



Increasing energy storage capacity for a sustainable future

In recent years, energy storage has emerged as the critical enabler of grid stability and efficiency, driving the transition to cleaner and more resilient energy systems. With the increasing integration of renewable energy sources, the need for reliable and scalable energy storage solutions has never been more pressing. Industry expectations for multi megawatt hour (MWh) packs and multi gigawatt hour (GWh) pipelines are rising to meet these ambitious goals.

Energy storage manufacturers are diligently working to improve not only their systems' safety and energy management capabilities but also their overall capacity and round trip efficiency.

Building on JinKo Solar's leadership in the solar PV market, JinKo ESS aims to mirror this success in the energy storage sector. The innovative SunTera 5 MWh, a state-of-the-art utility scale energy storage system, meets contemporary energy grid demands and will be discussed below in the context of the latest market requirements for energy storage.

The benefits of higher capacity and round trip efficiency

Round Trip Efficiency (RTE) measures the efficiency of an energy storage system's charge and discharge cycle. For instance, the SunTera 5 MWh ESS boasts a high RTE of up to 94%, meaning only 6% of energy is lost during the process. This is making JinKo ESS a market leader in terms of RTE.

The benefits of a high RTE and increased capacity for the industry are substantial. Enhanced efficiency leads to significant cost savings by reducing energy wastage and operational expenses, thereby increasing the return on investment for energy providers. Additionally, maximizing usable renewable energy reduces dependence on the national grid and provides additional services to it.

Higher capacity and energy density reduce infrastructure costs by requiring fewer installations to achieve desired energy storage levels and enhance system reliability. This capability allows for more substantial energy reserves, improving resilience against power interruptions and ensuring grid stability. Additionally, SunTera provides

dependable backup power during outages, guaranteeing continuity for critical services and infrastructure.

Its versatility extends to integrating intermittent renewable energy sources and supporting sustainable systems, which fosters the growth of green energy. For commercial and industrial applications, the system efficiently stores and discharges energy, reducing costs and enhancing energy security across various sectors.

Compact design

JinKo ESS has focused its engineering design to ensure optimal capacity from the SunTera 5 MWh while retaining its compact footprint.

Environmental benefits

The design typically uses fewer materials, reducing the environmental impact of the system. A compact footprint is important because it allows the system to occupy less physical space, which is crucial in densely populated areas. This feature also simplifies integration into existing infrastructure without requiring significant land allocation or modifications to surrounding environments.

Site utilization has also increased by over 30%, with one sided door opening and side by side battery placement. This leap in energy density allows for greater site flexibility, even for very space constrained sites.

Space constrained sites can include urban rooftops, small industrial facilities, dense urban areas, or remote locations where available land for large installations is limited. In these environments, maximizing site utilization and energy density is essential to make efficient use of the available space while meeting energy storage needs effectively.

Longer service life

Long term durability is critical in energy storage systems, and JinKo ESS has invested heavily to maximize the life cycle of the SunTera 5 MWh. The system's warranted life cycle has been extended to over 8,000 cycles, maintaining more than 70% state of health (SOH). This guarantees customers a longer service life and consistent performance over the asset's lifetime, ultimately reducing total ownership costs over time.

Enhanced safety measures

Safety cannot be overstated in the realm of energy storage. The system features advanced 'detection and response' mechanisms to provide safeguards at all levels from thermal management to structural considerations, ensuring that the system operates safely under all conditions.

For thermal management, it utilizes liquid cooling mechanisms to circulate coolant and maintain optimal battery temperature. The system continuously monitors temperatures across critical components. With the ability to adjust operational parameters, this prevents overheating, a major fire risk, and thermal runaway.

Additionally, dynamic power adjustments involve configuring to adjust charging and discharging rates or activate additional cooling measures if temperatures approach critical levels.

Structurally, the system monitors integrity and mechanical stresses, ensuring components operate within safe limits to minimize risks of damage or failure.

Overall, these measures guarantee safe operation under diverse conditions, addressing potential hazards like short circuits or overcharging, and ensuring the longevity and reliability of the energy storage system.

Structural safety

Advanced multi level protections ensure robust safety and reliability throughout the system. These include fire retardant materials, segregated compartment design, and a multi tiered anti leakage architecture. A three stage fuse system offers precise fault identification and rapid disconnection. Real time leak detection and anti arcing materials proactively enhance electrical safety. The Battery Management System (BMS) further boosts safety with reactive and preventive measures.

Fire protection

The SunTera 5 MWh incorporates triple layer fire protection for comprehensive safety. This includes pack level aerosol suppression for rapid response, sprinkler systems, local temperature control, and a fail safe dry pipe system. Hazard detection systems, pressure release mechanisms, and a condensation collector further enhance protection at all levels.



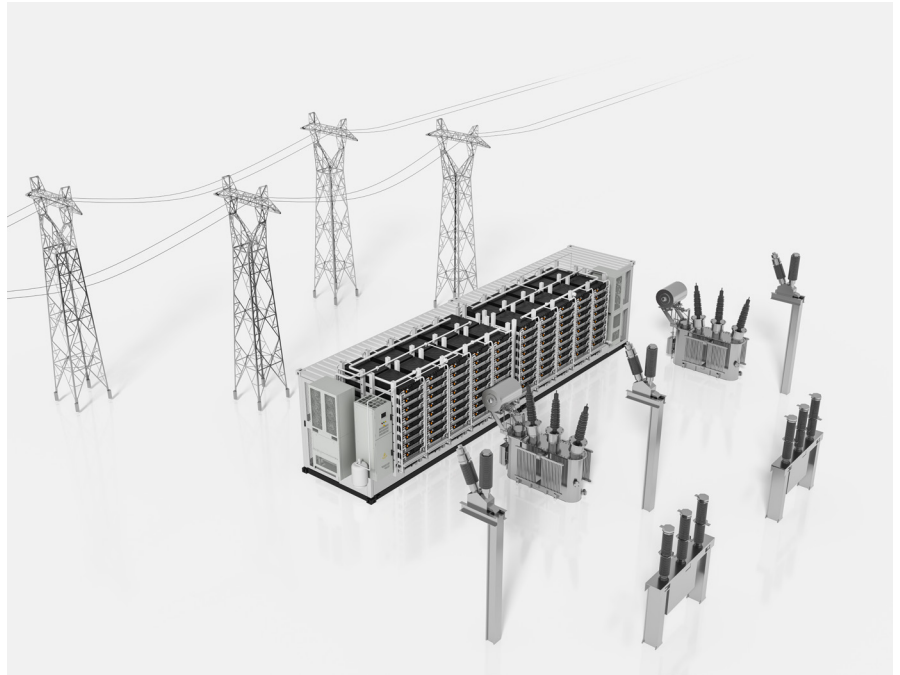
Lower power consumption

JinKo's innovative cooling and management systems enable the system to use 15% less auxiliary power to operate. This reduction in auxiliary power consumption contributes to an overall increase in system efficiency, supporting the company's commitment to sustainable energy solutions.

Lower operational costs

The SunTera 5 MWh is designed with intelligent systems that not only reduce the frequency of maintenance but also simplify the processes involved, significantly cutting down on operational costs.

Lower operational costs are achieved through intelligent design, which simplifies maintenance processes significantly. This is accomplished by incorporating automated monitoring and diagnostics that reduce the need for manual checks and troubleshooting. Predictive maintenance algorithms anticipate potential issues in advance, minimizing downtime and costly repairs.



Operators can remotely monitor and adjust system settings, reducing onsite visits and ensuring swift response to operational changes. Integrated management software centralizes data analysis and reporting, streamlining oversight and decision making.

All of these key product features showcase JinKo's commitment to a cost effective BESS solution that does not sacrifice quality.

The SunTera 5 MWh represents a significant advancement in energy storage technology, combining higher energy density, enhanced efficiency, longer service life, and rigorous safety measures. JinKo ESS's focus on intelligent systems and standardized architecture ensures that their solutions are not only cutting edge but also practical and reliable for long term use.

<https://jinkosolar.eu/ess/>

The SunTera 5 MWh smart O&M technology

An advanced suite of smart O&M features is designed to optimize performance, enhance safety, and streamline maintenance processes.

These intelligent systems ensure that JinKo's energy storage solution is not only efficient but also reliable and easy to manage.

Smarter management

Smarter management integrates system wide synergy and cloud algorithms, enabling efficient energy storage control

and reducing manual oversight through intelligent automation.

Optimizing efficiency

The system uses advanced thermal management and cell equalization techniques, significantly enhancing capacity characteristics and optimizing overall performance.

Reporting accuracy

With high accuracy, robust end cloud fusion iterative core algorithms, SunTera 5 MWh achieves below 3% error rate in full cycle SOC predictions, ensuring precision in operations.

Constant monitoring

Comprehensive monitoring of all crucial parameters such as voltage, current and temperature conditions, alongside robust thermal runaway detection and mitigation, ensures unparalleled safety in battery operations.

Standardized architecture

This approach to standardized hardware and software enhances platform reusability, and software iteration quality, simplifying system upgrades and maintenance.

This approach sets industry standards and ensures long term reliability.