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# PLANNANO PRODUCT SOLUTIONS 新能源产品及解决方案

致力于成为干法电极和安全储能的引领者

TO BE A LEADER IN DRY ELECTRODE AND SAFE ENERGY STORAGE

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官网



公众号

Your Website Here

## 企业愿景

ENTERPRISE VISION

作为全球干法电极和安全储能的引领者。  
普兰将以干法电极、超级电容器、钛酸锂电池为基础，  
以全固态电池为突破，  
助力绿色发展，启航零碳未来。

As the global leader in dry electrodes and safe energy storage system,  
Plannano will utilize dry electrodes, Supercapacitor and LTO battery as the foundation,  
all-solid-state batteries as the breakthrough,  
to accelerate green development and set sail for a zero-carbon future.

# CATALOGUE

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# ABOUT PLANNANO

## 关于普兰

2 个

制造中心：天津、洛阳  
Manufacturing Center: Tianjin, Luoyang

6 个

销售中心：天津、深圳、洛阳、上海、加州、汉堡  
Sales Center: Tianjin, Shenzhen, Luoyang, Shanghai  
California, Hanburg

200+

合作客户  
Partner customers

100+

服务单位  
Service Enterprises

天津普兰纳米科技有限公司由国际著名纳米材料专家、南开大学陈永胜教授和解敏雨先生于2009年共同创建，下设普兰能源、普蓝储能、赛美科技三个全资子公司。公司致力于新型纳米材料在新能源领域的开发与应用，在干法电极制备、原位钛酸锂材料与全极耳电池制备、模组与储能系统集成、全固态锂离子及锂金属电池等领域具有突出的技术优势和丰富的工艺经验，并处于国际先进水平。

普兰拥有40,000平米生产厂房，600余名员工，其中：博/硕士60余人，本/专科300余人。公司具有材料、极片、单体、模组、系统等全产业链的开发、设计与生产能力，形成六大类主营产品，包括纳米材料、干法电极、超级电容器、钛酸锂电池、储能产品和充电桩，产品远销亚洲、欧洲、非洲、北美洲、南美洲、大洋洲等六大洲的50多个国家和地区，广受客户赞誉。



科技创造未来/实干成就事业

Science and Technology Bring a Promising Future  
Responsibility and Devotion Make a Great Enterprise



Tianjin Plannano Technology Co., Ltd. was co-founded in 2009 by internationally renowned nanomaterials expert, Professor Chen Yongsheng of Nankai University and Mr. Xie Minyu. Plannano has 3 wholly-owned subsidiaries: Plannao Energy, Pulan Energy Storage and SEMITECH. Our company is committed to the development and application of new nanomaterials in the field of new energy, and has four core technologies: dry electrode preparation, in-situ preparation of LTO material and all-tab battery preparation, module and system integration and all-solid-state lithium-ion and lithium-metal battery. In the fields of graphene, dry electrode, all-tab LTO battery, and energy storage system, Plannano has outstanding technical advantages and rich technique experience.

Plannano has a 40,000-square-meter manufacturing plant and more than 600 employees, with more than 60 doctoral/master's degrees and more than 300 undergraduate/junior college degrees. Plannano owns the development, design and production capabilities of the entire industrial chain of materials, electrodes, cells, modules, systems, etc., and has formed main products six categories, including nanomaterials, dry electrodes, supercapacitors, LTO batteries, energy storage products and charging pile, the products are exported to more than 50 countries and regions across six continents, including Asia, Europe, North America, South America, Oceania, and Africa, and are widely praised by customers.



普兰能源 PLANNANO ENERGY  
年产 AnnualCapacity : 100MWh, 1500000m<sup>2</sup>



普蓝储能 PULAN ENERGY STORAGE  
年产 AnnualCapacity : 3GWh



赛美科技 SEMITECH  
年产 AnnualCapacity : 10GWh

# HONORS & CERTIFICATIONS

## 荣誉资质

普兰积累了40余项授权专利及20多项受理专利，荣获国家级专精特新小巨人企业、国家高新技术企业、天津市企业技术中心等20余项荣誉称号，通过了“IATF16949质量管理体系认证”“ISO14000环境管理体系认证”“ISO45001职业健康安全管理体系认证”“两化融合管理体系认证”等多项体系认证，推动中国制造走向世界。

Plannano has accumulated more than 40 licensing patents, won more than 20 honorary titles such as National Little Giant Enterprise with High Market Share and Strong Innovation Capacity, National High-tech Enterprise, Tianjin Enterprise Technology Center, etc., and passed “IATF16949”, “ISO14001”, “ISO45001”, “integration of industrialization and industrialization management system certification”. Plannano aims to promote Made in China to the world.



**14** 项  
授权发明专利  
Licensing Invention Patents

**30** 项  
实用新型专利  
Licensing Utility Model Patents

**7%**  
科研占比投入  
R&D Expense Proportion

**6** 项  
参与标准制定  
Participate in Standard Setting

# CORE PRODUCTS

## 核心产品

### 覆盖储能全产业链的一体化研发制造能力

Integrated R&D and manufacturing capability covering the whole industrial chain of energy storage

普兰纳米已构建起完善的储能产品矩阵，具备完善的储能产品型谱，可以为客户提供全方位的新能源产品及解决方案。

Plannano has built a perfect energy storage product matrix, with a perfect energy storage product type spectrum, can provide customers with a full range of new energy products and solutions.



所有产品均可接受定制  
All products can be customized

## 纳米材料系列 NANOMATERIALS SERIES

核心产品 CORE PRODUCTS

### 石墨烯材料 GRAPHENE

#### 产品介绍 PRODUCT ADVANTAGES

石墨烯凭借其稳定的二维蜂巢状晶格结构，表现出极为优异的性能，被认为是未来革命性的材料，成为材料科学研究热点。普兰石墨烯产品适合用于导电膜、药物载体、复合材料，以及各种电子、光电路件的制备。

With stable two-dimensional honeycomb lattice structure, graphene has excellent performance, and it is considered to be a revolutionary material in the future and has become a hot spot in materials science research. Plannano's graphene products are suitable for the preparation of conductive films, drug carriers, composite materials, and various electronic and optical circuit components.

- 力学性能:** 强度高达130GPa, 同时具有良好的韧性, 可被拉伸至自身尺寸的120%;
- 热学性能:** 高达 5000 W/m·K 的热导率, 是室温下纯金刚石的3倍, 金属铜的12倍;
- 电磁性能:** 电子传输速度可达到光速的1/300, 具有量子霍尔效应及铁磁性等特殊性质;
- 高透光性:** 光子透过率高达 97.4%, 其理论比表面积高达 2630 m<sup>2</sup>/g。

**Mechanical Properties:** The strength is up to 130GPa, with good toughness, which can be stretched to 120% of its own size.  
**Thermal Properties:** The thermal conductivity is up to 5000 W/m·K, 3 times that of pure diamond at room temperature, 12 times that of metallic copper.  
**Electromagnetic Properties:** The electron transmission speed can reach 1/300 of the light speed, with quantum Hall effect and ferromagnetism.  
**High Light Transmittance:** The photon transmittance is up to 97.4%, and its theoretical specific surface area is up to 2630 m<sup>2</sup>/g.

#### 规格参数 SPECIFICATIONS

产品名称 PRODUCT NAME	型号 MODEL	规格参数 SPECIFICATIONS
单层石墨烯氧化物 Single-layer Graphene Oxide	Sgraphene-001	固体粉末, 纯度>99%, 厚度0.7-1.2nm, 在水和DMF中具有优良的溶解性, 金属含量<10ppm, 不溶性杂质<0.01% Solid powder, purity >99%, thickness 0.7-1.2nm, excellent solubility in water and DMF, etc., metal content < 10ppm, insoluble impurities < 0.01%.
单层石墨烯 Single-layer Graphene	Sgraphene-002	固体粉末, 纯度>99%, 层厚0.7-1.2nm, 金属含量<10ppm Solid powder, purity >99%, layer thickness 0.7-1.2nm, metal content < 10ppm
单层石墨烯氧化物水溶液 Aqueous Solution of Single-layer Graphene Oxide	Sgraphene-010	浓度2mg/ml, 厚度0.7-1.2nm, 保证溶液稳定性一年以上 The concentration is 2mg/ml, and the thickness is 0.7-1.2nm, which ensures the solution is stable for more than one year.
单层石墨烯水溶液 Aqueous Solution of Single-layer Graphene	Sgraphene-030	浓度1mg/ml, 厚度0.7-1.2nm, 保证溶液稳定性一年以上 The concentration is 1mg/ml, and the thickness is 0.7-1.2nm, which ensures the solution is stable for more than one year.
寡层石墨烯 Few-layer Graphene	Sgraphene-070	固体粉末, 纯度>99%, 85%为2-4层, 厚度1-3nm, 在水和DMF中具有优良的溶解性, 金属含量<10ppm, 不溶性杂质<0.01% Solid powder, purity > 99%, 85% is 2-4 layers, thickness 1-3nm, excellent solubility in water and DMF, etc., metal content < 10ppm, insoluble impurities < 0.01%



### 钛酸锂粉料 LTO MATERIAL

#### 产品介绍 PRODUCT ADVANTAGES

钛酸锂是一种具有稳定致密结构的尖晶石型材料, 是目前最具应用前景的锂电池负极材料之一。普兰经过石墨烯改性及微纳结构设计, 降低了表面活性, 减小了产气, 保证了高温长寿命。

LTO material is a spinel-type material with a stable and dense structure, and is one of the most promising anode materials for lithium batteries. After graphene modification and micro-nano structure design, its surface activity and gas generation are reduced to ensure long life at high temperature.

- 高安全:** 不产生锂枝晶, 热稳定性好;
- 长寿命:** 零应变, 结构稳定;
- 高倍率:** 具有高的锂离子扩散系数(2 \*10<sup>-8</sup> cm<sup>2</sup>/s), 充电倍率可达10C以上;
- 耐宽温:** 可以在-50°C~65°C之间正常充放电。
- High Safety:** No dendrites, good thermal stability.
- Long Cycle Life:** Zero strain, stable structure.
- High C:** High lithium-ion diffusion coefficient (2 \*10<sup>-8</sup> cm<sup>2</sup>/s), charging rate can reach more than 10C.
- Wide Working:** Temperature Range: It can be charged and discharged normally between -50°C~65°C..

#### 规格参数 SPECIFICATIONS

型号 MODEL	LTO-G2
振实密度 (g/cm <sup>3</sup> ) Tap Density	1.3±0.3
pH值 PH	10.5±0.5
比表面积 (m <sup>2</sup> /g) Specific Surface Area	3.5±0.5
粒度分布D50 (μm) Particle Size Distribution D50	13±3
0.5C可逆容量 (mAh/g) 0.5C Reversible Capacity	≥163
首次效率 (%) 1st Efficiency	≥95



## 干法电极系列 DRY ELECTRODE SERIES

核心产品 CORE PRODUCTS





## 干法电容电极 DRY CAPACITOR ELECTRODE


### 产品介绍 PRODUCT ADVANTAGES

基于自主知识产权，采用无溶剂加工技术，具有水分含量低，压实密度高、存储容量大、功率密度高、循环寿命长、自放电率低、耐高温高湿的特点，性能处于国际领先水平，且成本低于湿法。


Based on independent intellectual property rights and solvent-free processing technology, the dry electrode has the characteristics of low moisture content, high compaction density, large storage capacitance, high power density, long cycle life, low self-discharge rate, high temperature and high humidity resistance. The performance is at the international leading level, and the cost is lower than that of wet electrode.

 循环寿命：提升100%  
Cycle life: Improve100%


 使用温度：可扩宽至-55~85°C  
Working Temperature: It can be widened to -55 ~ 85 °C

 功率密度：提升35%  
Power density: Improve35%

 使用湿度：可达85%  
Working Humidity: up to 85%

 能量密度：提升30%  
Energy density: Improve30%

 绿色环保：无VOC排放  
Green and environmental protection: No VOC emission

 占地面积：减少70%  
Covered area: Improve100%

### 规格参数 SPECIFICATIONS

型号 MODEL	PL-AAD-22900-135	PL-AES-23400-250
产品系列代码 Electrode Type Code	AA系列 AA Series	AE系列 AE Series
极片类型 Electrode Type	高循环系列 High Cycle Life Series	高循环系列 High Cycle Life Series
料区宽度 (mm) Width of the Coated Area	229	234
单边留白宽度 (mm) Width of the Tab	0	0
极片厚度 中值 (μm) Thickness of the Electrode	135	250
产品特点 Features	循环寿命好 Long Cycle Life	性价比高 High Cost-effectiveness
参考极片容量 (F/m <sup>2</sup> ) Capacitance of the Double-layer Capacitor for Reference	单面：7685，双面：15370 Single face: 7685, Double faces: 15370	单面：暂无，双面：15330 Single face: Not yet, Double faces: 15330




型号 MODEL	PL-PMS-05715-250	PL-ABD-22900-125
产品系列代码 Electrode Type Code	PM系列 AA Series	AB系列 AE Series
极片类型 Electrode Type	高循环系列 High Cycle Life Series	高容量系列 High Capacity Series
料区宽度 (mm) Width of the Coated Area	57	229
单边留白宽度 (mm) Width of the Tab	15	0
极片厚度 中值 (μm) Thickness of the Electrode	250	125
产品特点 Features	性价比高 High Cost-effectiveness	容量发挥高 High Capacity
参考极片容量 (F/m <sup>2</sup> ) Capacitance of the Double-layer Capacitor for Reference	单面：6940，双面：13880 Single face: 6940, Double faces: 13880	单面：9040，双面：18080 Single face: 9040, Double faces: 18080

## 干法超级电容器系列 DRY SUPERCAPACITOR SERIES

核心产品 CORE PRODUCTS

### 单体 CELL

#### 产品介绍 PRODUCT ADVANTAGES

-  自产干法电极;  
Utilizing Self-produced dry electrode.
-  较传统电容器, 能量密度超出10%;  
Compared with traditional capacitors, the energy density exceeds 10%.
-  长寿命, 大于100万次;  
Long life, more than 1 million times.
-  在高温高湿条件下, 直流寿命大于1500小时;  
Under high temperature and high humidity conditions, the DC life is longer than 1500 hours.
-  适用于3.0V及以上高压电容器。  
Suitable for 3.0V and above high voltage capacitors.



#### 规格参数 SPECIFICATIONS

型号 Model	PLUC1500C3R00WLA	PLUC3000C3R00WLA	PLUC3400C3R00WLA
额定容量 (F) Rated Capacitance	1500	3000	3400
容量允许偏差 Capacitance Tolerance	0~20%	0 ~ 20%	0~10%
最大连续电流 (A) Max. Continuous Current	( $\Delta T=15^{\circ}C$ )	103	146
	( $\Delta T=40^{\circ}C$ )	169	238
最大等效直流电阻 (m $\Omega$ ) Max. Equivalent DC Resistance	0.3	0.2	0.2
最大漏电流 (mA) Max. Leakage Current	8	12	12
最小储存能量 (Wh) Energy Storage	1.88	3.75	4.25
最大可用比功率 (kW/kg) Max. Usable Specific Power	10.9	9.4	9.4
最大阻抗匹配功率密度 (KW/Kg) Max. Impedance Match Specific Power	25.1	23.8	24
重量 (g) Weight	320 $\pm$ 5	525 $\pm$ 6	520 $\pm$ 6

### 模组 MODULE


#### 产品介绍 PRODUCT ADVANTAGES

-  高功率、低内阻和长使用寿命;  
High power, low resistance and long service life.
-  防护等级IP65;  
IP65 protection level.
-  主动/被动均衡装置, 并可配置过压或过温报警装置。  
Active/passive equalization device and can be equipped with over-voltage or over-temperature alarm.
-  金属外壳, 具有良好的防护功能;  
Metal shell, with good protection function.

#### 规格参数 SPECIFICATIONS

型号 Model	PLUC16V500F-K10	PLUC48V165F-K10
产品外观 Product Appearance		
组合方式 Combination Mode	1P6S	1P18S
尺寸 (L*W*H, mm) Size	418*69*180	418*194*180
重量 (Kg) Weight	6.0 $\pm$ 0.2	15.0 $\pm$ 0.5
工作电压范围 (V) Operatig Voltage Range	0~16.2	0~48.6
最大连续电流 ( $\Delta T=40^{\circ}C$ ) (A) Max. Continuous Current	199	163
最大峰值电流 (1s) (A) Max. Peak Current (1s)	1951	1990
最大储存能量 (Wh) Max. Storage Energy	17.8	52.8
单体规格 (V/F) Cell Specifications	2.7 / 3000	2.7 / 3000
工作温度 ( $^{\circ}C$ ) Operating Temperature	-40~65	-40~65
循环寿命 (次) Cycle Life (Cycles)	100万 1 Million	100万 1 Million

规格参数 SPECIFICATIONS

型号 Model	PLMC0188CO-0054R0A	PLMC0005C8-0160R0A
产品外观 Product appearance		
标称容量 (F) Nominal Capacitance	188	5.8
标称容量公差 Nominal Capacity Tolerance	0%~10%	0%~20%
标称电压 (V) Nominal Voltage	54	160
浪涌电压 (V) Surge Voltage	56.7	168
等效串联内阻 (mΩ) ESR	≤6	≤200
最大连续电流 (ΔT=40°C) (A) Max. Continuous Current	163	13
最大峰值电流 (1s) (A) Max. Peak Current (1s)	1990	214
单体规格 (V/F) Cell Specifications	3.0 / 3400	2.7 / 350
组合方式 Combination Mode	1P18S	1P60S
最大储存能量 (Wh) Max. Storage Energy	4.2	20.6
工作温度 (°C) Operating Temperature	-40~65	-40~65
循环寿命 (次) Cycle Life (cycles)	100万 1 Million	100万 1 Million
防护等级 Protection Level	IP65	IP30
重量 (Kg) Weight	≤15	6.0±0.15
尺寸 (L*W*H) (mm) Size	418x194x180	367x235x80

规格参数 SPECIFICATIONS

型号 Model	PLMC0010C0-0160R0A	PLMC0012C5-0170R0A
产品外观 Product appearance		
标称容量 (F) Nominal Capacitance	10	12.5
标称容量公差 Nominal Capacity Tolerance	0%~20%	0%~20%
标称电压 (V) Nominal Voltage	160	170
浪涌电压 (V) Surge Voltage	168	175
等效串联内阻 (mΩ) ESR	≤150	≤200
最大连续电流 (ΔT=40°C) (A) Max. Continuous Current	13	40
最大峰值电流 (1s) (A) Max. Peak Current (1s)	368	276
单体规格 (V/F) Cell Specifications	2.7 / 600	2.7 / 800
组合方式 Combination Mode	1P60S	1P64S
最大储存能量 (Wh) Max. Storage Energy	36	50.17
工作温度 (°C) Operating Temperature	-40~65	-40~65
循环寿命 (次) Cycle Life (cycles)	50万 500 Thousand	100万 1 Million
防护等级 Protection Level	IP20	IP20
重量 Weight (Kg)	≤12	≤8.4
尺寸 (L*W*H, mm) Size	428x90x300	528x270x90



## 钛酸锂电池系列 LTO BATTERY SERIES

核心产品 CORE PRODUCTS



### 产品介绍 PRODUCT ADVANTAGES

基于自主知识产权的钛酸锂材料技术和高能单体技术，普兰率先解决了钛酸锂高温产气的行业难题，开发出具备优异性能和超高性价比的产品。技术先进，工艺简单，成本低廉。

Based on the LTO material technology and high energy density cell technology with independent intellectual property rights, Plannano took the lead in solving the industry problem of gas generation at high-temperature of LTO battery, and has developed products with excellent performance and cost effectiveness. Advanced technology, simple process and low cost.

- 高安全 High Safety**  
不析锂，热稳定性好，实现本征安全  
No dendrite, good thermal stability, intrinsic safety
- 长寿命 Long Cycle Life**  
使用寿命超过20年  
Cycle life more than 20 years
- 高倍率 High Rate**  
6分钟充满，6分钟放空  
Fully charged in 6 min, completely discharged in 6 min
- 耐宽温 Wide Working Temperature**  
可在-50~65°C反复充放电  
It can be charged and discharged repeatedly at -50~65°C
- 再利用 Recycle**  
电芯再利用率 > 97%  
Recycling rate of the cell > 97%

## 2.4V系列 2.4V SERIES

### 规格参数 SPECIFICATIONS

型号 Model	18650CA-1500mAh	18650CB-1500mAh	
标称容量 (Ah) Nominal Capacity	1.5	1.5	
标称电压 (V) Nominal Voltage	2.4	2.4	
充放电电压范围 (V) Charging and Discharging Voltage Range	1.5~2.7	1.5~2.7	
尺寸 (mm) Size	直径 Diameter	18.5±0.2	18.5±0.2
	总高 Height	65.5±0.5	65.5±0.5
内阻@1kHz (mΩ) ESR @ 1kHz	≤25	≤15	
标称能量 (Wh) Nominal Energy	3.6	3.6	
能量密度 (Wh/kg) Energy Density	85.7	85.7	
最大持续放电电流 (A) (≥95%) Max. Constant Discharging Current	6	7.5	
最大充电电流 (A) Max. Charging Current	6	7.5	
最大放电电流 (A) Max. Discharging Current	12	12	
低温放电效率 (1C) Low Temperature Discharge Efficiency (1C)	-40°C	≥70%	≥70%
	-20°C	≥80%	≥80%
常温循环寿命@80% Normal Temperature Cycle Life@80%	≥8000	≥12000	
工作温度 (°C) Operating Temperature	充电 Charge	-50~65	-50~65
	放电 Discharge	-50~65	-50~65
重量 Weight (g)	42±2	42±2	

## 2.4V系列 2.4V SERIES

### 规格参数 SPECIFICATIONS

型号 Model		60138MSTA-24Ah	60138CSTA-30Ah	60165CSTB-40Ah	66160CSTE-45Ah
标称容量 (Ah) Nominal Capacity		24	30	40	45
标称电压 (V) Nominal Voltage		2.4	2.4	2.4	2.4
充放电电压范围 (V) Charging and Discharging Voltage Range		1.5~2.8	1.5~2.8	1.5~2.9	1.5~2.9
尺寸 (mm) Size	直径 Diameter	60.5±0.3	60.5±0.3	60.5±0.3	66.0±1.0
	总高 Height	146.5±0.3	146.5±0.3	193.6±0.3	209.5±1.0
内阻@1kHz (mΩ) ESR @ 1kHz		≤0.45	≤0.35	≤0.3	≤0.3
标称能量 (Wh) Nominal Energy		57.6	72	96	108
能量密度 (Wh/kg) Energy Density		72	85.7	91.4	86.4
最大持续放电电流 (A) (≥95%) Max. Constant Discharging Current		120	240	320	360
最大充电电流 (A) Max. Charging Current		144	360	480	900
最大放电电流 (A) Max. Discharging Current		240	600	800	1350
低温放电效率 (1C) Low Temperature Discharge Efficiency (1C)	-40°C	≥50%	≥80%	≥80%	≥80%
	-20°C	≥70%	≥85%	≥85%	≥85%
常温循环寿命@80% Normal Temperature Cycle Life@80%		≥20000	≥15000	≥25000	≥30000
工作温度 (°C) Operating Temperature	充电 Charge	-50~65	-50~65	-50~65	-40~60
	放电 Discharge	-50~65	-50~65	-50~65	-40~60
重量 Weight (g)		805±10	840±10	1050±12	1250±12

## 2.3V系列 2.3V SERIES

### 规格参数 SPECIFICATIONS

型号 Model		60138XWLB-24Ah	60165XWLC-35Ah
标称容量 (Ah) Nominal Capacity		24	35
标称电压 (V) Nominal Voltage		2.3	2.3
充放电电压范围 (V) Charging and Discharging Voltage Range		1.5~2.7	1.5~2.7
尺寸 (mm) Size	直径 Diameter	60.5±0.3	60.5±0.3
	总高 Height	146.5±0.3	171.6±0.3
内阻@1kHz (mΩ) ESR @ 1kHz		≤0.3	≤0.3
标称能量 (Wh) Nominal Energy		55.2	80.5
能量密度 (Wh/kg) Energy Density		65	76
最大持续放电电流 (A) (≥95%) Max. Constant Discharging Current		192	210
最大充电电流 (A) Max. Charging Current		480	700
最大放电电流 (A) Max. Discharging Current		720	1050
低温放电效率 (1C) Low Temperature Discharge Efficiency (1C)	-40°C	≥45%	≥45%
	-20°C	≥60%	≥60%
常温循环寿命@80% Normal Temperature Cycle Life@80%		≥30000	≥30000
工作温度 (°C) Operating Temperature	充电 Charge	-50~65	-50~65
	放电 Discharge	-50~65	-50~65
重量 Weight (g)		830±10	1012±15

## 储能系列 ENERGY STORAGE SERIES

核心产品 CORE PRODUCTS



### 钛酸锂家庭储能 LTO Home Energy

#### 产品介绍 PRODUCT ADVANTAGES

普兰户用储能系统产品为家庭能源储存、绿色环保生活提供更好的能源解决方案。产品采用先进的电池技术，可搭配混网、离网、光储逆变器，光伏组件等组成智能能源管理系统，保证了电池的高能量密度和长寿命。

Plannano household energy storage system products provide better energy solutions for household energy storage and green and environmentally friendly living. The product adopts advanced battery technology and can be combined with hybrid, off grid, photovoltaic inverters, photovoltaic modules, etc. to form an intelligent energy management system, ensuring the high energy density and long service life of the battery.

- |   |   |
|---|---|
| <p> <b>智能长寿 Intelligent and Long-lived</b></p> <ul style="list-style-type: none"> <li>- LTO 电池系统，确保 30 年以上超长使用寿命</li> <li>- 云端技术加持，远程运维维护与监控</li> <li>- LTO battery system to ensure over 30 years long life</li> <li>- Cloud technology support, remote Operation Maintenance and monitoring</li> </ul>   | <p> <b>安全放心 Safety</b></p> <ul style="list-style-type: none"> <li>- 纳米钛酸锂材料，高安全、长寿命、耐宽温、快充放</li> <li>- 多重安全设计，户用使用更安全</li> <li>- Nano-LTO material, high safety, long life, wide temperature resistance, fast charge and release</li> <li>- Multiple safety design, more safe for user</li> </ul>  |
| <p> <b>应急备电 Emergency Power Reserve</b></p> <ul style="list-style-type: none"> <li>- 可在-50-65°C反复充放电</li> <li>- 快速充电，可在30分钟充满</li> <li>- 断网时，可用储存电量供电保证供电不间断</li> <li>- Can be charged and discharged repeatedly at -50-65°C</li> <li>- Fast Charging, can be charged in 30 minutes</li> <li>- When the power network is cut off, the power supply can be guaranteed by the stored power supply</li> </ul> | <p> <b>安装简易 Easy installation</b></p> <ul style="list-style-type: none"> <li>- 模块化设计，便于电池替换和系统增补扩容</li> <li>- Modular design to facilitate battery replacement and system expansion</li> </ul> <p> <b>节能环保 Energy Saving and environmental protection</b></p> <ul style="list-style-type: none"> <li>- 存储太阳能、风能，清洁环保</li> <li>- Storage of solar and wind energy, clean and environmentally friendly</li> </ul> |

#### 规格参数 SPECIFICATIONS

型号 Model	PL-LTO-LV 5800
额定容量 (KWh) Rated Capacity	5.76
组合方式 Combination Mode	3P20S
额定电压 (V) Rated Voltage	48
工作电压范围 (V) Operating Voltage Range	42~58
额定充放电电流 (A) Rated Charge and Discharge Current	100
额定充放电功率 (KW) Rated Charge and Discharge Power	5
工作温度范围 (°C) Operating Temperature Range	-40~60
相对湿度 (%) Relative Humidity	0-95%
最高工作海拔 (m) Max. Working Altitude	4,000
循环寿命 (次) Cycle Life (cycles)	25,000
通讯方式 Communication Mode	RS485 / CAN
安装方式 Installation Mode	竖高堆叠 Stack Vertically
重量 (Kg) Weight	91 (About)
尺寸 (H*W*T) (mm) Size	(620×650m×225) ±3



## 电池模块 BATTERY PACK

### 产品介绍 PRODUCT ADVANTAGES

可采用磷酸铁锂电池、钛酸锂电池及超级电容器进行独立或混合设计，配置 BMS 采集模块 BMU，用于模组的电压、温度等参数采集。电池组采用模块化设计，便于搬运、安装、维护。符合标准GB\_T 36276-2023, UN38.3。

LFP battery, LTO battery and supercapacitor can be used for independent or hybrid design, configuration of BMS acquisition module BMU for module voltage, temperature and other parameters acquisition. The battery pack is Modular design for easy handling, installation and maintenance. Comply with standard GB 36276-2023, UN38.3.

#### 可靠性 Reliability

- 严格按照UL认证标准设计和选型
- 可兼容高海拔设计
- 防呆、防接反设计，放心安装运维
- 两级短路保护，分级快速限流
- Designed and selected in accordance with UL standard
- Compatible with high altitude design
- Anti-gawking, anti-connection anti-design, safe installation and operation
- Two-stage short-circuit protection, grading fast current limit

#### 兼容性 Compatibility

- 按1500V系统设计，兼容1000V系统
- 采用内置BMS，降低工艺成本
- According to 1500V system design, compatible with 1000V system
- Using built-in BMS, reduce process costs

#### 可维护性 Maintainability

- BMS嵌入式设计，拆卸维护方便
- 模组间的通讯线采用标准网线，便于插拔
- BMS embedded design, easy to disassemble and maintain
- Module communication line using standard network cable, easy to plug

### 规格参数 SPECIFICATIONS

型号 Model	1P16S	1P24S	1P52S	1P104S
散热方式 Heat Dissipation Mode	风冷 Air-cooled	风冷 Air-cooled	液冷 Liquid-cooled	液冷 Liquid-cooled
标称电压 (V) Nominal Voltage	51.2	76.8	166.4	332.8
最小工作电压 (V) Min. Operating Voltage	43.2	64.8	140.4	280.8
最大工作电压 (V) Max. Operating Voltage	57.6	86.4	187.2	374.4
额定容量 (Ah) Rated Capacity	280	280	280/314	280/314
额定电量 (KWh) Rated Electricity	14.336	21.504	46.592/52.2496	93.184/104.4992
循环寿命 (次) Cycle Life (Cycles)	6000	6000	6000	6000
自放电率 Self-discharge Rate	≤3%/月(Month)	≤3%/月(Month)	≤3%/月(Month)	≤3%/月(Month)
连续充放电电流 Continuous Charge-discharge Current	0.5P	0.5P	0.5P	0.5P
工作温度 (°C) Operating Temperature	充电：0 ~ 55 放电：-20 ~ 55 Charge: 0 ~ 55 discharge: -20 ~ 55			
绝缘等级 Insulation Grade	阻值>500MΩ @1000VDC Resistance>500MΩ @1000VDC			
防护等级 Protection Level	IP2X	IP2X	IP67	IP67
尺寸 (W*D*H, mm) Size	471*810*240	491*1060*230	790*1133*245	790*2188*247
重量(Kg) Weight	114	165	340	670



## 光储微电网户外柜 Outdoor PV-Storage Integrated Cabine

### 产品介绍 PRODUCT ADVANTAGES

有效整合分布式电源、储能设备、转换设备、监控保护设备以及负荷等进行整体设计，可建设柔性负荷占比超高、可长期独立运行的100%新能源新型电力系统，通过新能源独立组网及源网荷储协同控制等技术，实现新能源高效利用及消纳。

Effective integration of distributed power supply, energy storage equipment, conversion equipment, monitoring and protection equipment and load for overall design, it can build a new 100% new energy power system with super high proportion of flexible load and long-term independent operation. It can realize efficient utilization and consumption of new energy by independent networking of new energy and load storage and coordination control of source and network.

#### 稳定可靠 Stability and Reliability

支持精细化充电管理，支持恒功率/恒流、恒压充电；  
恒流充电时，恒流恒压分段充电过程自动切换；恒功率充电时，恒功率恒压分段充电过程自动切换；  
恒流充电时，稳流精度≤2%；恒压充电时，稳压精度≤1%。  
Supporting fine charge management of batteries, supporting constant power/constant current and constant voltage charging; automatic switching of constant current and constant voltage sectional charging process when constant current charging;  
Automatic switching of constant power and constant voltage sectional charging process when constant power charging; automatic switching of constant power and constant voltage sectional charging process when constant power charging;  
When charging at constant current, the accuracy of current stabilization is less than 2%, and when charging at constant voltage, the precision of voltage stabilization is less than 1%.

#### 智能控制 Intelligent Control

能够对光伏和储能能量自动调控，实现光伏能量首先向负载供电，多余能量向蓄电池充电，保证电能利用率最高；  
先进的 MPPT 算法，跟踪效率高；  
支持并离网两种运行模式，并可实现并离网无缝切换。  
The system can automatically regulate the photovoltaic and energy storage energy, realize that photovoltaic energy first supplies power to the load, and the excess energy charges to the battery to ensure the highest utilization rate of photovoltaic energy.  
Advanced MPPT algorithm, high tracking efficiency.  
Supporting grid and off-grid two operating modes, and can achieve grid and off-grid seamless switching.

### 规格参数 SPECIFICATIONS

型号 Model	60KW/115KWh	100KW/215KWh
<b>电网/柴油机侧参数</b> Grid/Diesel Side Parameters		
额定功率 (KW) Rated Power	60	100
最大输出功率 (KW) Max. Output Power	70	110
电网电压 (Vac) Grid Voltage	400	400
电源频率 (Hz) Power Frequency	50	50
<b>电池系统</b> Battery System		
标称容量 (Ah) Nominal Capacity	150	280
系统能量 (KWh) System Energy	115.2	215.04
标称电压 (Vdc) Nominal Voltage	768	768
工作电压范围 (Vdc) Operating Voltage Range	648~864	648~864
<b>光伏系统</b> PV System		
最大输入功率 (KW) Max. Input Power	70	100
输入电压范围 (Vdc) Input Voltage Range	200~700	200~700
MPPT路数 The Number of MPPT Routes	2	2
<b>系统参数</b> System Parameters		
冷却方式 Cooling Method	风冷 Air-cooled	风冷 Air-cooled
防护等级 Protection Level	IP54	IP54
海拔高度 Altitude	> 2000m 降额 > 2000m Reduction	> 2000m 降额 > 2000m Reduction
整机重量 (Kg) Overall Weight	≈ 1800	≈ 3600
尺寸 (W*H*D, mm) Size	1600*2200*1200	1800*2400*1400



## 工商业储能 INDUSTRIAL & COMMERCIAL ENERGY STORAGE

### 产品介绍 PRODUCT ADVANTAGES

可采用磷酸铁锂电池、钛酸锂电池及超级电容器进行独立或混合设计，发挥不同电芯的性能优势。配置3S管理系统，支持多台并联，容量配置灵活；具备离网独立运行功能。

LFP batteries, LTO batteries, and Supercapacitors can be used for independent or mixed design to leverage the new energy advantages of different battery cells. Configure a 3S management system that supports multiple parallel connections and flexible capacity configuration; Capable of independent operation from the network.

**高精智能 High precision & intelligence**  
满足智能电网设计规范；  
集成本地控制器，实现统一调度管理，单机系统可独立进行削峰填谷；  
具备PQ、VF、SVG等功能，支持微电网独立运行；  
户外型设计，防护等级IP54。  
Meet smart grid design specifications;  
Integrate the local controller to achieve unified dispatch management, and the stand-alone system can independently perform peak shaving and valley filling;  
Equipped with PQ, VF, SVG and other functions to support independent operation of microgrid;  
Outdoor design, protection grade IP54.

**灵活便捷 Flexible and Convenient**  
交流侧PCS采用模块化设计，安装、维护便捷；  
支持多台PCS交流并联运行，配置方案更加灵活。  
The communication side PCS adopts a modular design, which is easy to install and maintain;  
Support for more flexible configuration schemes for multiple PCS AC parallel operation.

**高效集成 Efficient integration**  
系统集成度高，集成电池系统、交流系统、温控系统消防系统，数据监控系统等；  
一体化集装箱式储能系统设计，方便运输，施工简单安装成本低。  
High system integration, integrating battery system, AC system, temperature control system, fire protection system, data monitoring system, etc.;  
Integrated container-type energy storage system design is convenient for transportation, simple construction, and low installation cost.

**高效转换 Efficient conversion**  
智能温控系统，提高系统效率和电池循环寿命；  
具备双向变流，充电具备恒流、恒压、恒功率模式。  
Intelligent temperature control system to improve system efficiency and battery cycle life;  
It has bidirectional current conversion, and charging has constant current, constant voltage and constant power modes.

### 规格参数 SPECIFICATIONS

型号 Model	100K/215A-L	100K/215A-H	100K/215L-L	100~125K/ 232~261L-H
<b>电池参数 Battery Parameters</b>				
标称容量 Nominal Capacity (Ah)	280	280	280	280/314
组合方式 Combination Mode	1P24S	1P16S	1P48S	1P52S
额定容量 (kWh) Rated Capacity	215.04	215.04	215.04	232.96/261.248
额定电压 (V) Rated Voltage	768	768	768	832
电压范围 (V) Voltage Range	648~864	648~864	648~864	702~936
<b>并/离网参数 Grid-connected / Off-line Parameters</b>				
额定功率 (kW) Rated Power	100	100	100	100/125
最大功率 (kVA) Max. Power	110	110	110	110/137.5
额定电压 (V) Rated Voltage	400	400	400	400
额定频率 (Hz) Rated Frequency	50	50	50	50
<b>系统参数 System Parameters</b>				
消防形式 Fire Fighting Methods	气溶胶/全氟己酮 Aerosol/Perfluorohexanone		全氟己酮 Perfluorohexanone	
冷却方式 Cooling Method	风冷 Air-cooled		液冷 Liquid-cooled	
温度范围 (°C) Temperature Range	-20~50			
通讯方式 Communication Method	CAN/485/LAN			
消防等级 Fire Rating	IP54			
海报高度 Altitude	≤2000m (> 2000m 降额) ≤2000m (> 2000m Reduction)			
整机重量 (Kg) Overall Weight	< 3000			
尺寸 (W*H*D, mm) Size	1500*2050*1455	1500*2400*1100	1550*2100*1400	1000*2300*1350



## 大型储能 LARGE-SCALE ENERGY STORAGE

### 产品介绍 PRODUCT ADVANTAGES

采用集装箱一体化设计，将储能电池簇、电池汇流柜、储能变流器、变压器、配电柜等设备集成在集装箱内。

By container integrated design, energy storage battery clusters, battery confluence cabinets, energy storage converters, transformers, power distribution cabinets and other equipment are integrated into the container.

#### 稳定可靠 Stability and Reliability

BMS、EMS联动，支持多重保护；  
软-硬件双重保障，通讯、供电环路冗余设计；  
全面的故障诊断功能，满足快速、灵敏、可靠性要求；  
BMS and EMS linkage supports multiple protections;  
Software-hardware dual guarantees, redundant design of communication and power supply loops;  
Comprehensive fault diagnosis functions to meet fast, agile and reliable requirements.

#### 简单便捷 Simple and Convenient

模块化设计，即插即用，安全可靠；预装式设计，便于运输，减少现场安装工时。  
Modular design makes maintenance simple and convenient, plug-and-play, safe and reliable; pre-assembled design facilitates transportation and reduces on-site installation man-hours.

#### 配置灵活 Flexible Configuration

单套储能系统能量2MWh~7MWh，配置灵活可调，适用于各种应用场景；  
The energy of a single energy storage system is from 2MWh to 7MWh. The configuration is flexible and adjustable, and it is suitable for various applications.

#### 智能控制 Intelligent Control

智能热管理系统，温度差可小于3°C；智能预警及消防设计；智能监控，减少人工巡检次数。  
Intelligent thermal management system to achieve the temperature difference less than 3°C; intelligent early warning and fire protection design; intelligent monitoring to reduce manual inspections.

#### 一体设计 Integrated Design

逆变升压一体化设计，电池系统1500V一体化设计；  
Inverter and voltage boost integrated design, battery system 1500V integrated design.

### 规格参数 SPECIFICATIONS

型号 Model	PLSF0280C0-6709R0A	PLPF0314C0-1331R2A
组合方式 Combination Mode	1P416S, 18簇	1P416S, 12簇
尺寸 (W*H*D, mm) Size	12192*2438*2896	6050*2438*2896
重量 (T) Weight	76	45
额定能量 (MWh) Rated Energy	6.709	5.015
额定电压 (V) Rated Voltage	1331.2	1331.2
环境温度 (°C) Ambient Temperature	-30~60	-30~60
通讯方式 Communication Method	RS485/CAN/Ethernet	RS485/CAN/Ethernet
冷却方式 Cooling Method	液冷 Liquid-cooled	液冷 Liquid-cooled

型号 Model	PLSF0280C0-3354R0A	PLPF0220C0-1331R2A
组合方式 Combination Mode	1P416S, 9簇	1P416S, 9簇
尺寸 (W*H*D, mm) Size	6058*2438*2896	6085*2438*2896
重量 (T) Weight	35	28
额定能量 (MWh) Rated Energy	3.354	2.635
额定电压 (V) Rated Voltage	1331.2	1331.2
环境温度 (°C) Ambient Temperature	-30~60	-30~60
通讯方式 Communication Method	RS485/CAN/Ethernet	RS485/CAN/Ethernet
冷却方式 Cooling Method	液冷 Liquid-cooled	液冷 Liquid-cooled

## 智能充电桩系列 SMART CHARGING PILE SERIES

核心产品 CORE PRODUCTS



### 7KW交流充电桩 7KW AC CHARGING PILE

#### 规格参数 SPECIFICATIONS

型号 Model	SMT-A1G7TE(欧标Euro)/SMT-A1G7T(国标National Standard)
电气指标 Electrical Indicators	
输入电压 (V) Input Voltage	AC220 ± 20%
交流频率 (Hz) AC Frequency	50 / 60 ± 10%
单路最大输出功率 (A) Max. output power of single circuit	32
额定功率 (KW) Rated Power	7
环境指标 Environmental Indicators	
工作温度 (°C) Operating Temperature	-25~50
防护等级 Protection Grade	IP54
充电接口 Charging Interface	单枪满足国标GB/T 20234.2 Single gun to meet the national standard GB/T 20234.2
保护功能 Protection Function	
安全 Safety	充满自停、输入过/欠压、过载、过流、短路、漏电等保护功能 Protection function Full self-stop, input over/under voltage, overload, overcurrent, short circuit, leakage, etc. Overload, overcurrent, short circuit, leakage and other protection functions

## 直流一体式充电桩 DC INTEGRATED CHARGING PILE

#### 产品介绍 PRODUCT ADVANTAGES

基于自有运营服务平台，提供研发、设计、制造及一体化解决方案，可满足各种定制化需求。

Based on our own operational service platform, we provide solution including R&D, design, manufacturing to meet various customized needs.

- 环保节能 Energy Saving
- 经济高效 Economically efficient
- 充电智能分配 Intelligent charging allocation
- 超低功耗 Ultra low power consumption



#### 规格参数 SPECIFICATIONS

型号 Model	60kw/80kW	120kW/160kW	240kW	360kW
输入电压 Input Voltage	三相380Vac Three-phase 380Vac			
输入电流 (A) Input Current	<110/140	<220/280	<500	<660
交流输入频率 (Hz) AC Input Frequency	40~65	40~65	40~65	40~65
功率因数 PF	≥0.99	≥0.99	≥0.99	≥0.99
额定输出功率 (KW) Rated Output Power	80	160	240	360
输出电压 (可定制) Output Voltage (Customizable)	200VDC~750VDC	200VDC~750VDC	200VDC~750VDC /1000VDC	200VDC~750VDC
输出电流 (可定制) (A) Output Current (Customizable)	≤90/120	≤180/240	≤500	≤500
稳压精度 Precision of Voltage Regulation	≤+1%	≤+1%	≤+1%	≤+1%
稳流精度 Steady current accuracy	≤+1%	≤+1%	≤+1%	≤+1%
效率 Efficiency	≥95%	≥95%	≥95%	≥95%
工作环境温度 (°C) Operating Temperature Range	-25~50	-25~50	-25~50	-25~50
充电接口 Charging Interface	单枪/双枪 (支持双枪同功率自行分配) Single gun/Double gun (supports self distribution of dual guns with the same power)			
防护等级 Protection Grade	IP54			
保护功能 Protection Function	输入过压/欠压, 输出过压、过流、过温、短路、漏电防雷、急停等保护功能 Input over-voltage/under-voltage, Output over-voltage, over-current, over-temperature, short circuit, lightning protection, emergency stop and other protection functions			



# FIELDS OF APPLICATION

## 应用领域

### 储能应用

Energy Storage

发电侧调峰、调频  
电网侧调峰、调频  
工商业储能  
火电调频

Peak regulation and frequency regulation on the power generation side / grid side  
Commercial and industrial energy storage system  
Thermal power frequency modulation



### 风光发电

Power Generation

风机变桨后备电源  
分布式风光储一体化系统电源  
塔筒升降机动力电源

Wind turbine pitch backup power  
Distributed wind-solar-storage integrated system power supply  
Tower elevator power supply



### 电力应用

Electricity

DTU/FTU电源  
通讯基站电源  
智能电表后备电源

DTU/FTU power supply  
Power supply for communication base stations  
Smart meter backup power



### 交通运输

Transportation

地铁能量回收  
专用运输车动力电源  
燃料电池配套电源

Subway energy recovery  
Power supply for special transport vehicle  
Fuel cell supporting power supply

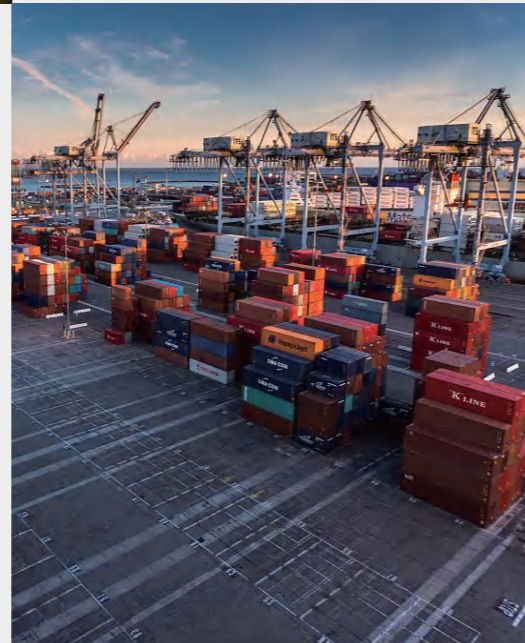


### 石油和天然气

Petroleum

钻井平台压裂作业储能系统  
天然气设备供电电源  
加油站工商业储能系统

Energy storage system for fracturing operations on drilling platforms  
Natural gas equipment power supply  
Industrial and commercial energy storage system at gas station



### 其他应用

Others

高寒启动电源  
能量回收电源  
天然气监测仪器电源  
高寒照明电源  
矿井电源

Starting power supply in alpine and cold areas  
Energy recovery power  
Power supply for natural gas monitoring instruments  
Lighting power supply for alpine and cold areas  
Power supply for the mine

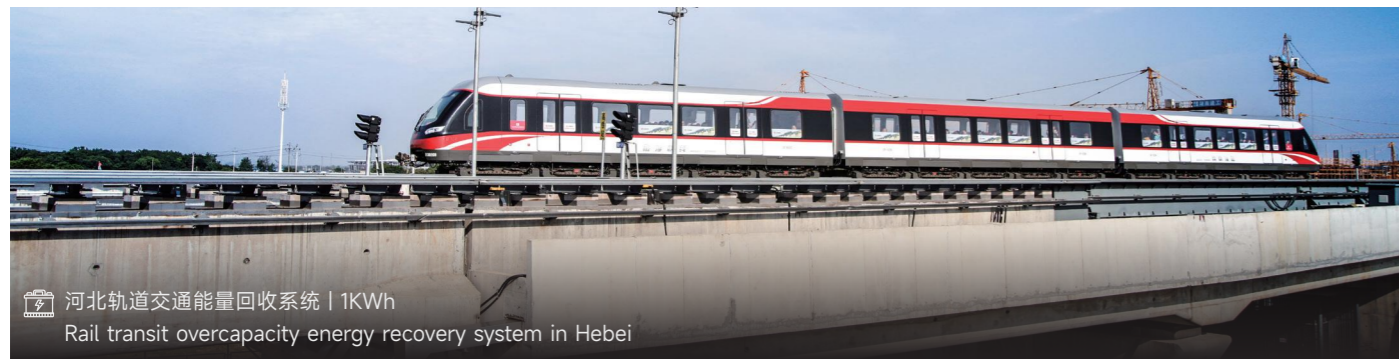


# TYPICAL CASES

## 典型案例

### 超级电容器项目 SUPERCAPACITOR PROJECT

典型案例 TYPICAL CASES



## 钛酸锂电池项目 LTO BATTERY PROJECT

典型案例 TYPICAL CASES



## 工商业储能项目 C&I ENERGY STORAGE PROJECT

典型案例 TYPICAL CASES



湖南工商业储能项目 | 300KW/645KWh  
C&I Energy Storage Project in Hunan



苏北油田储能项目 | 200KW/1118KWh  
Oil Field Energy Storage Project in North Jiangsu



广州工商业储能项目 | 500KW/1075KWh  
C&I Energy Storage Project in Guangzhou



河南矿用设备储能应急电源示范项目 | 500KW/1000KWh  
Mine Equipment Energy Storage Emergency Power project



广东工商业储能项目 | 300KW/645KWh  
C&I Energy Storage Project in Guangdong



湖北产业园工商业储能项目 | 500KW/1000KWh  
C&I Energy Storage Project in industrial parks in Hubei



河南光伏储能示范项目 | 1500KW/3000KWh  
Photovoltaic Energy Storage Demonstration Project in Henan



甘肃钻井大功率绿色储能电驱压裂项目 | 5.6MW/5.6MWh  
Drilling high-power energy storage electric drive fracturing project

## 大型储能项目 LARGE-SCALE ENERGY STORAGE PROJECT

典型案例 TYPICAL CASES



中石油玉门油田项目  
Yumen oilfield project of Petrochina

该项目是玉门油田玉门东镇200MW光伏发电项目配套40MW/80MWh储能系统，位于甘肃省酒泉市玉门市玉门东镇，为酒泉市“十四五”第一批光伏配储项目。

The project is a 200MW photovoltaic power generation project with a 40MW 80MWh energy storage system in Dongzhen town, Jiuquan, Gansu Province. It is one of the first batch of photovoltaic distribution and storage projects in Jiuquan during the 14th five-year plan period.



四川光伏配储项目 | 50MWh  
PV distribution and storage project in Sichuan



河南风电配储项目 | 70MWh  
Wind power distribution and storage project in Henan



新疆风光配储项目 | 150MWh  
Wind power and photovoltaic storage projects in Xinjiang



宁夏共享储能电站 | 200MWh  
Shared power station project in Ningxia



贵州共享储能电站 | 200MWh  
Shared power station project in Guizhou



新疆储能电站 | 315MWh  
Energy storage power station in Xinjiang

## 智慧光储充一体项目

# SMART PHOTOVOLTAIC ENERGY STORAGE AND CHARGING INTEGRATED PROJECT

典型案例 TYPICAL CASES



地面光伏电站 Ground Photovoltaic Power Station    1000KWh储能系统 1000KWh Energy Storage System    120KW直流充电桩 120kW DC Charging Pile    7KW交流充电桩 7KW AC Charging Pile

[凌波科创园] 充电站，位于洛阳市，占地约 8000平米，设置有200个标准停车位，拥有 1000KWh 移动式离网储能系统一台自建 230KW 地面光伏发电站，采用“自发自用，余电上网”。项目配套有洗车场、司机休息室、便利店等服务功能为一体的新能源智能化充电站。

The charging station, located in Luoyang, covers an area of about 8,000 square metres, has 200 standard parking spaces, 1000KWh Mobile off-grid energy storage system, a self-built 230KW ground photovoltaic power station, use "Spontaneous self-use, surplus electricity online". Project supporting a car wash, driver's lounge, convenience store and other services for the integration of new energy intelligent charging station.

## 光储充一体解决方案 Integrated Solution for Optical Storage and Charging

立体车库、广告屏 (LCD显示、灯箱显示) 路灯深度集成解决方案  
Stereoscopic garage, advertising screen (LCD display, lightbox display), street lights, deep integration solution

**集中式充电站:** 由交流充电，一体式和分体式直流快速充电桩组成，是城市充电网络的重要组成部分。适宜部署公交车站、出租车休息点、大型停车场、加油站等需要集中快速充电区域。

**分散式充电站智能停车场:** 主要集中在城市小区停车场、商场停车场、路边空地、高速公路等区域。通过云平台及运营管理系统实现设备管理计费计量、支付结算、用户管理、集中监控等功能。

**细分解决方案:** 智能运营系统、低功耗配套服务平台、APP+微信客户端。

**Centralized charging station:** by AC charging, one-piece and split-type DC quick charging pile composition, is an important part of the urban charging network. Suitable for the deployment of bus stations, taxi rest points, large car parks, gas stations and other need to focus on rapid charging area.

**Distributed charging station smart car park:** mainly concentrated in the urban community car park, shopping mall car park, roadside open space, highway and other areas. Through the cloud platform and Operation Management System to achieve equipment management billing measurement, payment and settlement, user management, centralized monitoring and other functions.

**Segmentation solutions:** intelligent operation system, low-power supporting service platform, APP+ wechat client.

电池成本下降，市场容量爆发；电池梯度利用，开发电池的剩余使用价值。

The battery cost drops, the market capacity explodes; the battery gradient utilization, develops the battery residual use value.

削峰填谷，通过电价差异削减电费开支。

Cut Peak fill valley, through the difference in electricity prices to reduce electricity costs.

可参与主网调节，增强电网运行可靠性。

Can participate in the main network regulation, enhance the reliability of power grid operation.

有效利用光伏发电，可并网运行，可脱离电网运行，提高供电灵活性与可靠性。

Effectively utilizing photovoltaic power generation, capable of grid connected operation and off grid operation, improving power supply flexibility and reliability.

减少电网侧配电容量，充电站电力扩容。接入功率范围大，设计灵活，可提供应急供电。

Reduce the distribution capacity of the grid side, charging station power capacity expansion. Access Power Range, flexible design, can provide emergency power supply.

光储充一体化设计，能量智能调度，为电动汽车提供可靠和智能化的充电服务。

Integrated design of optical storage and charging, intelligent scheduling of energy for electric vehicles to provide reliable and intelligent charging services.

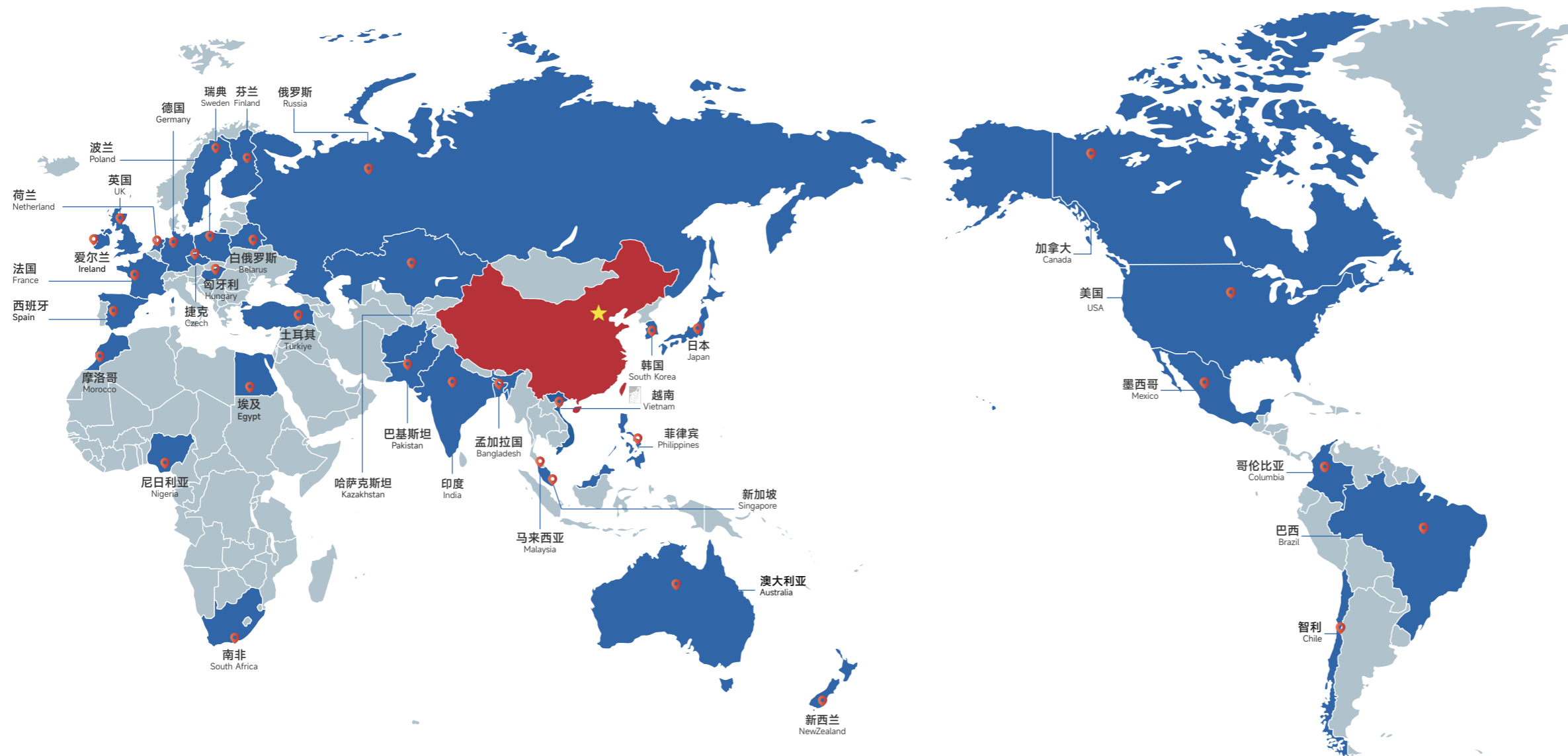
# COOPERATIVE PARTNERS

## 合作伙伴



# BUSINESS DISTRIBUTION

## 业务分布



- 📍 **母公司 Parent Company**  
 普兰纳米 Plannano
- 📍 **子公司 Subsidiary Company**  
 普兰能源 Plannano Energy  
 普蓝储能 Pulan Energy Storage  
 赛美科技 SEMITECH
- 📍 **研发中心 R&D Center**  
 天津 Tianjin
- 📍 **制造中心 Manufacturing Center**  
 天津 Tianjin, 洛阳 Luoyang
- 📍 **销售中心 Sales Center**  
 天津 Tianjin, 深圳 Shenzhen, 洛阳 Luoyang  
 上海 Shanghai, 加州 California, 汉堡 Hamburg
- 📍 **海外仓 Overseas Warehouse**  
 北美 North America