兰动力电池在电信、移动等通信基站后备电源行业中得到应用。

Chunlan power battery had been widely used in the telecommunications, mobile communications base station as back-up power supply.

7 太阳能风力发电储能系统

Solar energy and wind energy storage system

春兰动力电池在新能源发电储能系统中获得应用。

Chunlan power battery had been widely used in large-scale new energy storage system.

8 其他领域

Other application

春兰动力电池在军用等其它领域获得广泛应用。

Chunlan power battery had been widely used in military power supply and other field