Industrial and Commercial & Microgrid Applications

Utilizing LYP ultra-safe, large-capacity battery cell technology to provide reliable, efficient, and long-life energy storage solutions for industrial and commercial & microgrid scenarios.

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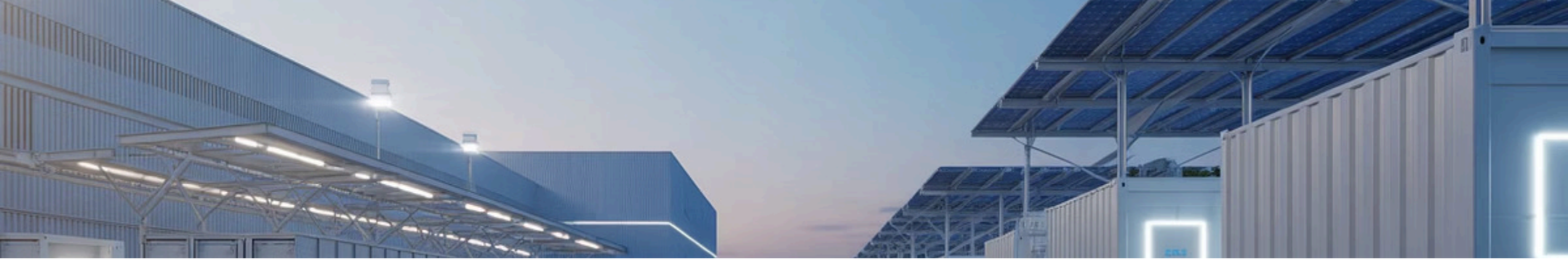

Commercial & Industrial Energy Storage: Core Driver of Energy Transition

Global Trend Overview

As the global energy structure transformation accelerates, commercial and industrial energy storage is becoming a key strategy for businesses to reduce operating costs and enhance energy independence. The rise of decentralized energy systems enables enterprises to more flexibly manage power demand and reduce reliance on traditional grids.

The rapid popularization of microgrid technology, especially in industrial parks, data centers, and large commercial facilities, provides businesses with unprecedented energy stability and economic benefits.

Decentralization Trend

Enterprises independently control energy supply chains

Cost Reduction & Efficiency Improvement

Peak shaving and valley filling to optimize electricity expenses

Stability Requirements

Zero-interruption operation for critical loads

Microgrid Acceleration

Rapid deployment of independent power supply systems

Core Challenges in C&I Scenarios

Commercial and industrial energy storage systems face harsher operating environments and more stringent performance requirements than residential energy storage. From the high-power load shocks in large manufacturing plants to the extreme demands for uninterruptible power in data centers, every application scenario presents unique technical challenges for energy storage systems.

Load Impact Management

The instantaneous high current demand during industrial equipment startup requires energy storage systems to have excellent power response capability and voltage stability to prevent voltage drops from affecting normal equipment operation.

Adaptation to Harsh Environments

Complex industrial environments such as high temperature, high humidity, dust, and corrosion pose severe challenges to the material, sealing, and thermal management of battery systems. Traditional metal casings are prone to corrosion and aging.

System Reliability Requirements

Critical production lines and data centers have extremely high demands for power supply stability. Any system failure can cause huge economic losses, making zero-downtime operation a basic requirement.

Operating Cost Pressure

Frequent maintenance and component replacement significantly increase the total cost of ownership. Enterprises need low-maintenance, high-reliability, and long-lifecycle energy storage solutions.

Long Lifecycle Investment

Commercial and industrial projects typically require a system operating life of more than 10 years. Battery performance degradation must be controlled within an acceptable range to ensure return on investment.

Technical Bottlenecks of Traditional LFP Systems

Despite the widespread application of Lithium Iron Phosphate (LFP) batteries in energy storage, they still face numerous technical limitations in large-scale commercial and industrial scenarios. These issues not only affect system performance but can also increase safety risks and operational costs.

Parallel Synchronization Challenges

Large capacity systems require multiple batteries in parallel, where slight differences between cells lead to uneven current distribution, affecting system efficiency and lifespan.

Voltage Sag Phenomenon

Significant voltage drops occur during high current discharge, impacting power output capability and the stable operation of electrical equipment.

Accelerated Degradation at High Temperatures

Continuous high temperatures in industrial environments accelerate battery capacity degradation, shortening the system's service life.

Metal Casing Corrosion

In high humidity and corrosive environments, metal casings are prone to rust and corrosion, increasing maintenance costs and safety hazards.

Thermal Runaway Risk

Although the probability is low, organic electrolyte systems still pose thermal propagation concerns, requiring additional safety measures in high-density deployment scenarios.

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Winston Battery LYP Technology: Designed for Industrial and Commercial Scenarios

Winston Battery LYP large-capacity cells adopt unique aqueous binder technology, fundamentally addressing the core pain points of traditional energy storage systems. Through material innovation and structural optimization, comprehensive improvements in safety, performance, and lifespan have been achieved.

Aqueous System Prevents Thermal Runaway

Utilizing aqueous binders, it is inherently safe and will not experience thermal runaway even under extreme conditions, providing safety assurance for high-density deployments.

Large Capacity Reduces Parallel Connections

Single cell 700Ah, 900Ah, 1000Ah large-capacity design significantly reduces the number of parallel connections, simplifies system structure, and lowers failure risk points.

Stable Voltage Without Fluctuations

Stable discharge curve, wide voltage platform, no sudden drops, ensuring continuous high-power output and stable equipment operation.

20-Year Lifespan Verification

Verified by over 20 years of practical application, with a cycle life exceeding 8000 times, meeting the long-term investment return requirements for industrial and commercial use.

Corrosion-Free Plastic Casing

Utilizes high-strength engineering plastic casing, completely immune to corrosion issues, adapts to harsh industrial environments, and significantly reduces maintenance costs.

Global PCS Compatibility

Standardized interface design, seamless integration with mainstream Power Conversion Systems (PCS) and Energy Management Systems (EMS), offering flexible and convenient deployment.

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Voltage Stability: Key Performance Indicator

In commercial and industrial applications, voltage stability directly impacts system power output capability and the normal operation of electrical equipment. LYP cells maintain extremely stable voltage output throughout the entire discharge process, which is their core competitive advantage in high-power application scenarios.

LYP 700Ah

Voltage Platform: 3.3V stable output

Discharge Characteristics: No voltage fluctuations throughout, suitable for medium-power continuous load applications

Application Scenarios: Small and medium-sized commercial & industrial energy storage, backup power systems

LYP 900Ah

Voltage Platform: 3.3V ultra-wide platform region

Discharge Characteristics: Minimal voltage sag during high-rate discharge, stable power output

Application Scenarios: Standard industrial energy storage, PV-storage integrated systems

LYP 1000Ah

Voltage Platform: 3.2V extremely stable

Discharge Characteristics: Excellent voltage stability maintained even with ultra-large capacity, supporting extremely high power output

Application Scenarios: Large-scale park energy storage, independent microgrids, data centers

Technical Advantage: Compared to the significant voltage sag of traditional LFP batteries during high-current discharge, LYP cells can maintain a stable 3.2V output throughout the entire discharge cycle, ensuring efficient inverter operation and safe operation of load equipment. This characteristic results in higher system usable capacity and superior energy conversion efficiency.

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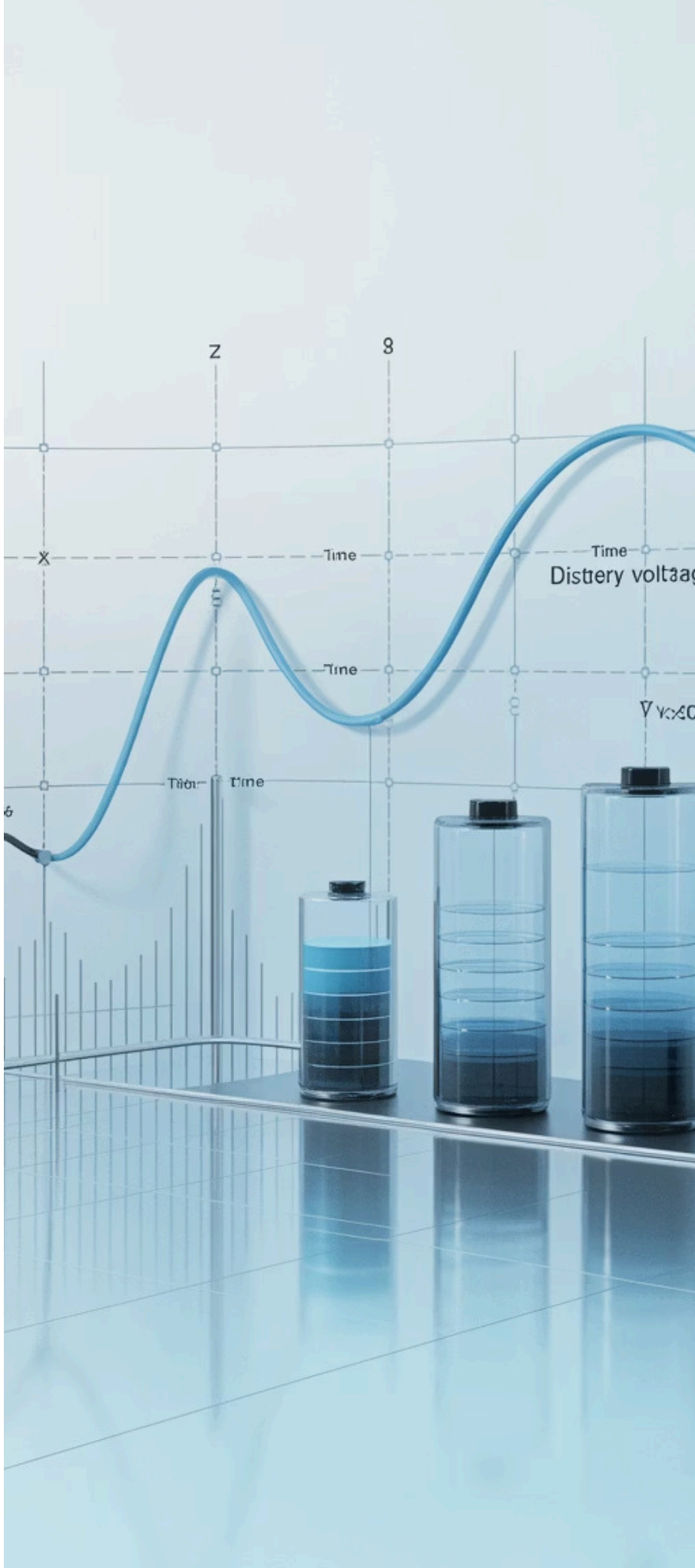

Simplified System Architecture, Reduced Complexity

Winston Battery LYP large-capacity cells enable a simpler and more efficient system design. By reducing the number of parallel batteries, system complexity is lowered, and reliability and ease of maintenance are significantly improved.

Energy Storage Converter PCS

Bidirectional inversion, realizing AC/DC conversion and power regulation

LYP Battery Pack

Large capacity, fewer parallel connections, reducing current balancing difficulty

Energy Management System EMS

Intelligent scheduling, optimizing charge and discharge strategies

Load Equipment

Industrial production lines, office facilities, data centers

System Advantages

- **Fewer Parallel Connections:** Large single-cell capacity significantly reduces the number of parallel batteries, lowering the difficulty of current equalization control.
- **Fewer Risk Points:** Reduced connection and control nodes lead to a substantial decrease in system failure rate.
- **Simple Operation:** Modular design, convenient installation and commissioning, shorter training period for O&M personnel.
- **High Reliability:** Simplified system architecture, fewer critical components, overall reliability enhanced.

Economic Benefits

- Initial Investment: Reduces BMS and connection components, lowering system costs.
- Installation Cost: Shortened construction period, reduced labor costs.
- O&M Expenses: Fewer maintenance points, reduced workload for periodic inspections.
- Lifecycle: Long-life design, low replacement cost over a 20-year operating period.

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Typical Application Scenario One: Factory Energy Storage System

Energy Management Revolution in Manufacturing

Manufacturing factories are major energy consumers and ideal scenarios for energy storage system applications. By deploying LYP large-capacity energy storage systems, factories can achieve peak shaving and valley filling, reduce electricity costs, and provide uninterrupted power supply for critical production lines.

In regions with significant peak-valley electricity price differences, energy storage systems can charge during off-peak hours and discharge during peak hours, significantly reducing electricity costs. In addition, the system can also serve as an emergency backup power source, ensuring continuous operation of core equipment during unexpected power outages.

01

Peak Shaving & Valley Filling

Utilize peak-valley electricity price differences to achieve 30-70% annual electricity bill savings

02

Demand Management

Reduce maximum demand to lower capacity charges

03

UPS Functionality

Uninterruptible power supply guarantee for critical production lines

04

High Temperature Reliability

Adapts to high-temperature factory environments, stable performance

Actual Benefit Analysis

>25%

Electricity Cost Reduction

Annual electricity cost savings

50kW

Demand Reduction

Typical configuration power output

4-5 years

Investment Recovery

System investment payback period

Core Value

WB LYP cells demonstrate excellent adaptability in factory environments with high temperatures, high humidity, and dust. The plastic casing completely eliminates corrosion issues, and the water-based binder ensures no thermal runaway even under extreme conditions, providing the highest level of safety assurance for densely deployed energy storage systems.

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Typical Application Scenario Two: Large Parks and Office Buildings

Large commercial parks and office buildings have dual requirements for energy systems: achieving green energy-saving goals while ensuring absolute safety in high-density areas. The integrated PV-storage solution perfectly meets these needs.

Integrated PV-Storage

Rooftop photovoltaic systems are deeply integrated with LYP energy storage. During the day, PV power directly supplies the park's electricity, with excess power stored for backup. Energy storage is released at night or on cloudy days, maximizing green energy utilization and reducing carbon emissions.

Emergency Backup Power

Provides backup power for critical loads such as elevators, fire systems, and emergency lighting. Automatically switches in case of grid failure, ensuring personnel safety and basic building functions, and meeting fire safety regulations.

Ultimate Safety Assurance

High-traffic areas demand extremely high safety requirements for energy storage systems. LYP aqueous binder technology fundamentally eliminates the risk of thermal runaway, ensuring no safety hazards even when deployed in confined spaces like underground parking lots, meeting the strictest building safety standards.

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Typical Configuration Scheme

100,000 square meter office building:

- Rooftop PV: 500kW installed capacity
- Energy Storage System: 1MWh LYP battery pack
- Daily average power saving: 2000-3000 kWh
- Backup duration: Over 4 hours for critical loads

Investment Value

In addition to direct electricity savings, green building certifications (LEED, Green Mark) can increase property value by 5-15%. Simultaneously, it meets increasingly stringent building energy efficiency standards and carbon neutrality goals, improving the enterprise's ESG rating.

Typical Application Scenario Three: Independent Microgrids

In remote islands, mountainous areas, and border regions far from the main power grid, independent microgrids are the only option for stable power supply. These scenarios place extreme demands on the reliability, lifespan, and ease of maintenance of energy storage systems.

1

Independent Power Supply

Photovoltaic, wind power, and other renewable energy sources, combined with energy storage systems, build a completely autonomous power supply network.

2

Grid Independence

Breaking free from long-distance transmission constraints, power is generated and consumed locally, significantly improving power supply reliability.

3

Long Lifespan, Low Cost

In hard-to-maintain areas, LYP's ultra-long 20-year lifespan significantly reduces total lifecycle operating costs.

4

Environmental Adaptability

Adapts to extreme environmental conditions such as high salt spray on islands, low temperatures in plateaus, and high humidity in tropical regions.

Technical Advantages

- **Ultra-Long Lifespan**

  6000+ cycles, 20 years proven, reducing replacement frequency.

- **Maintenance-Free Design**

  Corrosion-resistant plastic casing, aqueous binder with no leakage risk.

- **Wide Temperature Range**

  Stable operation from -20°C to 60°C, adapting to extreme climates.

- **Modular Expandability**

  Flexible capacity expansion as load grows, protecting investment.

Application Example

Island Cold Storage Microgrid:

A 500kW photovoltaic + 2MWh LYP energy storage system was deployed on an Indonesian island to provide 24-hour stable power to a Walmart seafood cold storage facility. The system has operated for 9 years without major failures, and the battery capacity retention rate is still above 85%.

Compared to diesel power generation, it saves over 1 million RMB in fuel costs annually, while also eliminating noise and air pollution. The project successfully demonstrates the excellent performance of LYP technology in remote microgrid applications.

Why Choose Winston Battery

Winston Battery is not only the founder of LFP technology but also the pioneer of LYP large-capacity energy storage technology, and a trusted long-term partner in the global industrial and commercial energy storage sector. Our products and services have been tested in real-world applications for over 20 years, successfully deployed in more than 70 countries worldwide.

🌍 Global Deployment

Products cover 70+ countries and regions, from Asia to Europe, from the Americas to Africa, accumulating rich experience in various climates and application scenarios.

⏱️ 20 Years of Validation

Continuous iteration and optimization since 2005, with early projects still running stably, proving the promise of an ultra-long lifecycle with real data.

🛡️ Ultimate Safety

Water-based binder technology physically prevents thermal runaway, has obtained multiple global safety certifications, and is suitable for deployment in densely populated areas.

📦 Large Capacity Leader

1000Ah ultra-large single cell capacity leads the industry, with 300/500/700Ah full series covering various application needs.

⚙️ Zero-Tolerance Operation

Providing professional solutions for critical industries such as data centers, hospitals, and financial institutions, meeting the most stringent reliability requirements.

🤝 Technical Support

Global technical service network, offering professional support throughout the entire process from solution design to installation and commissioning, from O&M training to remote monitoring.

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Embark on Your Energy Storage Solution Journey

Download Professional Technical Documents

We have prepared detailed technical information for industrial, commercial, and microgrid applications, including product specifications, system design guides, installation manuals, and case studies. These documents will help you fully understand the technical advantages of Winston Battery LYP technology and provide professional references for your project selection.

📄 Complete Technical Specifications

Cell parameters, performance curves, test reports

🏗️ System Integration Solutions

Configuration recommendations, interface standards, compatibility list

📊 Application Case Studies

Global real-world project data and experience sharing

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Winston Battery - Providing reliable energy storage solutions for critical applications