

# Wantage 15 Years Industry Expertise Dossier - Official Commercial BESS

## Technical Overview & Datasheet

### EXECUTIVE SUMMARY

The Wantage 15 Years Industry Expertise Dossier represents the culmination of a decade and a half of dedicated research, engineering, and field-proven deployments in the global energy storage sector. This document serves as the definitive technical reference for EPC contractors, asset managers, and commercial facility operators seeking a tier-one, bankable Battery Energy Storage System (BESS) platform. Built upon a foundation of over 15 years of iterative design cycles, the Wantage platform integrates Tier-1 LFP cell chemistry, advanced liquid cooling architecture, and intelligent Energy Management System (EMS) logic into a single, scalable turnkey solution. The system is engineered to deliver optimal Levelized Cost of Energy (LCOE) reductions, seamless grid-interactive functionality, and uncompromising safety performance across a wide spectrum of Commercial and Industrial (C&I) applications, from peak shaving and demand response to renewable energy arbitrage and micro-grid stabilization.



## SYSTEM ARCHITECTURE & SAFETY

The Wantage BESS is architected around a modular, rack-based topology that ensures granular control, ease of maintenance, and inherent redundancy. Each core cabinet houses high-density, prismatic Tier-1 LFP cells arranged in a series-parallel configuration to achieve the desired DC bus voltage. The system's backbone is a high-efficiency, bi-directional Power Conversion System (PCS) that provides four-quadrant operation, enabling seamless transition between grid-following and grid-forming modes. Safety is not an add-on feature but a core design principle. The architecture incorporates a multi-layered defense strategy: at the cell level, ceramic-coated separators and advanced electrolyte additives mitigate thermal runaway propagation; at the module level, integrated temperature and voltage sensors provide real-time telemetry; and at the system level, an aerosol-based fire suppression system,

coupled with a proactive gas detection and exhaust ventilation system, ensures the highest level of protection for personnel and assets.

## KEY FEATURES

- 15 Years of Proven Field Reliability: Every component and control algorithm has been validated through over a decade of operational data from diverse climates and grid conditions, ensuring unmatched system availability and degradation predictability.
- Intelligent Liquid Cooling: A high-efficiency, closed-loop liquid cooling plate system maintains optimal cell temperatures with a delta-T of less than 3 °C across the entire battery stack, significantly extending calendar and cycle life.
- Multi-Level Safety Architecture: Engineered to exceed UL 9540 and IEC 62619 standards, featuring cell-to-system level thermal management, gas detection, and aerosol fire suppression.
- Scalable Modular Design: The cabinet-based architecture allows for seamless parallel expansion from 215 kWh to multi-MWh capacity, accommodating future capacity upgrades without major infrastructure modifications.
- Advanced EMS with Grid-Forming Capability: The integrated EMS provides sophisticated peak shaving, demand response, and renewable smoothing logic, with the ability to form a stable grid independently during islanding events.

COMPLIANCE & STANDARDS

The Wantage platform is designed, manufactured, and tested to meet the most stringent international codes and standards, ensuring global market accessibility and bankability. The system holds certifications for UL 9540 (Energy Storage Systems and Equipment), UL 9540A (Test Method for Evaluating Thermal Runaway Fire Propagation), IEC 62619 (Safety Requirements for Industrial Batteries), and CE marking. Additionally, the PCS complies with IEEE 1547 and UL 1741 SA for grid interconnection, ensuring seamless and code-compliant integration with utility networks worldwide.

TECHNICAL SPECIFICATIONS

The following specification matrix provides a detailed overview of the standard Wantage 215 kWh and 372 kWh outdoor cabinet configurations. All parameters are nominal at 25 °C ambient temperature and 0.5C charge/discharge rate unless otherwise noted.

| Parameter        | Specification                   |
|------------------|---------------------------------|
| Nominal Capacity | 215 kWh / 372 kWh per cabinet   |
| Usable Capacity  | 193.5 kWh / 334.8 kWh (90% DoD) |
| DC Voltage Range | 600 - 900 Vdc                   |

|                         |                                             |
|-------------------------|---------------------------------------------|
| Cell Chemistry          | Tier-1 LFP (Lithium Iron Phosphate)         |
| Cooling Method          | Smart Liquid Cooling (Delta-T < 3°C)        |
| Cycle Life              | > 6,000 cycles @ 80% EOL, 0.5C, 25°C        |
| Round-Trip Efficiency   | ≥ 95% (DC-DC)                               |
| Communication Interface | Modbus TCP/IP, CAN 2.0B                     |
| Protection Rating       | IP55 / NEMA 3R                              |
| Operating Temperature   | -20°C to +55°C (derating above 45°C)        |
| Fire Suppression        | Aerosol + Gas Detection + Exhaust           |
| Certifications          | UL 9540, UL 9540A, IEC 62619, CE, IEEE 1547 |

## INDUSTRIAL DEPLOYMENT

Wantage systems are engineered for rapid deployment in a variety of C&I environments. The standard outdoor-rated enclosure (IP55/NEMA 3R) is designed for pad-mounted installation, requiring minimal site preparation. Typical deployment scenarios include manufacturing facilities seeking to reduce demand charges, commercial buildings integrating rooftop solar with storage for resiliency, and remote micro-grids requiring reliable, dispatchable power. The system's modular nature allows for phased investments, starting with a single cabinet for immediate peak shaving needs and expanding to a

multi-cabinet array for full-scale energy arbitrage and backup power as operational requirements evolve.

