CHUNLAN NEW ENERGY

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

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公司简介
Introduction

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 ISO9001:2015、IATF16949:2016 质量管理体系认证，主营业务为动力镍氢电源系统、动力锂离子电源系统、储能系统、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 ISO9001:2015 and IATF16949:2016 international quality management system. Its main business includes R&D, production and sales of nickel metal hydride power supply systems, lithium-ion power supply systems, energy storage systems, fuel cell systems and its embedded management software.

从 1995 年至今，已累计投资 10 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，300 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 车（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 1 billion RMB had been invested to R&D of high-energy power battery and industrial application, more than 10 experts and 300 engineers and senior engineers had been attracted to build up the domestic first automatic large-capacity 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 battery and its management system. The new developed traction power supply system products 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.

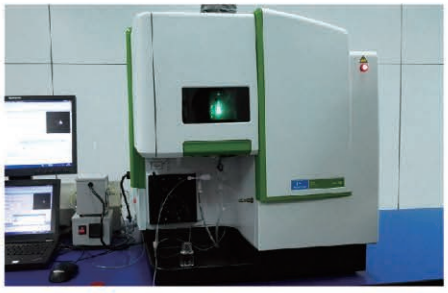
生产能力和科研装备
Production capacity and R&D equipment

经过二十年的潜心研究，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，年生产能力达到 20 亿瓦时。

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 (Ni-MH) 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 battery production line in the country had been set up to produce traction Ni-MH and lithium-ion batteries,and annual production capacity reaches 2 billion watthours.

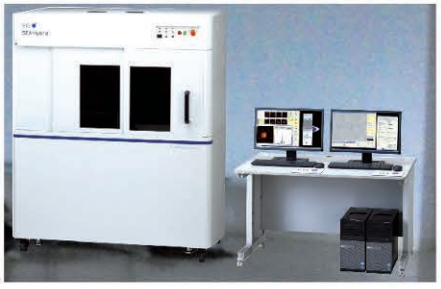
春兰大容量动力电池生产线

Chunlan large-capacity traction battery production line



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

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

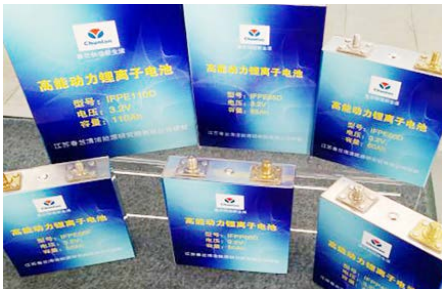
方型锂离子电池极片自动生产线

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.





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（磷酸铁锂）

High-power lithium-ion battery specification （lithium iron phosphate）

型号 Model	标称电压 Nominal voltage (V)	标称容量 Nominal capacity (Ah)	尺寸 高 x 宽 x 厚 Dimensions (mm) H*W*D	重量 Weight (kg)	比功率 Specific Power (W/kg)	循环寿命 Cycle life (Times)
IFPP42A	3.2	42	176 X 130 X 36	≤ 1.44	≥ 1500	≥ 3000
IFPP50	3.2	50	166 X 130 X 36	≤ 1.40	≥ 1500	≥ 3000
LFL160	3.2	60	207.6 X 130 X 36	≤ 1.62	≥ 1500	≥ 3000

能量型参数表（磷酸铁锂）

High-energy lithium-ion battery specification （lithium iron phosphate）

型号 Model	标称电压 Nominal voltage (V)	标称容量 Nominal capacity (Ah)	尺寸 高 x 宽 x 厚 Dimensions (mm) H*W*D	重量 Weight (kg)	能量密度 Energy Density (Wh/kg)	循环寿命 Cycle life (Times)
IFPE60D	3.2	60	161 X 130 X 36	≤ 1.47	≥ 136.00	≥ 3000
IFPE85D	3.2	85	207X 130 X 36	≤ 1.99	≥ 144.40	≥ 3000
IFPP92	3.2	92	207 X 174 X 27	≤ 2.15	≥ 140.37	≥ 3000
IFPE100	3.2	100	183 X 165 X 39	≤ 2.38	≥ 135.00	≥ 3000
IFPE110	3.2	110	231 X 165 X 39	≤ 2.82	≥ 126.56	≥ 3000
IFPE130	3.2	130	261 X 165 X 39	≤ 3.35	≥ 131.23	≥ 3000
IFPE160	3.2	160	207 X 174 X 48	≤ 3.54	≥ 149.66	≥ 3000
IFPE202	3.2	202	207 X 174 X 54	≤ 4.18	≥ 161.56	≥ 3000
IFPE240	3.2	240	207 X 174 X 72	≤ 5.20	≥ 150.18	≥ 3000
IFPE272	3.2	272	207 X 174 X 72	≤ 5.50	≥ 164.16	≥ 3000

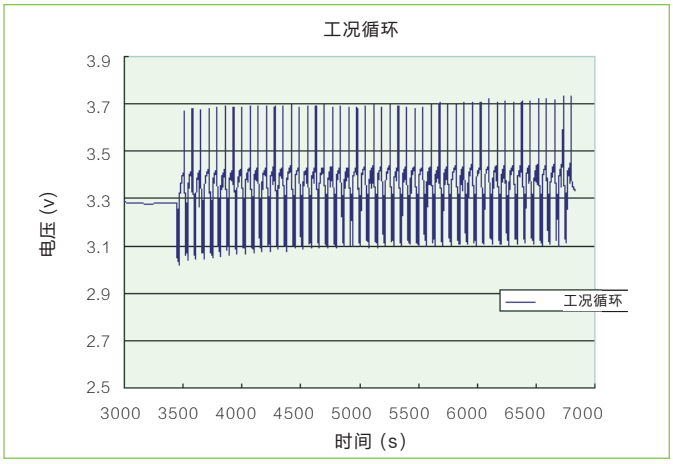
能量型参数表（三元锂）

High-energy lithium-ion battery specification （the ternary lithium）

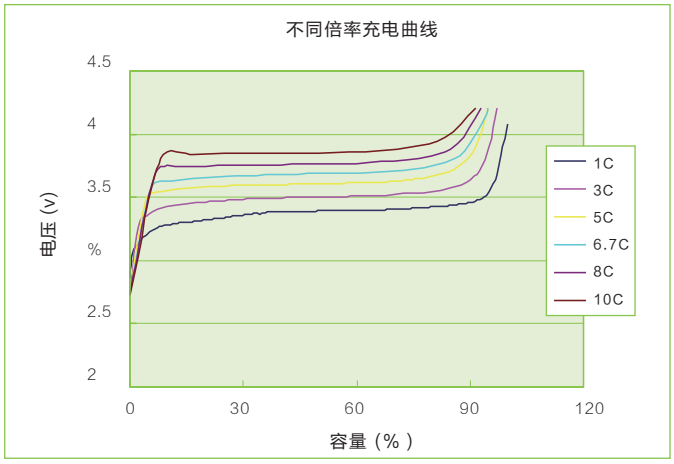
型号 Model	标称电压 Nominal voltage (V)	标称容量 Nominal capacity (Ah)	尺寸 高 x 宽 x 厚 Dimensions (mm) H*W*D	重量 Weight (kg)	能量密度 Energy Density (Wh/kg)	循环寿命 Cycle life (Times)
ITRE30	3.6	30	139 X 100 X 20.5	≤ 0.67	≥ 181.04	≥ 2000
ITRE40	3.6	40	97 X 148 X 26.5	≤ 0.84	≥ 180.12	≥ 2000
ITPE48	3.6	48	97 X 148 X 26.5	≤ 0.87	≥ 206.14	≥ 2000
ITPE60	3.6	60	119 X 148 X 26.5	≤ 1.09	≥ 210.23	≥ 2000

B、特性曲线 Performance Curve

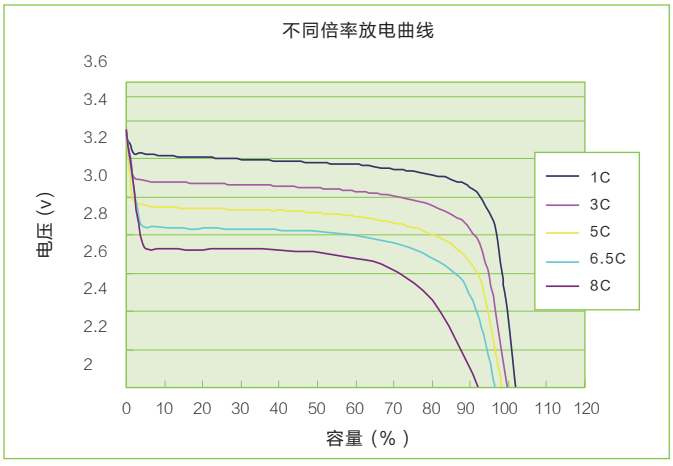
25℃条件下的模拟工况循环
Simulation cycle of lithium-ion battery at 25℃



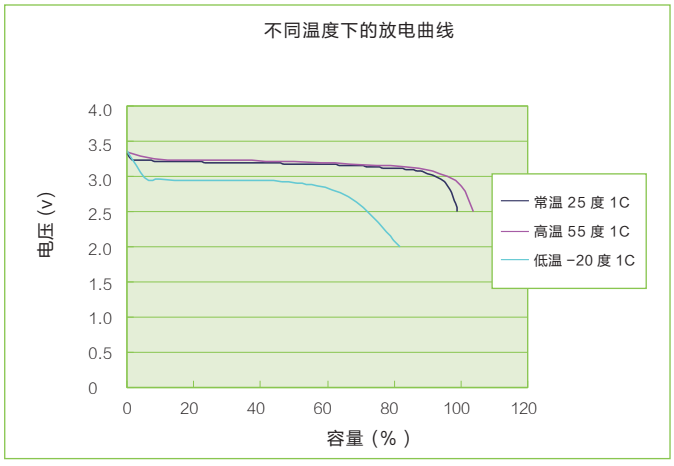
25℃条件下的不同倍率充电曲线
Different charge rate curve of lithium-ion battery at 25℃



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



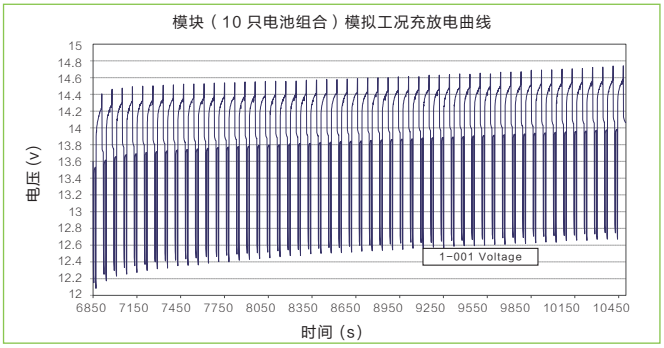
2 动力镍氢电池规格图表
Power nickel metal hydride battery specification

A、参数表 Parameters

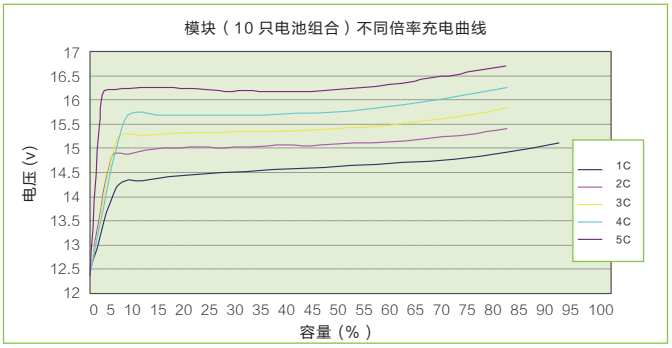
型号 Model	标称电压 Nominal voltage (V)	标称容量 Nominal capacity (Ah)	尺寸 高 x 宽 x 厚 Dimensions (mm) H*W*D	重量 Weight (kg)	比功率 Specific Power (W/kg)	循环寿命 Cycle life (Times)
QNFG40	1.2	40	157.5 X 82 X 27.5	≤ 1.06	≥ 900	≥ 1500
QNFG60	1.2	60	182 X 100.5X 29	≤ 1.62	≥ 700	≥ 1500
QNFG110	1.2	110	243 X 78 X 48	≤ 2.91	≥ 300	≥ 1500

B、特性曲线 Performance Curve

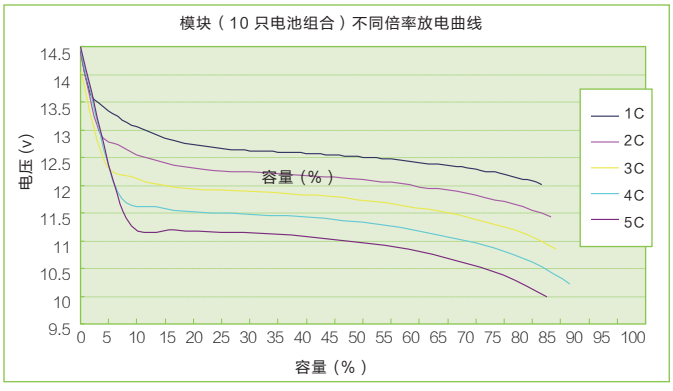
25℃条件下模块（10 只电池组合）的模拟工况循环
Simulation cycle of Ni/MH Module(10 cells in series) at 25℃



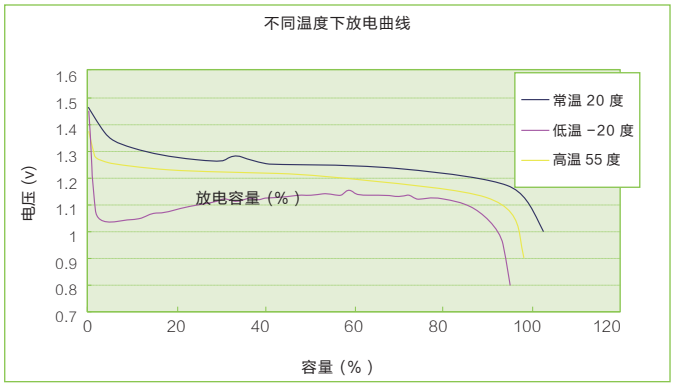
25℃条件下模块（10 只电池组合）的不同倍率充电曲线
Different charge rate curve of Ni/MH Module(10 cells in series)at 25℃



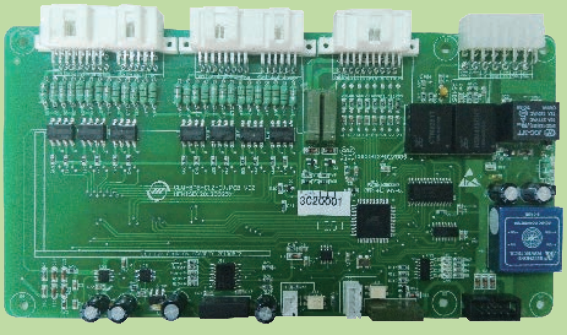
25℃条件下模块（10 只电池组合）的不同倍率放电曲线
Different discharge rate curve of Ni/MH Module(10 cells in series)at 25℃

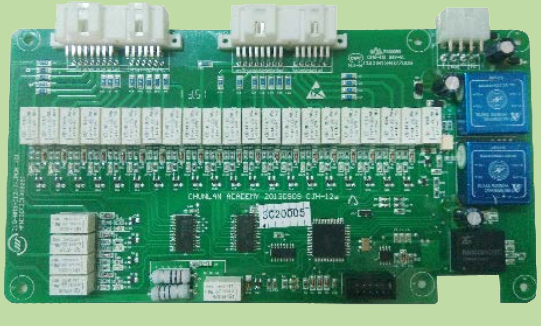


不同温度条件下的放电曲线
Discharge curve of Ni/MH battery at different temperature



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





- 实时监控功能，包括电池组及单体电池电压、电流、温度、电池组绝缘状态。进行电池系统荷电状态（SOC）和健康度（SOH）估算；
  The state of charge (SOC) and state of health(SOH) were estimated by real-time monitoring voltage, current, temperature and insulation state of cell and battery system.

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

- 自检功能；
  Self-diagnosis function.

- 蓄电池组的自动温控系统（风冷、液冷、电加热）；
  Battery automatic temperature control system(wind cooling，liquid cooling & electrical heating).

- 过压保护功能。
  Over-voltage protection.

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

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

- 通讯采用两级架构，三路 CAN 通讯方式；
  Two level CAN ,three-channel communication mode of BMS.

4 动力电源系统标准箱

Power supply system standard box

A、插电式标准箱配置表 PHEV standard pack configuration table

序号 No	型号 Model	标称电压 Nominal voltage (V)	标称容量 Nominal capacity (Ah)	标称能量 Nominal energy (kWh)	类 型 Type	尺寸（长x宽x高） Dimension L x W x H(mm)	单体电池型号 Cell model	最小模块型号 Minimum module model	电池成组方式 Battery connecting mode	冷却方式 Cooling mode	适用车辆类型 Applicable vehicle
1	C1S-128-84B2	128	84	10.78	C 箱	1060X630X230	IFPP42A	IFPP84B2	2P40S	液冷	插电式混合动力
2	C1S-128-100B2	128	100	12.8	C 箱	1060X630X230	IFPP50	IFPP100B2	2P40S		
3	C2S-256-60	256	60	15.36	C 箱	1060X630X240	LFL160	LFL160	1P80S		
4	C3S-269-92	268.8	92	24.73	C 箱	1060X630X240	IFPP92	IFPP92	1P84S		
5	B1S-179.2-92	179.2	92	16.49	B 箱	820X630X243	IFPP92	IFPP92	1P56S		
6	C4S-154-170B2	153.6	170	26.11	C 箱	1085X630X240	IFPE85D	IFPE170B2	2P48S		
7	C1F-147-84B2	147.2	84	12.36	非标	1100X688X256	IFPP42A	IFPP84B2	2P46S	风冷	
8	A1F-125-100B2	124.8	100	12.48	非标	1012X690X251	IFPP50	2IFPP50	2P39S		
9	B1F-256-60	256	60	15.36	非标	1016X774X278.5	LFL160	IFPP60	1P80S		
10	DYL352-100B2-A11-1	176	100	17.6	非标	1724X596X305	IFPP50	2IFPP50	2P55S		
11	DYL352-100B2-A11-2	176	100	17.6	非标	1724X596X305	IFPP50	2IFPP50	2P55S		

B、纯电动标准箱配置表 PEV standard pack configuration table

序号 No	型号 Model	标称电压 Nominal voltage (V)	标称容量 Nominal capacity (Ah)	标称能量 Nominal energy (kWh)	重量 Weight (kg)	能量密度 Energy density (Wh/kg)	类 型 Type	尺寸（长x宽x高） Dimension L x W x H(mm)	单体电池型号 Cell model	最小模块型号 Minimum module model	电池成组方式 Battery connecting mode	适用车辆类型 Applicable vehicle
1	C1-154-202	153.6	202	31.03	221	140.9	C 箱	1060X630X240	IFPE202	IFPE202	1P48S	非快充纯电客车
2	D1-144-202	144	202	29.09	207	141.46	D 箱	1010X630X240	IFPE202	IFPE202	1P45S	
3	D2-134-202	134.4	202	27.15	193.5	140.66	D 箱	1010X630X240	IFPE202	IFPE202	1P42S	
4	C1-115-272	115.2	272	31.33	222	140.98	C 箱	1060X630X240	IFPE272	IFPE272	1P36S	
5	D1-106-272	105.6	272	28.72	204	140.36	D 箱	1010X630X240	IFPE272	IFPE272	1P33S	
6	C1-259-85	259.2	85	22.03	195	120.44	C 箱	1060X630X230	IFPE85D	IFPE85	1P81S	
7	C1-86-255B3	86.4	255	22.03	196	120.01	C 箱	1060X630X230	IFPE85D	IFPE255B3	3P27S	
8	B1-64-255B3	64	255	16.32	150	116.08	B 箱	820x630x230	IFPE85D	IFPE255B3	3P20S	
9	C1-144-160	144	160	23.04	188	126.41	C 箱	1060X630X240	IFPE160	IFPE160	1P45S	
10	C1-115-240	115.2	240	27.65	215	127.09	C 箱	1060X630X240	IFPE240	IFPE240	1P36S	
11	B1-77-240	76.8	240	18.48	152	122.17	B 箱	820X630X245	IFPE240	IFPE240	1P24S	
12	DYLT144-120B3-A11	144	120	17.28	142.5	122.94	非标准箱	945X685X274	ITRE40	ITRE120B3	3P40S	纯电动乘用车
13	DIST-353-120B4	352.8	120	42.33	325	128.84	非标准箱	1408X1130X241	ITRE30	ITRE120B4	4P98S	纯电动物流车
14	DYLT364-120B2-A11	363.6	120	43.632	290	151.34	非标准箱	1462X1129X241	ITPE60	ITPE120B2	2P101S	

5 动力电源系统

Power supply system

A、系统特点 System Features

● 安全性 Safety

设计初期即进行尺寸优化、散热分析、防热失控管理，并在设计过程中进行随机振动、冲击、挤压等测试验证，以确保系统的使用安全。

At the beginning of the design,the size optimization,thermal analysis,thermal runaway control management were considered,and random vibration,impact,extrusion and other simulation test were verified to ensure the safety of the system.

● 可靠性 Reliability

从部件至电池系统，把握每一个零部件的安全可靠，以确保系统的安全可靠。

From the component to the battery system, each component was confirmed to ensure the safety and reliability of the system.

● 耐久性 Durability

使用专业评估软件对电池包进行寿命预测，测试结果为使用寿命可达 10 年以上。

Use the specialized software to evaluate life expectancy of the battery pack ,and the prediction results showed that service life could be up to 10 years.

● 轻量化 Lightweight

在确保结构件强度的情况下，最大限度减轻重量，去掉多余材料，精确计算使用材料分量，并通过仿真计算进行确认，以提高能量密度和续航里程。

In the case of ensuring the strength of structural members,the energy density and mileage were improved by minimizing weight,removing excess material,calculating material weight accurately, which was confirmed by simulating calculations.

B、典型应用 Typical applications

（1）插电式动力电源系统配置表 PHEV Power supply system configuration table

序号 No	电源系统型号 Power supply model	电池类型 Cell type	车辆类型 Vehicle type	标称能量 Nominal energy (kWh)	车长 (m) Vehicle length	单体电池型号 Cell model	最小模块型号 Minimum module model	标准箱配置 Standard pack configuration	标准箱型号 Standard pack model	标准箱尺寸 Standard pack dimension(LIWIH,mm)	标准箱重量 Standard pack weight (kg)	电池组合方式 Battery connecting mode	冷却方式 Cooling mode
1	DYL538-92-A11	磷酸铁锂	混合动力客车	49.46	10 米及 12 米	IFPP92	IFPP92	2 个 C 箱串联 +1 高压箱	C3S-269-92	1060X630X240	213	1P84S	液冷
2	DYL512-60-A11			30.72	8.5 米	LFL160	LFL160	2 个 C 箱串联 +1 高压箱	C2S-256-60	1060X630X240	210	1P80S	
3	DYL512-100B2-A11			51.2	10 米及 12 米	IFPP50	IFPP100B2	4 个 C 箱串联 +1 高压箱	C1S-128-100B2	1060X630X230	168	2P40S	
4	DYL307-170B2-A11			52.22	10 米及 12 米	IFPE85D	IFPE170B2	2 个 C 箱串联 +1 高压箱	C4S-154-170B2	1085X630X230	235	2P48S	
5	DYL512-60-B11			30.72	8-10 米	LFL160	IFPP60	2 个箱串联 +1 高压箱	B1F-256-60	1016X774X278.5	210	1P80S	风冷
6	DYL500-100B2-A11			49.92	10 米以上	IFPP50	2IFPP50	4 个箱串联 +1 高压箱	A1F-125-100B2	1012X690X251	190	2P39S	
7	DYL589-84B2-A11			49.46	10.5 米及 12 米	IFPP42A	IFPP84B2	4 个箱串联 +1 高压箱	C1F-147-84B2	1100X688X256	170	2P46S	
8	DYL294-168B4-A11			49.46	10.5 米及 12 米	IFPP42A	IFPP84B2	2 个箱串联再并联 +1 高压箱	C1F-147-84B2	1100X688X256	170	2P46S	
9	DYL352-100B2-A11			35.20	8-10 米	IFPP50	2IFPP50	2 个箱串联 +1 高压箱	DYL352-100B2-A11-1 DYL352-100B2-A11-2	1724X596X305	250	2P55S 2P55S	
10	DYL282-180B3-A11			50.69	10.5 米及 12 米	LFL160	IFPE180B3	4 个 B 箱串联 +1 高压箱	B1-70-180B3	820X630X240	123	3P22S	

（2）纯电动动力电源系统配置表 PEV Power supply system configuration table

序号 No	电源系统型号 Power supply model	电池类型 Cell type	车辆类型 Vehicle type	标称能量 Nominal energy (kWh)	车长 (m) Vehicle length	补贴系数 Subsidy coefficient	系统能量密度 System energy density (Wh/kg)	单体电池型号 Cell model	标准箱配置 Standard pack configuration	标准箱尺寸 Standard pack dimension (L x W x H,mm)			标准箱重量 Standard pack weight(kg)			电池组合方式 battery connecting mode		
										C 箱	D1 箱	D2 箱	C 箱	D1 箱	D2 箱	C 箱	D1 箱	D2 箱
1	DYL576-202-A11	磷酸铁锂	纯电动客车	116.35	8＜L≤10	1.2	140.66	IFPE202	4 个 D1 箱串联 +1 高压箱	—	1010X630X240	—	—	207	—	—	1P45S	—
2	DYL528-272-A11			143.62	L ＞ 10	1.2	140.36	IFPE272	5 个 D1 箱串联 +1 高压箱	—	1010X630X240	—	—	204	—	—	1P33S	—
3	DYL538-272-A11			146.23	L ＞ 10	1.2	140.36	IFPE272	1 个 C 箱 +4 个 D1 箱串联 +1 高压箱	1060X630X240	1010X630X240	—	222	204	—	1P36S	1P33S	—
4	DYL538-404B2-A11			217.19	L ＞ 10	1.2	140.66	IFPE202	4 个 D2 箱先串成组后两并共 8 箱 +1 高压箱	—	—	1010X630X240	—	—	193.5	—	—	1P42S
5	DYL605-404B2-A11			244.34	L ＞ 10	1.2	140.9	IFPE202	3 个 C 箱 +1 个 D1 箱先串成组后两并共 8 箱 +1 高压箱	1060X630X240	1010X630X240	—	221	207	—	1P48S	1P45S	—

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 listed in state-level key new product trial industrialization plans in 2002.

- 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 11 月，春兰“混合动力客车用动力电源系统”获“国家重点新产品”证书。2009 年 5 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。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 traction power supply system for hybrid electric bus was certificated as national key new product. In May 2009,Chunlan MH-Ni power supply system was selected as the first national independent innovation product list. In May 2010,Chunlan DY144-8 MH-Ni traction power supply system for hybrid electric car was certificated as national key new product,too.

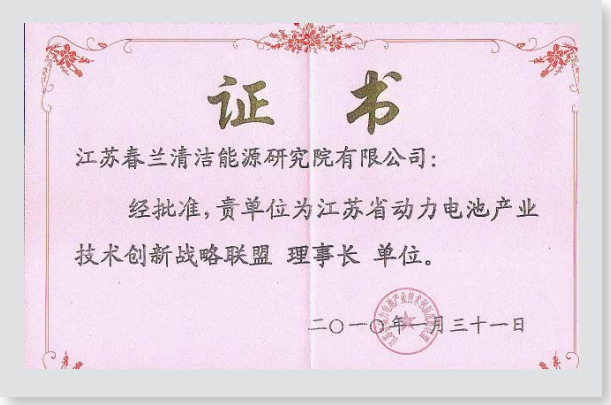

国 家 重 点 新 产 品
证 书


国家自主创新产品证书


国 家 重 点 新 产 品
证 书

- 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 Progress second prize.Chunlan was elected as the secretariat and chairman unit of Jiangsu Province power battery industry technological innovation strategic alliance.



- 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 maglev train, high power Ni-MH batteries, Ni-MH battery power supply system for automatic guided vehicle,were authorized hi-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”

- 2015 年，公司承担的项目“能量功率型动力锂离子电池及管理系统产业化”被列入国家火炬计划项目

  In 2015, the project“industrialization of energy-power type lithium ion battery and its management system”, which had been undertaken by Chunlan, was listed on the“State Torch plan”program.

- 2015 年，春兰两个产品“纯电动大客车用锂离子电池动力电源系统 DYL563-340B4”、“纯电动特种车用锂离子电池动力电源系统 DYL154-220B2”获省高新技术产品认定。

  In 2015,Chunlan "DYL 563-340B4 lithium-ion battery power supply system for pure electric bus", and "DYL154-220B2 lithium-ion batteries power supply system for special pure electric vehicle" were honored the provincial hi-tech products .

- 2015 年，春兰发明专利“一种用于电动汽车的动力电池管理系统”获第十七届中国专利优秀奖。

  In 2015, Chunlan patent "battery management system for electric vehicles" won the 17th China patent excellence award.

- 2015 年 6 月，春兰锂离子电池车间获“江苏省示范智能车间”认定

  In June 2015, Chunlan lithium-ion battery workshop was identified as "Jiangsu Province intelligent demonstration workshop".

- 2015 年 7 月，春兰公司当选为中国电池工业协会第七届理事会常务理事单位

  In July 2015, Chunlan was elected as the executive director of the 7th council of China Battery Industry Association .

- 2016 年，被评为江苏省规划布局内重点软件企业

  In 2016, Chunlan was awarded as key software enterprises in the planning and layout of Jiangsu.

- 2016 年，被评为江苏省高新技术企业

  In 2016, Chunlan was awarded as the hi-tech Enterprises of Jiangsu Province.

- 2016 年 3 月，春兰新能源汽车用高能锂离子电池动力电源系统关键技术与应用获得 2016 年度江苏省科学技术三等奖。

  In Mar. 2016, the key technolgy and application of high-energy lithium-ion battery power supply system for new energy vehicle were awarded the third prize of Science and Technology of Jiangsu Province.

- 2016 年 12 月，春兰牌动力电池获得江苏省名牌产品称号

  In Dec. 2016,Chunlan brand power battery was awarded as famous brand products in Jiangsu Province .

- 2017 年，“大容量三元锂电池及其管理系统关键技术研发”荣获江苏省机械工业科技进步二等奖。

  In 2017, "the key technology research and development of the large-capacity NCM lithium battery and its management system" won the second prize of Jiangsu provincial mechanical industry Science and Technology Progress.

- 2017 年 12 月，春兰荣获“区长质量奖”

  In Dec. 2017, Chunlan won the "district government quality award" .

- 2018 年，春兰承担“高安全长寿命客车动力电池系统技术”国家重点研发计划项目

  In 2018，Chunlan undertakes the national key research and development program of “high security long-life passenger vehicle power battery system technology”.

- 2018 年，春兰获得 ISO9001:2015 及 IATF16949:2016 质量管理体系复评认证证书、UL 认证证书、泰尔认证证书和国家矿用产品安全标志中心备案证书。

  In 2018, chunlan authorized the certificates of ISO9001:2015 and IATF16949:2016 quality management system, UL certification, TLC certificate and the national mine product safety mark center record certificate.

- 2018 年 7 月，春兰再次通过江苏省软件行业协会软件企业评估。
  In July 2018,Chunlan was authorized the software enterprise qualification by Jiangsu software industry association again.

- 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 authorized 73 patents , including 28 invention patents,and 9 software copyright.

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 月北京奥运会期间，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 buses 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”电动车示范 Clean-energy electric vehicle demonstration in 13cities

国家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及其管理系统。

Most HEV buses 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,ect.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 20000 辆，在全国 100 多个城市得到广泛的推广应用，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。

So far, more than 20,000 NEVs equipped with Chunlan power battery and its management system are running more than one hundred cities in China.The longest driving mileage of the NEV bus is over 700,000 km,and energy-saving and emission-reduction were evidently verified.

国家新能源汽车示范城市推广应用

National new energy automobile demonstration city popularization application

2 储 能

Energy storage

春兰电池在储能领域获得广泛应用。

Chunlan battery has been widely used in energy storage.

储能电站
Energy storage power station

1MWh 储能系统性能优势：

- 优异的循环寿命：在 DOD80% 每天充放电一次的情况下运行 8 年后，电池系统总容量不低于初始容量的 80%
- 充放电倍率 0.5C
- 优异的一致性性能
- 友好的调度：标准对外通讯协议，实现可靠对外通讯，友好调度
- 高集成度：以集装箱为载体，集 1MWh 电池系统、BMS、环境监控系统于一体
- 高度环境适应性，可实现在高海拔、极寒、风沙地区应用
- 稳定优异的安全性能

Characteristic of 1MWh energy storage system ：

- Excellent cycle life：the remaining capacity of the battery system is not less 80% capacity of the initial capacity after running eight years under 80% DOD cycles.
- The charging and discharging rate can be up to 0.5C.
- Excellent consistency performance.
- Friendly scheduling: standard external communication protocol can serve reliable external communication.
- High integration：1MWh battery system、BMS and environmental monitoring system are set in a container.
- High environmental adaptability can be applied in high altitude、extreme cold and wind sand area.
- Stable and excellent safety performance.

内容 Content	参数 parameter
标称容量 Nominal capacity	1MWh
电池模块 Battery module	6S3P
系统总串并数 Battery number in parallel or series for system.	192S15P
电池簇数 The battery number of clusters	5 簇 5 clusters
对外接口 External interface	高压航插 (1000VDC, 70mm^2) high voltage aeronautical plug (1000VDC, 70mm^2)
工作温度 Operating temperature	-40℃ ~60℃
对外通讯 External communication	RS485X2/CANX1/ Ethernet10/100M X1/RS232X1
工作电压 Operating voltage	489.6V-710.4V
充放电倍率 Charge and discharge rate	0.5C
电流采集精度 Current acquisition accuracy	≤ ±1%
温度采集精度 Temperature acquisition accuracy	±1℃
电压采集周期 Voltage acquisition period	≤ 100ms
电流采集周期 Current acquisition period	≤ 100ms
温度采集周期 Temperature acquisition period	≤ 100ms
历史数据存储 Historical data storage	≥ 30 天 more than 30 days

3 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 has been widely used in the telecommunications, mobile communications base station as back-up power supply.

4 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.

5 其他领域

Other application

春兰动力电池在军用、后备电源等其它领域获得广泛应用。

Chunlan power battery has been widely used in military, back-up power supply and other fields.

CHUNLAN NEW ENERGY

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