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LiFePO₄ Batteries for Aerial Work Platforms

Drop-in Lithium-ion
for Lead-acid
Alternatives



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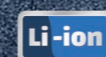
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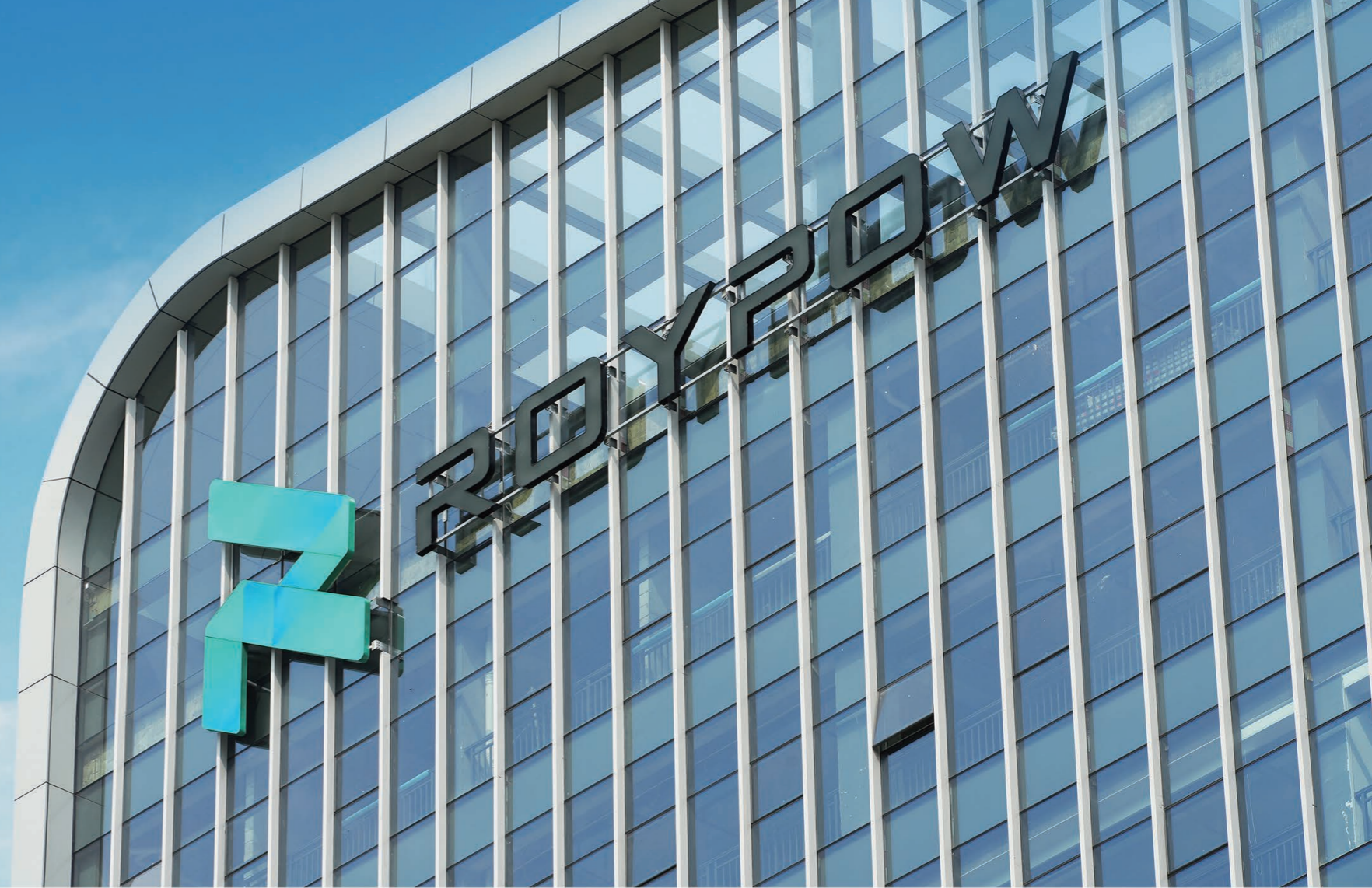
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ROYPOW

For One-stop New Energy Solutions

- R&D, manufacturing and sales of motive power systems and energy storage systems as one-stop solutions
- Fully automatic production lines, a full range of test equipment and an advanced MES
- Covering Low-Speed Vehicles' Batteries, Industrial Batteries, as well as Residential ESS, Commercial & Industrial ESS, and Mobile ESS
- Self-development of power electronics technologies, including PCS, BMS, and EMS



750+ Employees
190+ R&D People
105,000 m² Headquarters Floor Area
2,500 m² Testing Center
171 Patents

Quality Control Certificates:

- ✓ Environmental Management System: ISO 14001:2015
- ✓ Occupational Health and Safety Management System: ISO 45001:2018
- ✓ Quality Management System: ISO 9001:2015, IATF16949:2016
- ✓ Information Security Management System: ISO/IEC 27001:2022
- ✓ Social Accountability Management System: SA8000:2014
- ✓ Hazardous Substance Process Management: IECQ QC 080000



Product Certifications:

UL 1973, UL 9540A, UL 9540, UL 2580, UL 2271, UL 1741			FCC, IEC/EN 61000-6, BS EN IEC 61000-6
IEEE 1547			IEC 60730, ISO 13849-1
IEC 62619			UN 38.3
EN 62477, EN 62040, (EU) 2023/1542, EN 62109-1, EN 62109-2			RoHS Directive 2011/65/EU & (EU) 2015/863

R&D and Manufacturing Highlights

As a result of these investments, ROYPOW is capable of "end-to-end" integrated delivery, making our products out-perform the industry norms.

- Fully Automatic Production Lines
- BMS, PCS, EMS All Designed in House
- All-round Testing
- Advanced MES System

Global Sales and Service Network

- Timely Delivery
- Hassle-free After-sales Service
- Fast Response Technical Support

ROYPOW has comprehensively unfolded its overseas market layout to ensure the localization of R&D, manufacturing, marketing and service, becoming one of your most reliable and valuable partners.



Upgrading to New Technology, with Our Turnkey Solutions.

With years of dedication to new energy solutions, we are proud to offer customers professional solutions for:

- Low-speed Vehicle Batteries
- Battery Systems for Off-highway Applications
- Residential Energy Storage Systems
- Mobile Energy Storage Systems
- Industrial Batteries
- Battery Systems for Emerging Applications
- Commercial & Industrial Energy Storage Systems
- Chargers



New Technology. Create Great Value for Your Business

Converting from lead-acid to lithium-ion is easy and cost-effective and increases the productivity of the fleets and the operator.



Benefits of Lithium-ion Batteries

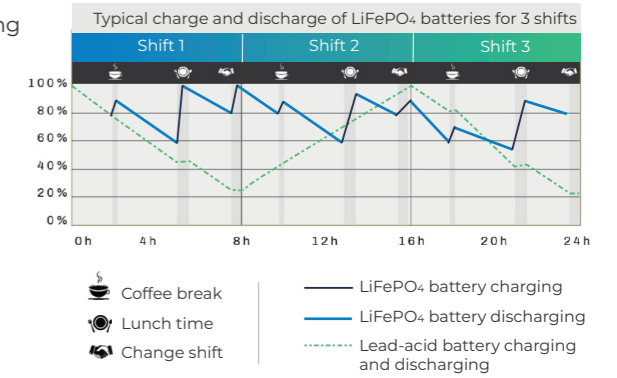


Lead-acid	LiFePO4 battery	
<p>3 years design life</p>	<p>up to 10 years design life</p> <p>Longer life 3 to 4 times lead-acid lifespan</p>	<ul style="list-style-type: none"> ✓ Reduces overall battery investment ✓ Eco-friendly ✓ Minimize the need for spares
<p>Frequent maintenance</p>	<p>0 maintenance no need for regular filling of distilled water and electrolyte</p> <p>No maintenance</p>	<ul style="list-style-type: none"> ✓ No regular filling of distilled water ✓ Saving costs on labor and maintenance ✓ Less unplanned downtime and improved productivity ✓ No frequent battery replacements
<p>1-2 years warranty</p>	<p>Extended warranty bring you peace of mind</p> <p>5 years warranty</p>	<ul style="list-style-type: none"> ✓ Durable and reliable ✓ Reduces maintenance and labor costs ✓ Quality guarantee

Reduce Downtime, Increase Equipment Availability

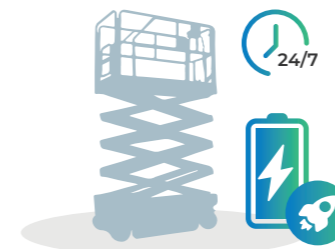
In day-to-day operations, the battery can be charged even during short breaks, such as taking a rest or changing shifts, effectively increasing productivity.

- ✓ Reduces the need for a full charge every time.
- ✓ Eliminates the need for frequent time-consuming battery swaps.
- ✓ Eliminates the risk of battery-changing accidents.
- ✓ Opportunity charge during breaks, lunch and at shift changes. Charge anytime equipment is not in use.



Rapid Charging

Whether you have a single-shift or a large fleet working 24/7, fast charge is one of the most important advantages.



TIPS

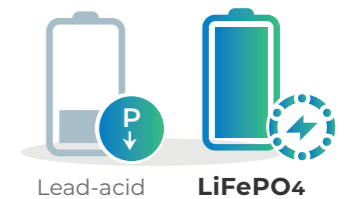
Why choose LiFePO4 batteries for Aerial Work Platforms?

There are a few lithium-ion chemistries to choose from. ROYPOW uses LFP or Lithium Iron Phosphate, one of the most thermally stable and safe lithium-ion chemistries for Aerial Work Platforms.

LFP offers longer life, is more energy-dense, more stable, is more compact, and weighs less than lead-acid. Our battery packs are sealed units requiring no daily or weekly watering and no maintenance. LFP is ideal for batteries used in Aerial Work Platforms.

Consistent Power

Lithium-ion batteries deliver consistently high performance, which maintains greater productivity even toward the end of a shift.



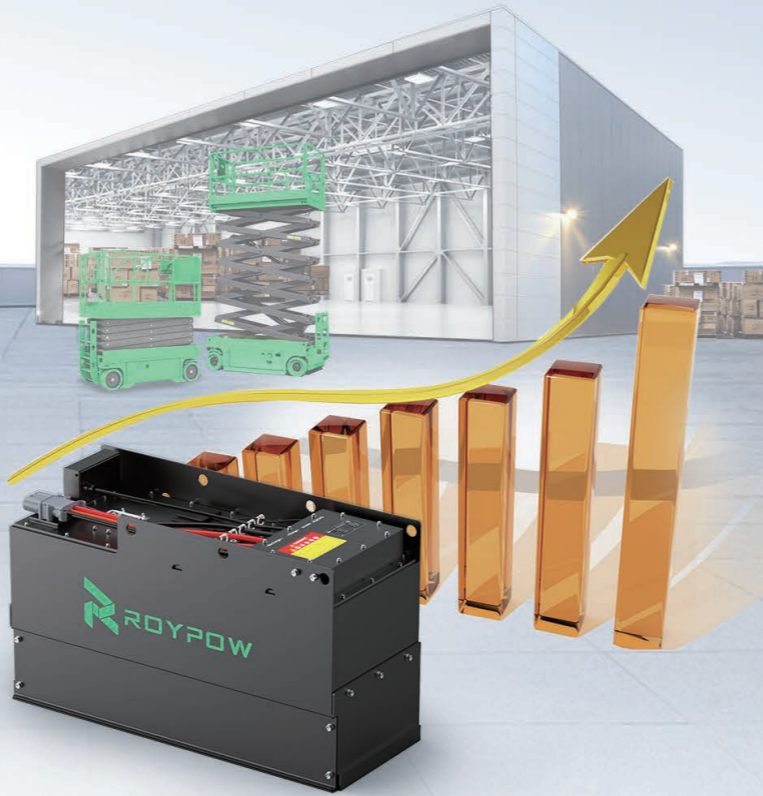
Eliminate the Need for a Dedicated Charging Area and Frequent Battery Swaps

- ✓ Minimize the need to buy, store and maintain spares.
- ✓ Eliminate the cost and storage space required for additional lead-acid batteries.
- ✓ No gassing, no ventilation system needed when charging. No hazardous acid spills.



Small Investment, Big Return

Converting your battery to lithium-ion may require a higher initial investment, but its ongoing savings on energy, equipment, labour and downtime can give you a more cost-effective bill in opposite.



The LiFePO₄ batteries can offer you...

- ✓ Longer life reduces overall battery investment.
- ✓ No maintenance saves labor and maintenance costs.
- ✓ No gas or acid spills, avoids the space, equipment and running costs of a battery room and ventilation system.
- ✓ Energy saving and less downtime, improve productivity.

5-year Cost Comparison to Increase Your Overall Return on Investments.

Save Up to **70%** Expenses in 5 Years

Below is the 5-year expenditure table comparing ROYPOW LiFePO₄ batteries with lead-acid batteries.

Purchases over 5 Years	Lead-acid Battery	LiFePO ₄ Battery
Battery cost	5x (5 money bags)	1x (1 money bag)
Maintenance	5x (5 stacks of coins)	/
Electricity waste	5x (5 stacks of coins)	/
Installation	5x (5 stacks of coins)	1x (1 stack of coins)
Shipping	5x (5 stacks of coins)	1x (1 stack of coins)

Remark: Actual costs may vary according to local conditions.

ROYPOW Batteries with Smart & Integrated Systems

Provide exceptional performance to get the job done and improve your productivity, which means fewer hours of unplanned downtime and more productive hours on your work.

0 Maintenance
Up to **3,500+** Cycle Life

5 yr Warranty
Up to **10** yr Design Life



Durable

ROYPOW batteries have an IP65 ingress rating. They will provide fast lifting and travel speeds at all levels of discharge, under all-weather working conditions.

Inbuilt Protection

Intelligent BMS is for automatic cell balancing and advanced battery management. The LiFePO₄ batteries have greater thermal and chemical stability.

Reliable Power for Most Aerial Lift Brands

ROYPOW lithium-ion batteries deliver consistent, reliable power for Aerial Lifts.



Advanced battery solution for most leading brands of aerial work platforms. They can be generally applied in these famous aerial work platform brands:

Zoomlion
Xcmg
Dingli
LGMG
Sinoboom
Snorkel/Xtreme

Genie
JLG
Sunward
Sany
Haulotte
LiuGong

Mantall
Runshare
Skyjack
Manitou
Emis

Noble
Eastmanhm
Airman
Sivge
More>

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Which LiFePO₄ Battery is Suitable for Your Aerial Work Platforms?

One Stop for All of Your Battery Needs!

We make 24, 48, and 72 volt systems to cover small and large platform Electric Scissor Lifts:

Small-platform

24 V Battery System

For small-platform electric scissor lifts



Large-platform

48 V Battery System

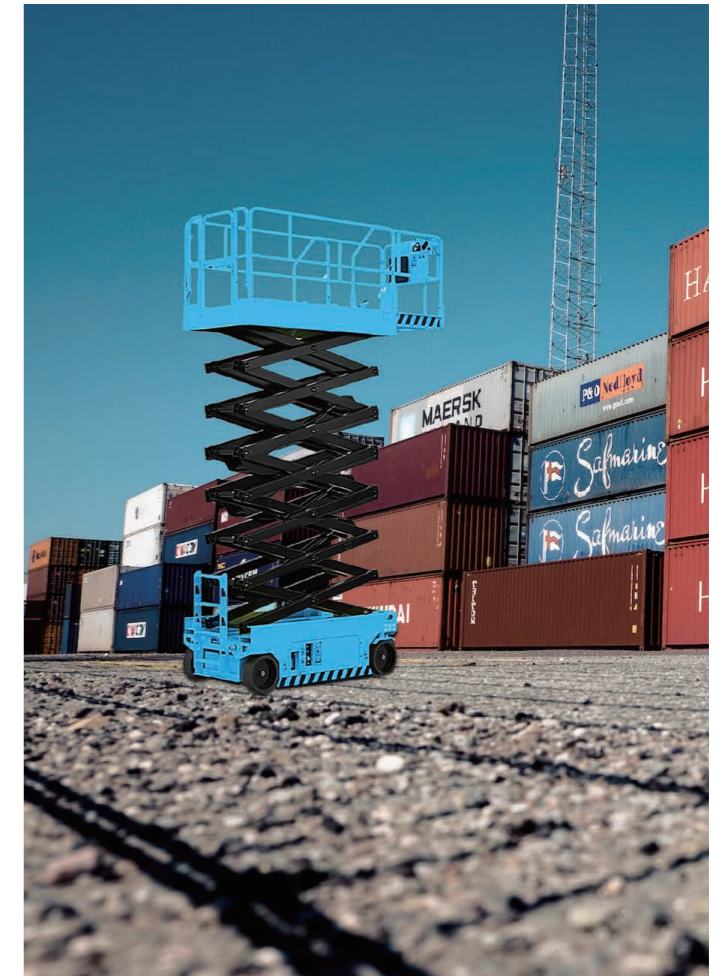
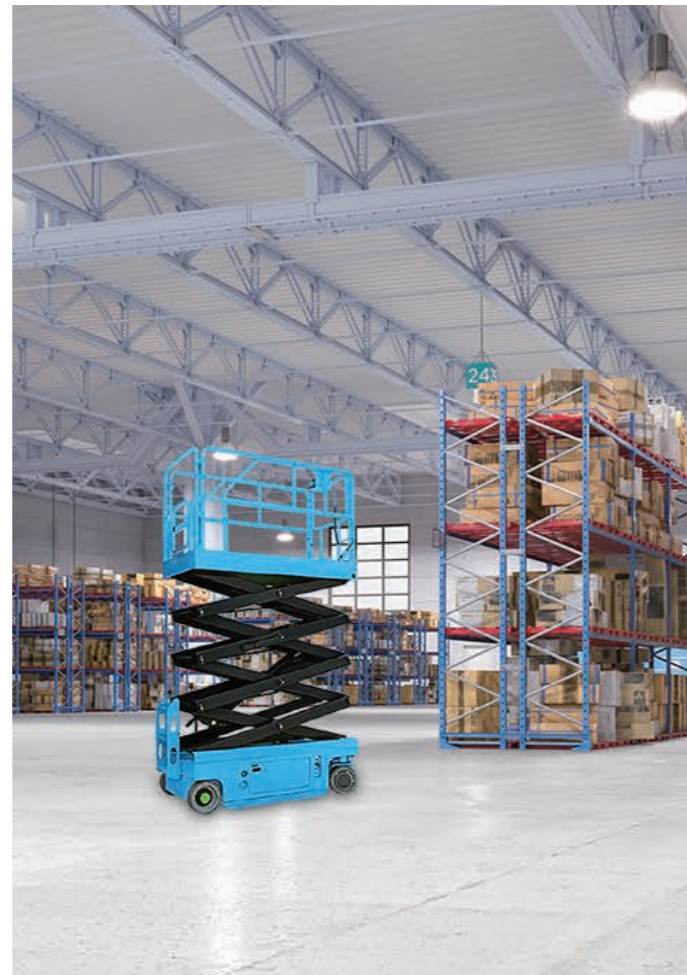
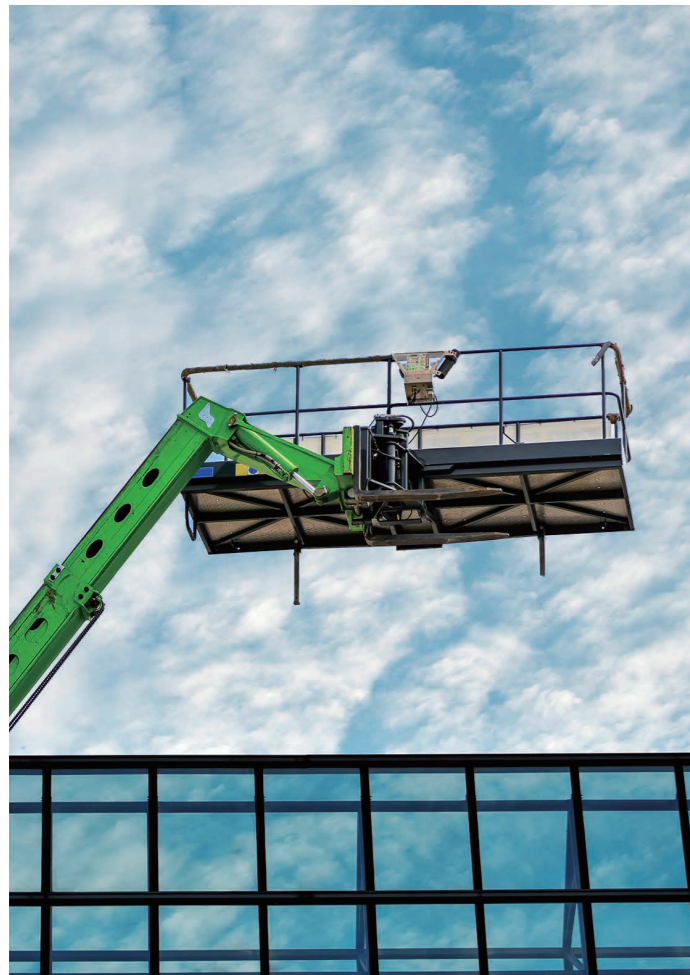
For large-platform electric scissor lifts



LiFePO₄ Batteries for Aerial Work Platforms

Switch to new technology, lithium drop-in replacements for lead-acid batteries.

- ✓ A full range of lithium-ion battery to power your aerial lifts.
- ✓ Maximum uptime and flexible lifting.



An Ideal Lithium-ion Solution

Efficient

- ✓ High, consistent performance without the voltage drop at the end of the cycle.
- ✓ Reduce unplanned downtime with fast, efficient, opportunity charging.
- ✓ 10 years design life - a worthwhile upgrade.

Flexible and Worry-free

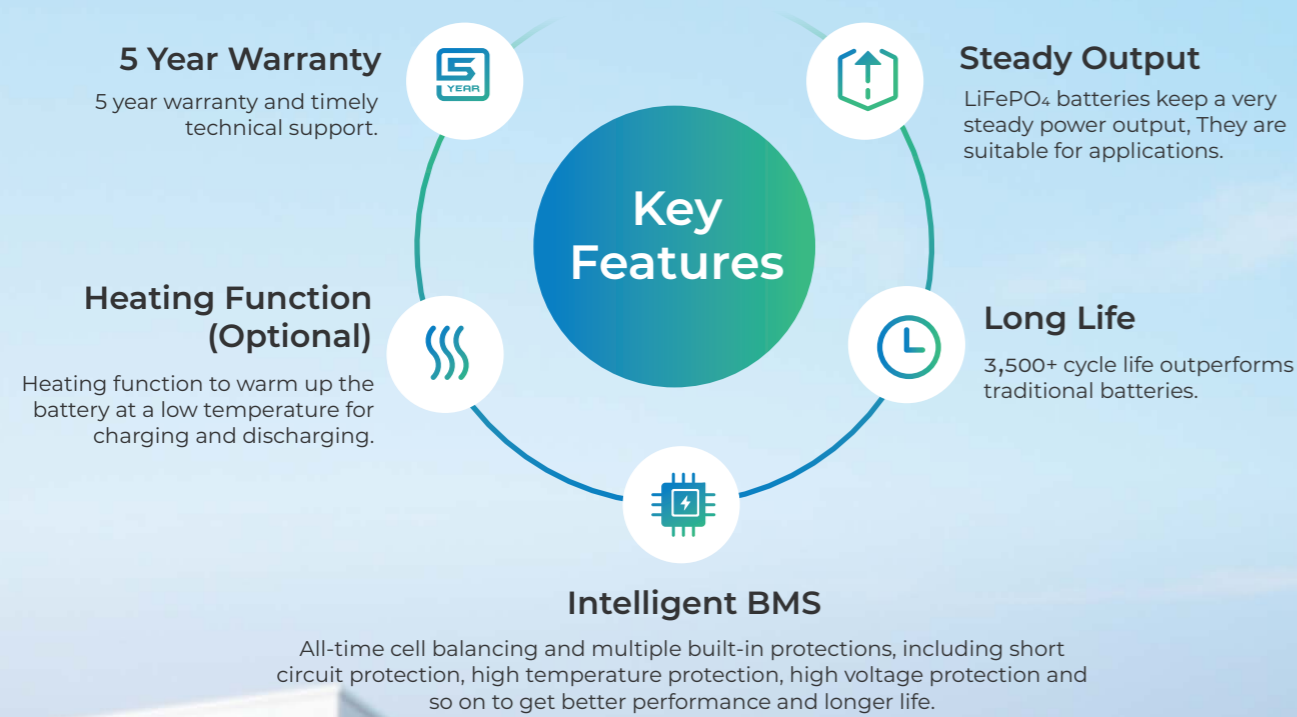
- ✓ Zero maintenance, no need for water top-ups or electrolyte checks.
- ✓ No battery swapping, reduce related accidents and resulting employee injuries.
- ✓ No need for specific charging room.

Green and Stable

- ✓ No acid spills, no noxious gas emissions.
- ✓ More thermal & chemical stability.
- ✓ Good for you and the planet.



Why ROYPOW LiFePO₄ Batteries



Specifications



Model	Technical Specifications					Discharge Current		General		
	Nominal Voltage	Nominal Capacity	Stored Energy	Cycle Life	Dimensions (L*W*H)	Weight lbs. (kg)	Continuous Discharge	Maximum Discharge	Casing Material	IP Rating
24 V System										
S24105C-D	25.6 V	105 Ah	2.69 kWh	>3,500 times	13.8x9.8x10.84 inch (350x250x275.3 mm)	55.78 lbs. (25.3 kg)	150 A	250 A (30 S)	Steel	IP65
S24150C		150 Ah	3.84 kWh		20.35x10.12x10.24 inch (517x257x260.2 mm)	76.28±4.41 lbs. (34.6±2 kg)	150 A	250 A (30 S)		IP67
S24210P-C		210 Ah	5.38 kWh		19.92x14.17x10.34 inch (504x360x262.7 mm)	101.41±11.02 lbs. (46±5 kg)	150 A	350 A (30 S)		IP67
T24100L		100 Ah	2.56 kWh		13.8x9.8x10.3 inch (350x250x262 mm)	56 lbs. (25.6 kg)	150 A	250 A (30 S)		IP67
T24150L		150 Ah	3.84 kWh		20.3x10.1x10.3 inch (517x257x262 mm)	77 lbs. (35 kg)	150 A	350 A (30 S)		IP67
T24200L		200 Ah	5.12 kWh		19.2x13.4x10.5 inch (488x340x267 mm)	101 lbs. (46 kg)	150 A	350 A (30 S)		IP67
48 V System										
S51210C	51.2 V	210 Ah	10.75 kWh	>3,500 times	19.84x14.17x10.87 inch (A/B BOX) (504x360x276 mm A/B BOX)	202.83 lbs. (92 kg)	210 A	350 A (30 S)	Steel	IP67
S51230D		230 Ah	11.78 kWh		23.4x11.69x10.9 inch (A/B BOX) (597x297x277 mm A/B BOX)	220 lbs. (100 kg)	230 A	350 A (30 S)		IP67
S51280C-B		280 Ah	14.34 kWh		28.0x10.8x13.30 inch (A/B BOX) (712x275x337.7 mm A/B BOX)	243 lbs. (110 kg)	280 A	350 A (30 S)		IP67
T51230P		230 Ah	11.78 kWh		23.4x11.69x10.9 inch (A/B BOX) (597x297x277 mm A/B BOX)	220 lbs. (100 kg)	230 A	350 A (30 S)		IP67
T51280P		280 Ah	14.34 kWh		28.0x10.8x10.8 inch (A/B BOX) (712x275x275 mm A/B BOX)	243 lbs. (110 kg)	280 A	350 A (30 S)		IP67
Working Temperature Range		Charge			Discharge		Storage (1 month)			Storage (1 year)
		-4°F~131°F (-20°C ~ 55°C)		-4°F~131°F (-20°C ~ 55°C)		-4°F~131°F (-20°C ~ 55°C)		32°F~95°F (0°C~35°C)		

1. All pictures shown are for reference only and data are based on ROYPOW standard test procedures.
2. Actual performance may vary according to local conditions. Only authorized personnel are allowed to operate or make adjustments to the batteries.
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More about ROYPOW Lithium-ion Batteries

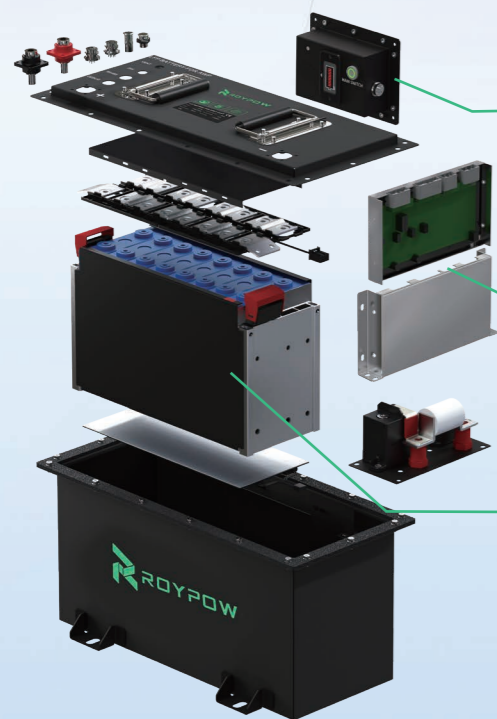


Quality and safety always come first. Except those benefits, we also have intelligent design from our professional R&D team.

- Maintenance free
- Fast charge
- Long life
- Ultra safe



Intelligent design



- Control panel included**
Showing all critical battery functions in real-time, voltage, current, and remaining charging time and fault alarm.
- Built-in BMS**
For cell balancing and advanced battery management.
- Battery pack module**
Using LiFePO₄ cells to insure stable and safe battery performance.

Battery management system (BMS)

The built-in BMS is equipped with automotive-grade components assuring safe, top quality and high energy density. To provide a fully optimized solution for demanding industrial applications. BMS software ensures the battery to provide peak performance when in operation, to deliver longer run time between charges, to maximize the total battery lifespan and to communicate well between the charger, battery and users.



The BMS can offer:

All-time cell balancing and battery management.

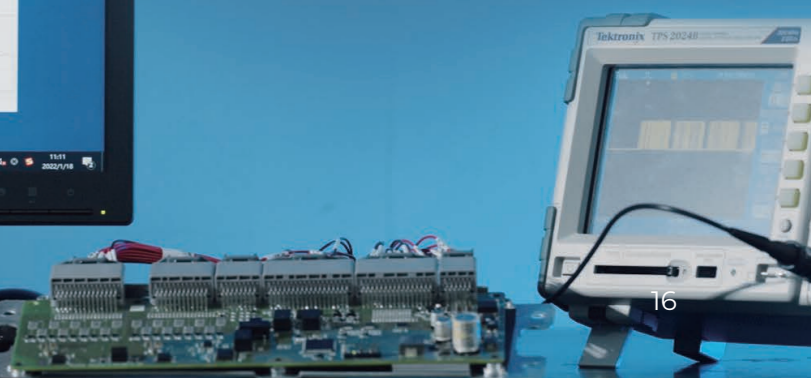
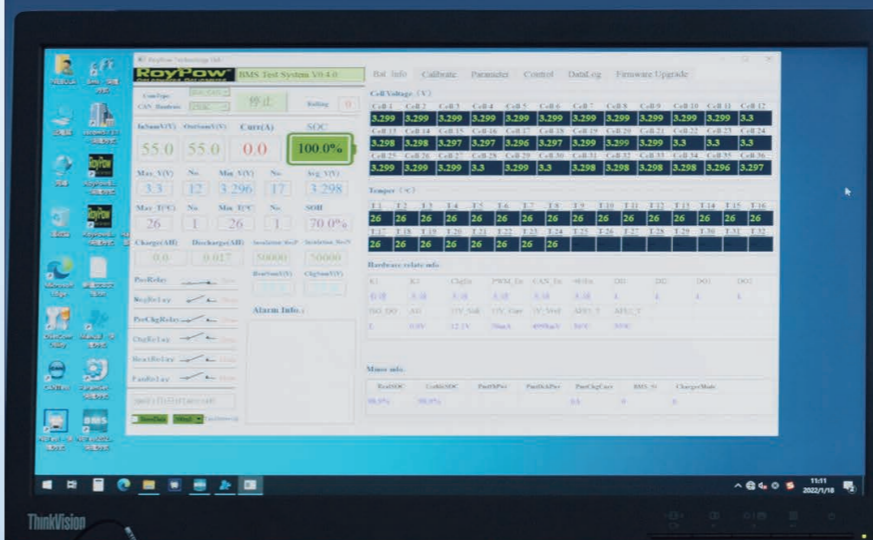
Through the intelligent balancing strategy, balancing between individual cells can be realized. The BMS can keep the battery's consistency at all times when in operation, maximizing the battery efficiency and improve the battery's working life.

Battery real-time monitoring and communication through CAN.

Monitoring cell voltage, electric current and battery temperature, so that any movement outside of normal range disconnects the cell or the entire battery.

Fault alarm and safety protection.

When the battery is less than 10%, it will beep to prompt for charging in case of stopping somewhere far away from charge station suddenly without notice. Over/under voltage, low/over temperature, over current or other faults will prompt to make the battery safe. Safety always comes first.



Original Charger for Aerial Work Platforms

ROYPOW has developed chargers specifically for each type of lithium batteries to deliver the optimal battery performance, safeguard the driving experience, and keep the best communication between our LiFePO₄ batteries and the chargers.



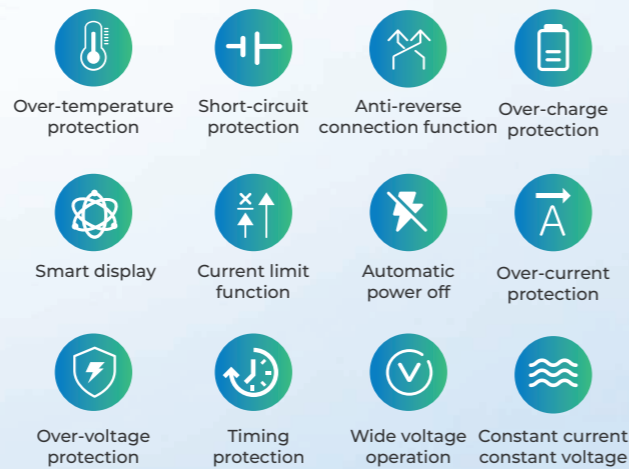
Intelligent Charging Management

To use the ROYPOW charger, the battery management system (BMS) can control the charging current according to different temperatures and SOC of the batteries.

ROYPOW's intelligent BMS ensures the safety of the battery and improves the charging efficiency.

When the battery is at a low voltage, the battery can be charged at low current to ensure battery safety.

When the battery is less than 10%, it will beep to prompt for charging.



Anti-walking Function

During the charging process, without disconnecting the plug, the equipment cannot be started.

Waterproof

Get rid of the AC adapter to realise the real IP66 rate, no need to worry about water or debris like dirt or mud.

Natural Cooling

It is sealed but with a natural cooling function without a fan for better heat dissipation capacity and to extend the lifespan.

Safe Charging

Safe Charging

Advanced charge algorithm ensures the batteries to be charged correctly and safely.

Corrosion Protection & Vibration Resistance

Aluminum alloy design with the one-body forming technology which is more corrosion protection and vibration resistance.

Smart, Durable and Efficient

Intelligent Protection

With the advanced technology of arc resistance hot-swap to keep the charger safe and extend its lifespan.

Compatibility

TIPS

Our chargers are compatible with the voltages in most countries and regions. And it's applied to cater to various charge modes and the multiple AC plugs for choices.

Single phase:

China 220V 50Hz America 120V 60Hz
Europe 230V 50Hz Japan 100V 50Hz/60Hz



AC input port

can be compatible with plugs from different countries.



DC output port

is configured as ROYPOW exclusive charging adaptor.

