Bessteq
A PART OF TECHON7 GROUP

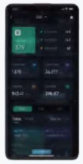
Business Overview

Battery Energy Storage Systems

Platform

By integrating distributed photovoltaic systems, energy storage, battery swapping stations, battery cabinets, and charging stations, we also incorporates advanced digital technologies such as blockchain, IoT, cloud computing, and artificial intelligence, driving a zero-carbon future through digital technology.

Web



APP

System

Integrated solutions for distribut-ed ESS to support renewable energy grid integration, peak shaving, demand-side response, microgrids and other requirements. These solutions enable multiple application scenarios like PV+ESS+Charging and PV+ESS+Generator, with the aim of achieving digital connectivity in power systems.

Liquid-cooling All-in-One Cabinet

Smart PV ESS Cabinet

Liquid-cooling ESS Container

Core Parts

Core high-level energy storage power electronics equipment such as PV inverter, PCS, Static Transfer Switches(STS), and optimizers. These are applied in medium to large-scale grid scenarios and energy storage, converting renewable energy into usable power in an efficient, reliable, and flexible manner.

PV Inverter

Power Conversion System

Power Conversion System(liquid-cooling)

Static Transfer Switch

Optimizer

Core Technology

Bessteq leveraging its deep understanding of advanced power electronics and bidirectional energy conversion technologies, is dedicated to achieving higher available capacity and higher safety standards for energy storage system.

Optimize on cluster lever,achieves full charge and discharge of battery pack

Support multiple working modes

Meet a variety of charge and discharge control mode

Have muiltiple charge and discharge control modes

No power jump on battery pack

Support old and new batteries mixed

No extra DC/DC converter is needed, thus reducing cost and being more efficient

- **BMS+PCS+EMS deeply integrated**
- **Comprehensively eliminate control and protection dead zone**
- **Effectively reduce the failure rate**

Summary of measured data from optimizer

Actual measurement of a system with five standard battery packs revealed an additional energy output. of 10.7kWh during a single cycle, and an estimated additional output of 163,000kWh over the entire lifecycle.

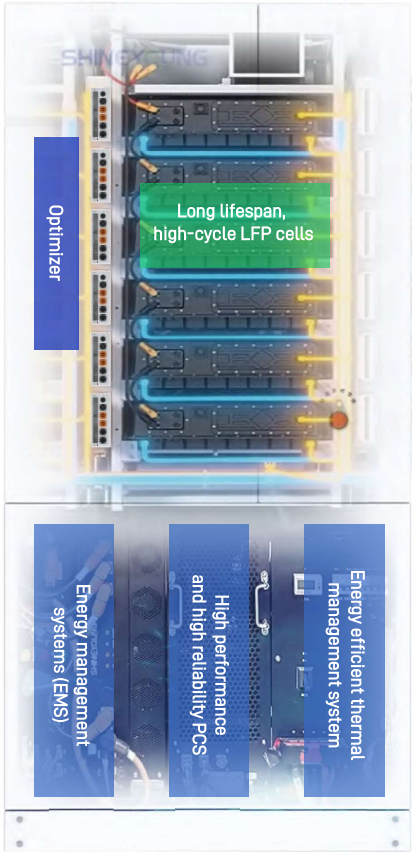
	Initial Cycle	The First Cycle	The Second Cycle	The Third Cycle	... ...	The 7919th Cycle	The 7920th Cycle
Without optimizer	SOC Display Difference ~6%	SOC Relative Difference ~13%	SOC Relative Difference ~13%	SOC Relative Difference ~13%		SOC Relative Difference ~13%	SOC Relative Difference ~13%
With Shineyoung optimizer	SOC Display Difference ~6%	SOC Relative Difference <0.4%	SOC Relative Difference <0.4%	SOC Relative Difference <0.4%		SOC Relative Difference <0.4%	SOC Relative Difference <0.4%
	≈10.7kWh	≈10.7kWh	≈10.6kWh	≈10.6kWh		≈7.49kWh	≈7.49kWh

"One for All" Integrated Design

The "One for All" integrated design optimizes and consolidates key components such as the product's multifunctionality, flexibility, intelligent management, and safety reliability by highly integrating battery packs, Power Conversion Systems (PCS), Energy Management Systems (EMS), Fire Safety Systems(FSS), offering final users an efficient, flexible, and reliable energy solution.

- Pack-level optimizer

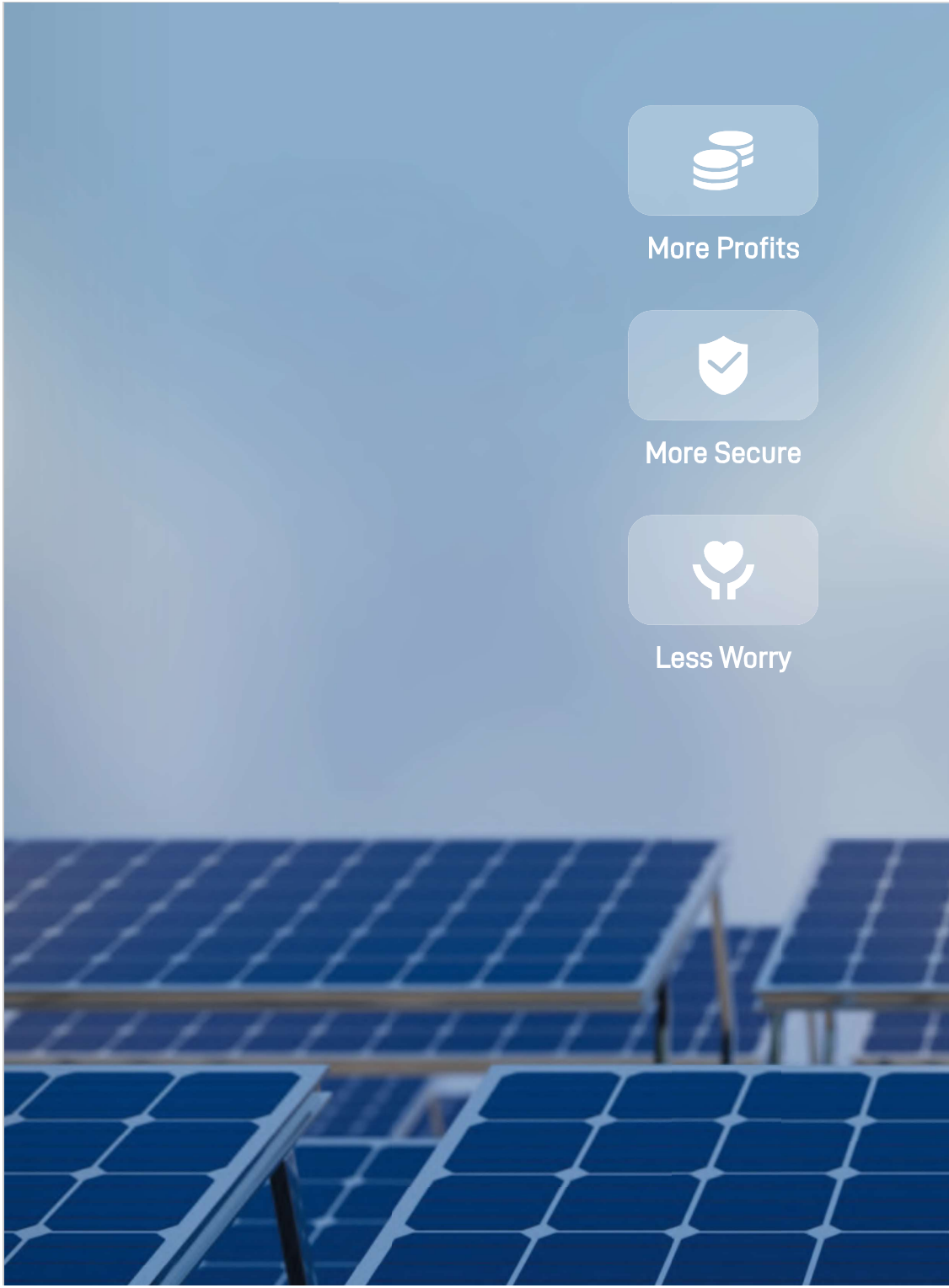
- High reliability and scalability, optimization of energy storage efficiency
- Local collaboration with full awareness, trustworthy real-time revenue allocation



- Single-unit failure rate as low as one in a billion
- 8000+ cycle-index

- Adopt efficient controllers and on-demand control to achieve optimal cooling and minimum energy consumption
- Dual variable frequency regulation of the cooling system and coolant circulation system

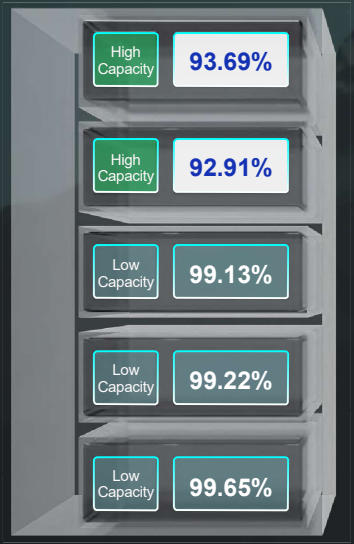
- Three-level topology with a conversion efficiency of up to 98.5%
- IP66 high protection rating with an integrated high-voltage box design (optional)



More Profits

Optimizer effectively improve system capacity

Without optimizer

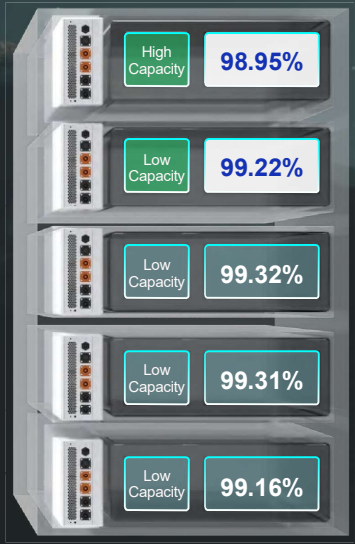


No Fully Charged

Impacto del efecto barril

Difference between SOC is 6.75%

With the optimizer



Fully Charged

Difference between SOC is 0.37%

On-demand investment and flexible expansion

- **On-demand investment in the primary period**
- **According to the plant's conditions select investment capacity**

Modular expansion supports up to 20 units in parallel operation

More Secure

Original factory quality, ultimate safety

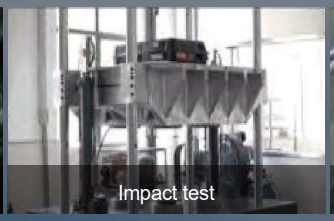
Lean production

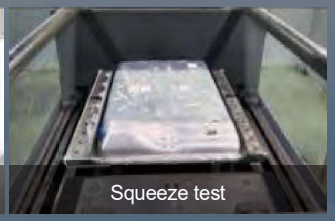
Single-unit failure rate as low as one in a billion

Strict process flow	Fast production speed	High-quality requirements
Strict shape and property control Strong coupling of multi-physical fields	20 seconds to produce one module Produce one cell every 1.7 seconds on average	68,004 quality control points Each battery cell undergoes over 100 inspection procedures before package

Comprehensive testing and verification

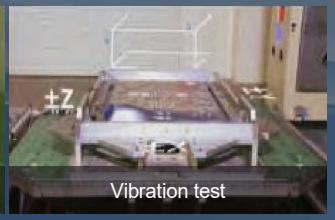

High pressure flush


Impact test


Squeeze test


Fire test


Water immersion test

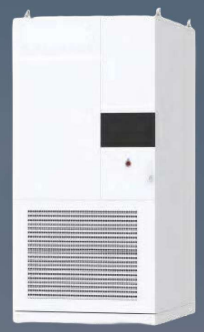


Vibration test

Full-scenario compatibility with upgraded fire safety protection

High protection for the entire machine, adapted to complex environment

- Maximum C5 anti-corrosion
- PCS protection: IP66
- IP55 dustproof and waterproof
- PACK protection: IP67



Full-scenario adaption

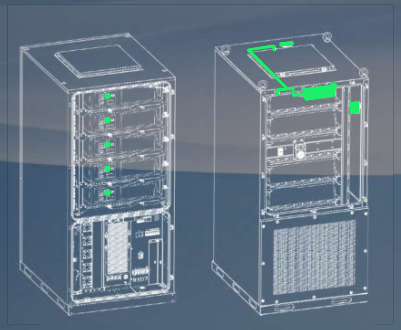

High temperature


High salt fog


Extreme cold


High humidity

Accurate early warning, preventing fire and explosion, timely firefighting



- Thermal runaway warning
- Explosion-proof window design
- 2-hour fire resistance in compartments
- Gas firefighting system
- Water firefighting system
- Water immersion warning

Less Worry

One-stop maintenance and management

Pre-installed, no need with site commissioning

- Modular design
- Full-stack integration in one machine
- Professional integration

Full-stack self-developed, one-stop maintenance

- One-stop deployment
- One-stop after-sales service
- One-stop operation
- Full-scenario benefits

Scope of service

Solutions

Installation guidance

After-sales service

Empower certification

With real-time data and fault monitoring

Trustworthy real-time revenue allocation

Provide data overviews, power station distribution, and revenue statistics

Real-time monitoring to share data based on real-time power supply

Complete allocation of benefits among interested parties

Local collaboration with full awareness

Support conventional commercial and industrial applications, such as peak-valley arbitrage and anti-backflow

Precise battery data collection with minute-level storage

Customizable data analysis charts and protection trigger conditions

High reliability and scalability

Mainstream Linux system as the main controller, self-developed communication management equipment

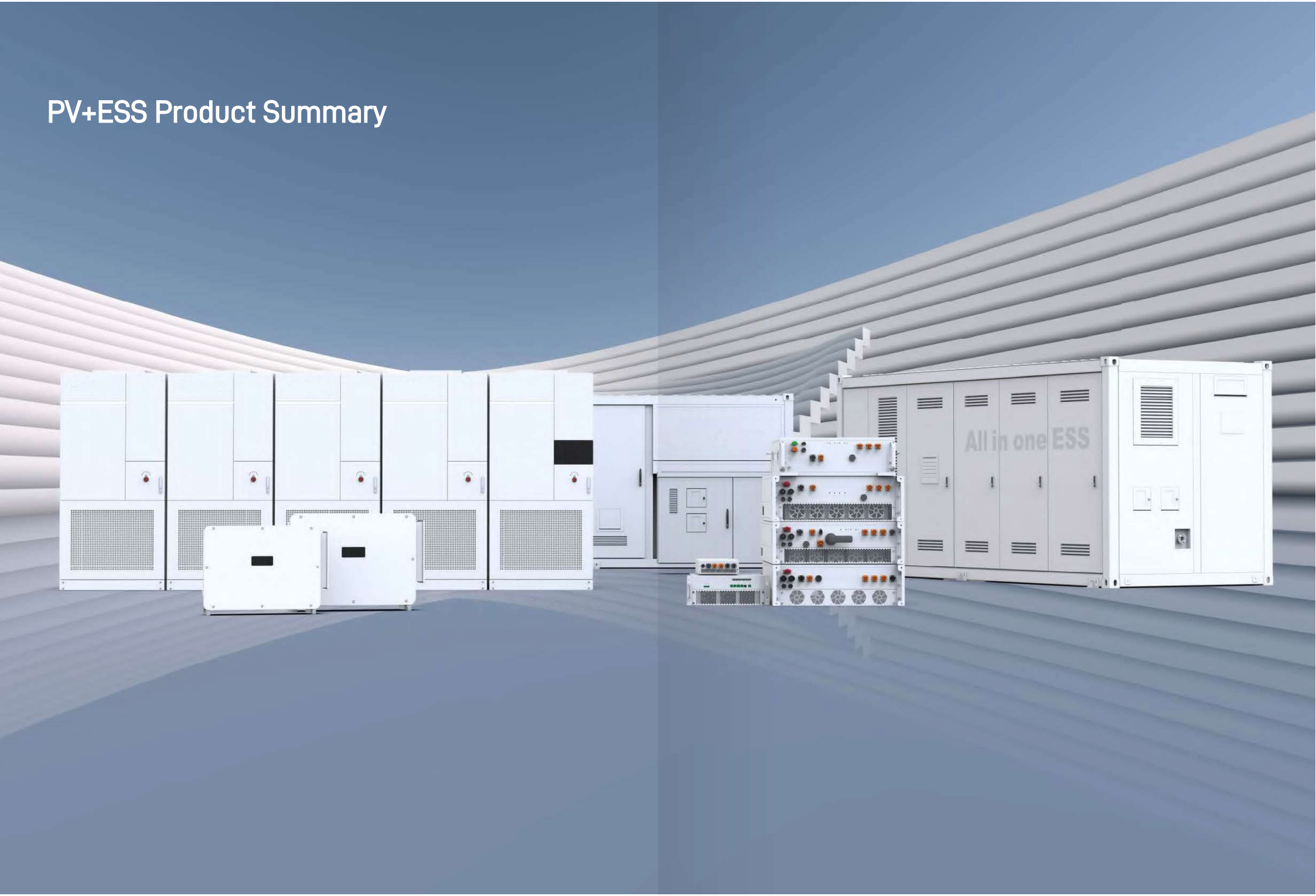
Support multi-units and integrated parallel operation, meeting flexible expansion needs

Energy storage efficiency optimization

Customizable energy storage control strategies for flexible storage of surplus power

Timely supplementation of park-district load demand

PV+ESS Product Summary



125kW
Three Phase String PV Inverter

PV125KTL-B

- Maximum efficiency of 98.92%.
- 5-channel MPPT, suitable for complex terrains.
- Each MPPT has a maximum input current of 60A, perfectly matching mainstream components.
- IP66 protection rating, adaptable to various harsh environments.

Max. DC Input Voltage	1100V
MPPT Operating Range	180~1000V
No. of MPP Trackers	5
No. of Strings per MPP Tracker	3/4
Rated Output Power	125kW
Nominal Output Voltage	3L/(N)/PE 400V/380V
Size (W*D*H)	980*355*750mm

Photovoltaic Inverter

320kW
Three Phase String PV Inverter

PV320KTL-C

- Maximum efficiency of 99.01%.
- 12-channel MPPT, suitable for complex terrains.
- Each MPPT has a maximum input current of 45A, perfectly matching mainstream components.
- IP66 protection rating, adaptable to various harsh environments.

Max. DC Input Voltage	1500V
MPPT Operating Range	500~1500V
No. of MPP Trackers	12
No. of Strings per MPP Tracker	2/3
Rated Output Power	320kW
Nominal Output Voltage	3L/PE 800V
Size (W*D*H)	1140*365*812mm

100/115/125kW
Power Conversion System

PC100/115/125KTL-AG

- Three-level topology, efficiency up to 98.5%.
- Support on-off grid switch.
- IP66, supports up to 20 units in parallel.
- Modularized design, support wall-mounted and rack-mounted installation.

Product Model	PC100KTL-AG	PC115KTL-AG	PC125KTL-AG
Rated Output Power	100kW	115kW	125kW
Rated AC Current	145A	166A	181A
Operating Voltage Range	600Vdc~1000Vdc (3L+PE) / 685Vdc~1000Vdc (3L+N+PE)		
Rated Output Voltage/ Voltage Range	400Vac (-20%~15%)		
Max. Effiency	98.5%		
Container Size (W*D*H)	800*900*250mm		
Weight	99kg		

Power Conversion System

100/115/125kW
Power Conversion System (high voltage box integrated)

PC100/115/125KTL-AG1

- Three leve topology, efficiency up to 98.5%.
- Support on-off grid switch.
- IP66, supports up to 20 units in parallel.
- Built-in HV box design, effectively increase the available space of the system.

Product Model	PC100KTL-AG1	PC115KTL-AG1	PC125KTL-AG1
Rated Output Power	100kW	115kW	125kW
Rated AC Current	145A	166A	181A
Operating Voltage Range	600Vdc~1000Vdc (3L+PE) / 685Vdc~1000Vdc (3L+N+PE)		
Rated Output Voltage/ Voltage Range	400Vac (-20%~15%)		
Max. Effiency	98.5%		
Container Size (W*D*H)	800*1060*250mm		
Weight	112.5kg		

250kW
Power Conversion System

PC250KTL-CG

- Three level topology, efficiency up to 99%.
- Strong power grid adaptability, SCRs up to 1.05.
- High power range suits for high voltage 1500V energy storage system.
- Modularized design, supports more than 20 units in parallel.
- IP66, adapt to harsh environments.

Rated Output Power	250kW
Rated AC Current	209A
Operating Voltage Range	1000Vdc~1500Vdc
Rated Output Voltage/ Voltage Range	690Vac (-15%~10%)
Max. Effiency	99%
Container Size (W*D*H)	800*900*275mm
Weight	105kg

Power Conversion System

215kW
Power Conversion System (liquid-cooling)

PC215KTL-CL

- Three-level topology, efficiency up to 99%.
- Strong grid adaptability, SCRs up to 1.05.
- High power range suits for high voltage 1500V energy storage system.
- Modular design, supports more than 20 units in parallel.

Rated Output Power	215kW
Rated AC Current	181A
Operating Voltage Range	1000Vdc~1500Vdc
Rated Output Voltage/ Voltage Range	690Vac (-15%~10%)
Max. Effiency	99%
Container Size (W*D*H)	700*760*235mm
Weight	105kg

Battery Optimizer

40kW
Battery Optimizer

Shine-040K-C1

- Solve the problem of battery pack mismatch, system capacity increased by 10%.
- Pack balanced linear control, system operation without instant impact, improve system safety.
- Support constant current, constant voltage, constant power and other operating modes.
- Supports mixed use of new and old battery packs, more convenient operation and maintenance.

Input Voltage Range	0~200Vdc
Output Voltage Range	0~200Vdc
Max. Output Power	40kW
Battery Current Range	10~200A
Max. Efficiency without PWM Regulation	≥99.5%
Container Size (W*D*H)	450*245*89mm
Weight	11kg

On-off Grid Switch

250kW
Static Transfer Switch

ST250KTL

- Switching time <10ms to ensure uninterrupted power supply to important loads.
- Automatic switching between on-grid and off-grid.
- Supports 1.1 times long-term overload, large margins for voltage/current stress and thermal stress, and multiple protections for over-temperature and over-voltage.
- Digital control, intelligent air-cooling temperature control , support CAN/RS485 communication.

Rated Power	250kW
Max. Output Power	275kW
PCS Power	125kW
Rated Grid Voltage/Grid Voltage Range	400Vac (-20%~15%)
Rated Currency	361A
Max. Effiency	99.5%
Container Size (W*D*H)	440*509*178mm

30kW/50kWh
Smart PV ESS Cabinet

ES50/30K-A/EU

- PV+ESS all in one design, support PV access.
- Modularized design, supports multiple parallel units.
- Seamless switching between on and off grid, providing reliable backup energy for important loads.
- High-efficiency conversion, maximum system efficiency up to 90%.
- IP65 , adaptable to multiple scenarios.

Rated Battery Capacity	57.34kWh
Rated AC Output Power	30kW
PV Input Max. Input Voltage	1000V
No. of MPPT Trackers	3
No. of Strings Per MPPT	6
Max. Effiency	90%
Container Size (W*D*H)	740*1216*2245mm

Energy Storage System

50kW/100kWh
Smart PV ESS Cabinet

ES100/50K-A/EU

- PV+ESS Hybrid all in one design, support PV access.
- Modularized design, supports multiple parallel units.
- Seamless switching between on and off grid, providing reliable backup energy for important loads.
- High-efficiency conversion, maximum system efficiency up to 90%.
- IP65 high-protection design, adaptable to multiple scenarios.

Rated Battery Capacity	100.35kWh
Rated AC Output Power	50kW
PV Input Max. Input Voltage	1000V
No. of MPPT Trackers	4
No. of Strings Per MPPT	8
Max. Effiency	90%
Container Size (W*D*H)	740*1216*2245mm

115kW/232kWh
Liquid-cooling All-in-One Cabinet

ES232/115K-A/EU

- Three-level topology, conversion efficiency up to 99.0%.
- CATL long-life LFP battery cells, cycle life > 8000 times
- Support off-grid operation, providing backup power for critical loads.
- Modular expansion, supports up to 20 units in parallel.
- Liquid-cooling temperature control design, battery pack temperature difference <3°C, auxiliary power consumption reduced by 30%, extending system lifespan by 2 years+.

Cell Type	LFP/280Ah
Rated Capacity	232.96kWh
Rated Battery Voltage	832Vdc
Rated Output Power	115kW
Rated Output Voltage	400Vac
Max. Effiency	90%
Container Size (W*D*H)	1120*1400*2403mm

Energy Storage System

0.93MW/1.86MWh
Liquid-cooling ESS Container

ES1863/931K-A/EU

- All in one design, pre-commissioning.
- Support mixed use of new and old battery packs, support phased investment in replenishment.
- CATL long-life LFP battery cell, cycle times > 8000 times.
- PCS three-level topology, efficiency >90%.
- Intelligent string equalization technology, rough system life cycle increased by 10%.
- Liquid-cooled temperature control, battery temperature difference <3°C, auxiliary power consumption reduced by 30%, system life extended by more than 2 years.

Cell Type	LFP/280Ah
Rated Capacity	1863.68kWh
Rated Battery Voltage	832Vdc
Rated Output Power	931.84kW
Rated Output Voltage	400Vac
Max. Effiency	90%
Container Size (W*D*H)	6058*2438*2896mm

Ener C
Liquid-cooling BESS

- Selection of lithium iron phosphate batteries with high thermal stability.
- IP55, meet the needs of outdoor applications.
- C5 corrosion resistance, 20 years reliability.

Cell Type	LFP/280Ah
Rated Capacity	3.72MWh
Rated Battery Voltage	1331.2Vdc
System Configuration	10P52S*8
IP Level	IP55
Container Size (W*D*H)	6058*2462*2896mm
Weight	35T

Energy Storage System

Ener One
Liquid-cooling BESS

- Can be integrated with CATL advanced batteries, cycle life up to 12000Cycle.
- Integrated inverter liquid cooling system, temperature difference between cells of battery cluster is <3°C, increasing life time by 33%.
- Modularized design, compatible with 600-1500V systems.
- Modularized high energy density design, 50% space saving.

Cell Type	LFP/280Ah
Rated Capacity	372.73kWh
Rated Battery Voltage	1331.2Vdc
System Configuration	1P52S*8
IP Level	IP66
Container Size (W*D*H)	1300*1300*2280mm
Weight	3.5T