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ROYPOW Technology Co., Ltd.

Tel: +86 (0)752-327 9099

Email: sales@roypow.com
service@roypow.com
marketing@roypow.com

Web: www.roypow.com

Add: ROYPOW Industrial Park, No.16, Dongsheng South Road,
Chenjiang Street, Zhongkai High-Tech District, Huizhou City,
Guangdong Province, China

ROYPOW (USA) Technology Co., Ltd.

Tel: +1 512 688 5555 (Texas Office)

Email: sales@roypowusa.com

Service Support: +1 626 269 0547

Email: service@roypowusa.com

Web: www.roypow.com

Head Office: 5901 Triumph St, Commerce, CA 90040, USA

Texas Office: 2350 Campbell Creek Blvd #100 Richardson, TX 75082, USA

Florida Office: 277 Douglas Avenue, Unit 1004, Altamonte Springs, FL 32714, USA

Indiana Office: 5545 W Raymond St, Ste H Indianapolis, IN 46241, USA

Georgia Office: 1150 Cobb International PI NW Ste E, Kennesaw, GA 30152, USA

ROYPOW Technology UK Limited

Tel: +44 (0) 7918 955 940

Email: sales.uk@roypow.com

Add: Regus Green Park, 200 Brook Dr, Reading RG2 6UB, UK

ROYPOW Battery Technology (Pty) Ltd

Email: sales.za@roypow.com

Tel: +27 69 89 55555

Add: 53 Lake Rd, Longmeadow Business Estate, Edenvale, 1609, South Africa



ROYPOW (Europe) Technology B.V.

Email: sales.eu@roypow.com

Tel: +31 702 001 114

Web: www.roypoweurope.com

Add: Seattleweg 1, 3195 ND, Pernis, The Netherlands

ROYPOW Australia Technology Pty Ltd

Email: sales@roypowtech.com.au

Tel: +61 29185 0814

Web: www.roypowtech.com.au

Add: Suite 803a, 18 Orion Road, Lane Cove, NSW, 2066, Australia

ROYPOW Technology GmbH

Tel: +49 (0) 176 2358 8956

Email: sales.de@roypow.com

Web: www.roypow.gmbh

Add: Rosa-Parks-Straße 4, 64295 Darmstadt, Germany

ROYPOW株式会社

Tel: +81 090 7092 6969

Email: info@roypow.co.jp

Web: www.roypow.co.jp

Add: 〒271-0094 千葉県松戸市上矢切299-7

ROYPOW Technology Co., Ltd (Korea)

Tel: 1555-2016

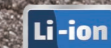
Email: sales.kr@roypow.com

Add: 2405, GIDC Gwangmyeong station A Dong, 43 Iljik-ro,
Gwangmyeong-si, Gyeonggi-do, Korea



LiFePO₄ Batteries for Electric Excavators and Agricultural Equipment

Reliable, Efficient, and Safe Energy for
Construction, Mining, and Farming Practices



sales@roypow.com
www.roypow.com



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
202 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
 IEC 62619
 EN 62477, EN 62040, (EU) 2023/1542, EN 62109-1, EN 62109-2

UL **EMC** **FCC, IEC/EN 61000-6, BS EN IEC 61000-6**
GRID **Function Safety** **IEC 60730, ISO 13849-1**
CB **Transport** **UN 38.3**
CE **RoHS** **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





LiFePO₄ Batteries for Electric Excavators

In the battery-powered excavator construction equipment industry, business requires batteries that won't tire out no matter the task. ROYPOW comes in handy and gives your excavators full performance capacity.

Embedded with ROYPOW batteries in electric excavators, businesses can expect uncompromising power performance and capability comparable to traditional diesel-powered solutions while reducing carbon footprint and enhancing sustainability and profitability.



Efficient and Stable

- ✓ More power with a high rate of discharge
- ✓ Consistent performance without the voltage drop at the end of the cycle
- ✓ Reduced unplanned downtime and maximized uptime



Worry-Free and Cost-Effective

- ✓ Long lifespan and no need for more batteries
- ✓ Zero maintenance and no frequent battery swaps
- ✓ Reduced battery maintenance labor costs

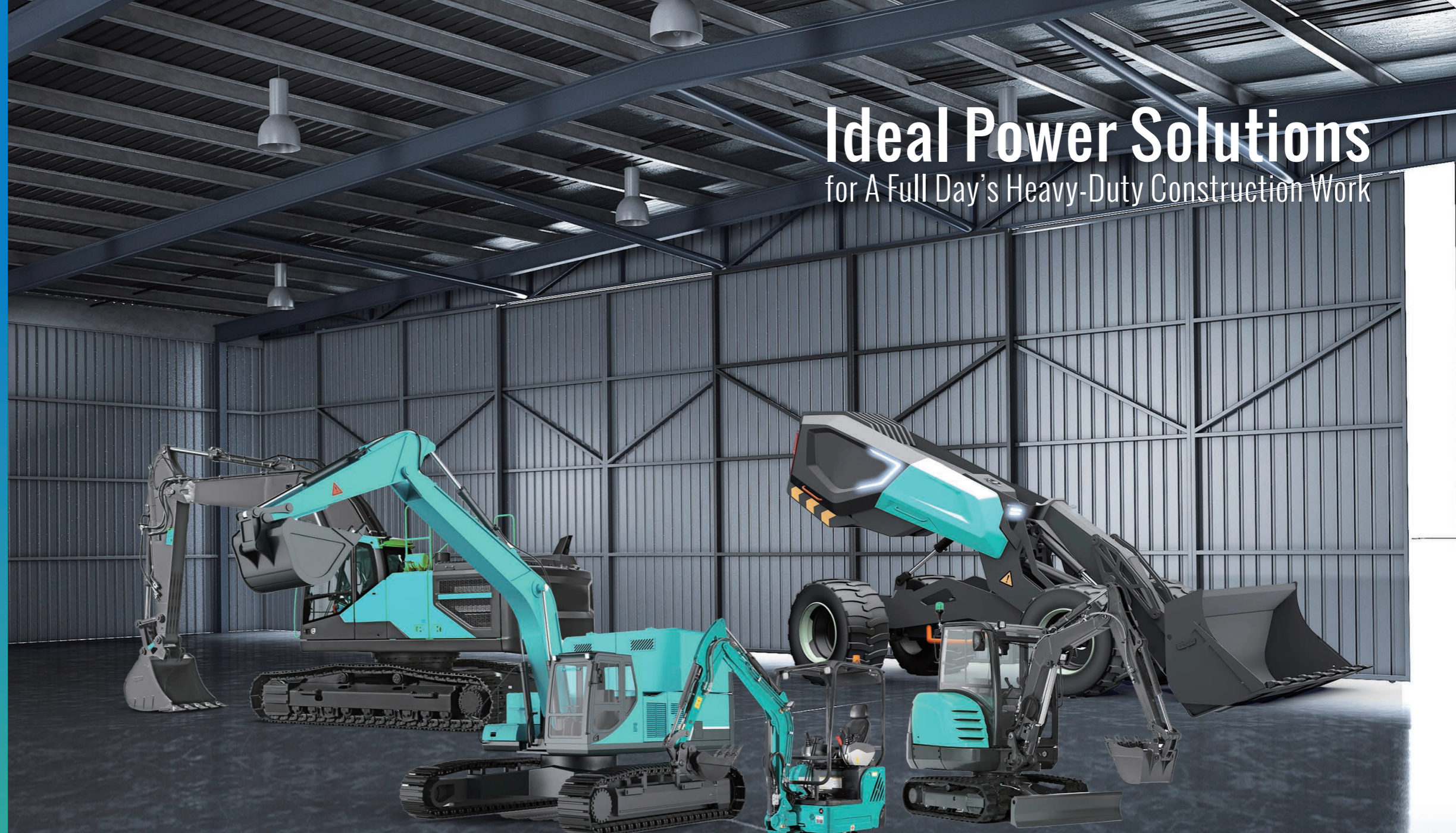


Green and Sustainable

- ✓ Reduced carbon footprint
- ✓ Good for excavator operators and the planet

Ideal Power Solutions

for A Full Day's Heavy-Duty Construction Work



Why ROYPOW Batteries



Safest LFP Chemistry

The excavator batteries are built with the LFP chemistry, proven the safest, most stable, efficient, and economical power option for industrial applications.



Long Lifespan

The batteries are designed for longevity with a lifespan of up to 10 years and can withstand over 3,500 times of deep charge and discharge.



Low Temperature Heating

The heating function will activate for stable charging and discharge at a low temperature during the cold months.



Automotive-Grade Rugged Durability

From the ruggedized, heavy-duty base to the internal structural supports, the batteries withstand the harsh vibrations and shocks of outdoor construction.



Built-in Fire Extinguishing System

Each battery is equipped with one or more specially designed fire extinguisher devices for fire protection.



Zero Maintenance

ROYPOW batteries eliminate the need for frequent swaps or maintenance, saving abundant time and costs to replace the battery on excavators.



IP65 Rated

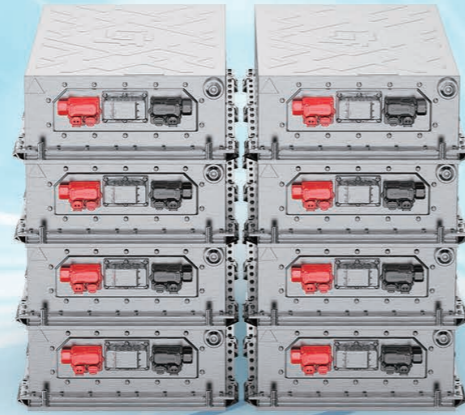
The electrical components are fully enclosed to protect from dust and water ingress to fit different construction site environments.



*Designed for
Extended Heavy-duty
Excavation*

Charge Fast. Power Long

ROYPOW batteries support fast charge to increase the uptime and complete the construction tasks on schedule. A single full charge extends up to 10 hours of use for the best productivity. Operators can recharge the equipment during breaks or overnight to get well-prepared for another shift of hard work.



1 Hour DC Fast Charging Station

6 - 10 Hours* Continuous Use

*Actual battery duration time varies depending on different working conditions and the type of job.

Multiple Charging Ways

More Versatility and Flexibility



DC Fast Charging



Tow Charging



Mobile Container DC Charging

Intelligent Battery Management System (BMS)

ROYPOW's self-developed BMS ensures the electric excavator battery's peak performance and safety through real-time monitoring and multiple protections, maximizing efficiency and extending battery life.

- ✓ All-Time Cell Balancing and Energy Management
- ✓ Real-time Monitoring and Communication Through CAN
- ✓ Battery Maintenance and Remote Upgrades
- ✓ Fault Alarm and Safety Protection



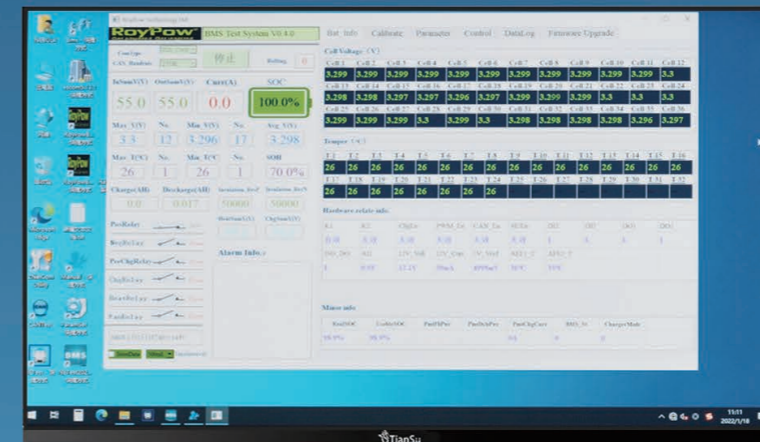
Smart 4G Module (Optional)

ROYPOW smart 4G module can be customized in the excavator batteries to realize real-time remote monitoring.

- ✓ Battery Status Monitoring
- ✓ Remote Control
- ✓ GPS Location
- ✓ Remote Software Upgrades
- ✓ Easy Network Connection
- ✓ Faults Alarm

Liquid Cooling System (Optional)

A well-designed and high-quality thermal management solution can be customized to help dissipate the heat when the power goes up.



Tailored Battery Systems for Excavation Applications

From mini to large excavators



Technical Specifications



Model	Series/Parallel	Nominal Voltage	Nominal Capacity	Nominal Energy	Cycle Life	Continuous Charge / Discharge Current	Maximum Charge / Discharge Current	Dimensions (L*W*H)	Weight lbs. (kg)	IP Rating
CV150230	1S1P	153.6 V	230 Ah	35.328kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	94.80±4.41 lbs (243±5 kg)	IP67
CV115280	1S1P	115.2 V	280 Ah	32.256kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	94.80±4.41 lbs (235±5 kg)	IP67
CV115314	1S1P	115.2 V	314 Ah	36.17 kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	94.80±4.41 lbs (233±5 kg)	IP67
CV150230	n*S1P	n*153.6 V	230 Ah	n*35.328kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	/	IP67
CV115280	n*S1P	n*115.2 V	280 Ah	n*32.256kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	/	IP67
CV115314	n*S1P	n*115.2 V	314 Ah	n*36.17 kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	/	IP67
CV150230	1Sn*P	153.6 V	n*230 Ah	n*35.328kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	/	IP67
CV115280	1Sn*P	115.2 V	n*280 Ah	n*32.256kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	/	IP67
CV115314	1Sn*P	115.2 V	n*314 Ah	n*36.17 kWh	>4,000 Times	0.5C / 1C	1C (60S)/ 2C(60S)	41.92x 24.80 x 9.44 inch (1065 x 630 x 240 mm)	/	IP67

Working Temperature Range

Charge Temperature: 32°F~131°F (0°C ~ 55°C)
 Discharge Temperature: -4°F~131°F (-20°C ~ 55°C)

Storage Temperature Range

Short-term (Within One Month): -4 ~ 113°F (-20 ~ 45°C)
 Long-term (Within One Year): 32 ~ 95°F (0 ~ 35°C)

Note: 1. Only authorized personnel are allowed to operate or make adjustments to the batteries.
 2. All data are based on ROYPOW standard test procedures. Actual performance may vary according to local conditions.

Ideal Power Solutions for Modern Agricultural Practices

Agricultural environments are often characterized by long duty cycles and challenging weather patterns, which require safe and reliable power for electric agricultural equipment.

ROYPOW solutions for electric agricultural equipment, boasting numerous advantages, are making them an ideal choice for agricultural businesses aiming to enhance their operations.

THE POWER BEHIND PERFORMANCE

Tractors

Harvesters

Lawn Mowers

ATV & UTV

Advanced LFP Technology Create Great Value for Your Business

Compared with conventional lead-acid batteries and other types of lithium batteries, ROYPOW LiFePO₄ technologies offer superior performance in longevity, efficiency, and safety. Choose to lower the total cost of ownership and upgrade farming operations.

LiFePO ₄		Lead-Acid	
Around 10 years	Design life	3 years	
>3,500 times	Cycle life	<500 times	
Maintenance-free	Maintenance	Regular maintenance required	
No memory effect and charge at any time	Charging time/frequency	8 to 10 hours of charging	
Multiple built-in protections	Safety	Potential acid spills	
Eco-friendly	Environment effects	Harmful lead	

Expenditures over 5 years	ROYPOW LiFePO ₄ battery	Lead-acid battery					ROYPOW
Battery cost							
Maintenance							
Electricity waste							
Installation							
Shipping							

Why ROYPOW Batteries for Agricultural Equipment



Steady Output

LiFePO₄ batteries keep a steady power output, which will not dramatically drop like lead-acid batteries.



Low-temperature Operation

The optional pre-heating function can warm up the battery for optimal charging even at a low temperature of -20°C.



5 Year Warranty

5-year warranty brings you hassle-free experience.



Long Life

A worthwhile investment with up to 10 years of design life and 3500 times of cycle life.



IP65 Protection

Rated at IP65 protection grade, ROYPOW batteries are waterproof and dust-proof to maintain stable performance under all-weather working conditions.



Increased Safety

The built-in hot aerosol fire extinguisher can quickly help with the fire fighting and reduce fire hazards for peace of mind.



SoC Meter

Display the battery's state of charge, status and malfunctioning information in real time.



Self-Developed Intelligent Battery Management System (BMS)

ROYPOW's self-developed BMS ensures the electric agricultural equipment battery system's peak performance and safety through real-time monitoring and multiple protections, maximizing efficiency and extending battery life.



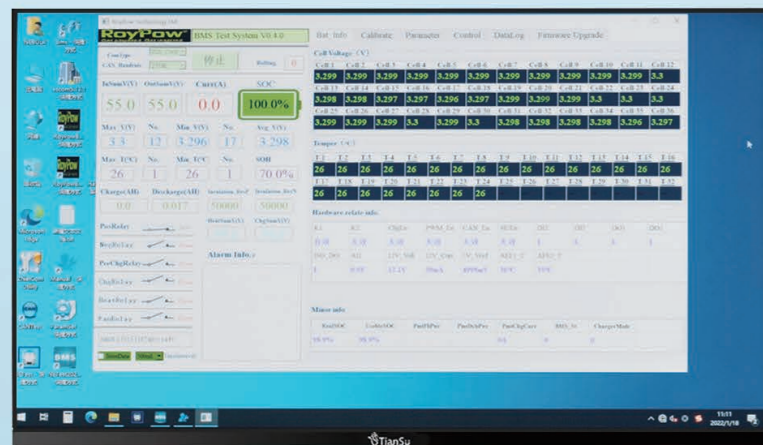
- ✓ All-Time Cell Balancing and Energy Management
- ✓ Real-time Monitoring and Communication Through CAN
- ✓ Battery Maintenance and Remote Upgrades
- ✓ Fault Alarm and Safety Protections

Smart 4G Module(Optional)

ROYPOW agricultural batteries feature the smart 4G module to realize real-time remote monitoring and minimize maintenance frequency and costs.



- ✓ Remote Battery Status Monitoring via APP and Web
- ✓ Remote Software Upgrades
- ✓ Easy Network Connection
- ✓ Faults Alarm



Automotive-grade Battery Manufacturing

To build a world-renowned lithium-ion battery brand and provide better solutions for you.













Safe, Reliable Intelligent Charging

ROYPOW professional charger enables optimal battery performance and the best communication between the charger and the battery.

- ✓ Reduce the need for a full charge every time
- ✓ Opportunity charge during breaks, lunch and at shift changes
- ✓ Eliminate the need for a dedicated charging area
- ✓ Minimize the need to buy, store, and maintain spares



Charging Management

-  Over-temperature protection
-  Short-circuit protection
-  Anti-reverse connection
-  Over-charge protection
-  Over-voltage protection
-  Timing protection
-  Smart display
-  Current limit function
-  Automatic power off
-  Over-current protection
-  Wide voltage operation
-  Constant current constant voltage

Technical Specifications

Battery Cell: Lithium Iron Phosphate (LFP)

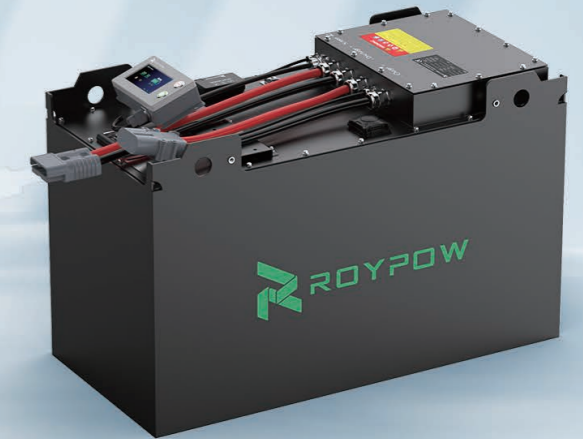
Rated Voltage: <1,000V

Rated Capacity: 15 Ah ~ 840 Ah

Cycle Life: Over 3,500 Times

Operating Temperature: -20°C ~ 60°C

Ingress Rating: IP65



<1,000V

Standard and Customizable Batteries for Agricultural Applications

