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## C & I Energy Storage Systems Brochure

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## **SUNGO Energy**

SUNGO Energy Technology focuses on the R&D and application of user-side solar+storage products, and is committed to providing global clients with excellent performance, leading-edge solar+storage products and comprehensive energy solutions. We have wide range product lines, including smart optimizers, and lithium-ion battery energy storage systems, which covers the entire industrial chain to meet users' requirements. In the future, we will continue to increase investment in R&D, continuously improve our competitive advantages, and provide global clients with products that are more integrated, easier to install and maintain.



Relying on SUNGO Energy's excellent independent R&D team and its joint venture factory with the Chinese central enterprise KONKA Group, SUNGO is committed to providing global customers with efficient, safe and cost-effective comprehensive energy solutions.





## **Application scenarios**

It can be widely applied in industrial and commercial scenarios with a capacity of over 100kW, smoothing out fluctuations in power supply and demand and optimizing energy management. It can also work in coordination with wind and solar resources to significantly enhance the utilization rate of renewable energy.



SUNGO Energy customizes personalized application solutions for users in different industry scenarios. Through the cooperation of professional technical teams, it provides one-stop comprehensive energy solutions covering the entire life cycle, continuously creating value forcustomers.

## Product selection

SUNGO Energy Technology is a leading provider of energy storage and comprehensive energy management solutions in the industry. It has the independent R&D and production capabilities in key links such as BMS (Battery Management System), EMS (Energy Management System) and system integration. By using high-performance battery cells of Tier-1 brands, it provides customers with advanced and complete customized solutions for all scenarios.

#### **Energon AC200**



- Automated energy management
- Vehicle-grade design, with high safety
- Support off-grid operation (optional with STS installed)

### **Original PACK of EVE**



- It can be directly connected to new energy sources, reducing power losses
- Automated energy management
- Vehicle-grade design, with high safety
- Support off-grid operation (optional with STS installed)

The original factory PACK features stable quality and high battery consistency.

The liquid cooling channels are integrally formed with the box body. The process is mature and there is no risk of coolant leakage.

Cover the application requirements of all scenarios on the power generation side, power grid side, and user side.

Advanced EVE battery cells are adopted, and the charging and discharging efficiency reaches over 95% under the environment of 25°C and 0.5P.



# Energon AC200Core AdvantagesImage: State of the stallation of the st

- Core-level real-time monitoring, linked safety protection measures, ultimate safety
- Intelligent fire-fighting system, rapid response, full -immersion fire-fighting, safe and reliable
- Integrated system integration for fast installation and commissioning, plug and play
- Full-scene application, supporting grid-connected and off-grid modes

#### **System Demonstration**



#### System Topology



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#### **Application Scenario**





Industrial park



Data center

## Battery ParametersCell typeSystem configuration of cellsDC side battery capacity @ EOL

Battery voltage range

AC Parameters	Grid	Off-Grid
Rated output power	100kW	100kW
THDi	≤3% (Rated power)	≤3% (Rated power)
Current DC component	≤0.5% (Rated power)	/
Rated grid voltage	AC 400V	AC 400V
Grid voltage range	400V(-20%~+15%)	AC 400V±3%
Rated grid frequency	50/60Hz	50/60Hz
Grid frequency range	50Hz/60Hz,±2.5Hz	/
Type of AC connection	3W+N+PE	3W+N+PE

#### **System Parameter** Dimension (W\*D\*H) Weight Max cycle efficiency Charge/Discharge rate DOD Cycle times Protection level Auxiliary power supply Corrosion-proof grade Operation humidity range Operation temperature range Max operation altitude Cooling Fire extinguishing and security Communication

Standards

#### Packaging Information & Shipping Details



LFP	
1P240S	
215kWh	
672~876V DC	

2750kg

≥85%

0.5C/0.5P

90%(Up to 100%)

≥6000 times (80%DOD, EOL80%)

IP54

Battery operated/utility

C4

5-95%RH, non-condensing

-25∼+55°C

3000m (>2000m reduce power)

Liquid cooling

Aerosol (perfluorohexanone & heptafluoropropane optional), temperature sensor, smoke sensor RS485/CAN/LAN

IEC61000 IEC62477 UN38.3

## **DC Converter**

#### **Core Advantages**



The power devices of the whole machine adopt SiC MOSFET



The maximum efficiency of the system is greater than 99%



It is equipped with complete functions such as constant voltage and constant current on both the high-voltage side and the low-voltage side

\*DC converters are equipped with additional components for direct connection to photovoltaic systems

## **Static Transfer Switch**

#### **Core Advantages**



The switching time between grid-connected and off-grid modes is less than 20 ms, enabling rapid disconnection and connection of the power grid and micro-grid



It includes active and passive grid-connected and off-grid switching to ensure the stability of the power supply

\*Static transfer switches are equipped with additional components for grid-connected and off-grid switching

Performance Parameters	
Dc voltage on bat side	Voltage range 300 - 900V, full load 300-900V
High-side battery voltage	Voltage range 300-900V, full load 500-900V
Rated power	100kW
Peak power	110kW (10min)
Rated current on low voltage side	320A
Rated current on the high voltage side	200A
Voltage measurement accuracy	1%
Current measurement accuracy	1%
Current ripple RMS value	≤2%
Maximum efficiency	≥99%
Charge to discharge transition time	<20ms
MPPT function	have
The number of MPPT routes	1-way
Operating mode	Constant voltage on low voltage side, constant current on low voltage side, constant power on low voltage side rate,high voltage side constant voltage, high voltage sideconstant current

Environmental Indicator Parameters	
Operating temperature	−25~45°C
Storage temperature	-40~65°C
Relative humidity	5%~95% (non-condensing)
Altitude	3000m (≥2000m capacity reduction)
Heat dissipation method	Forced air cooling

Performance Parameters		
Rated voltage	0.4kV	
Rated current	433/288/144A	
Rated power	300/200/100kVA	
Rated frequency	50Hz	
Switching time on and off the grid	≤20ms	
Protection	IP20	
Dimension	480*370*200mm	
Weight	15kg	
Primary interface	Grid side interface: A/B/C; AC side interface for PCS and loads: U/V/W	
<b>Environmental Indicator Para</b>	meters	
Operating temperature	20°C~50°C	
Relative humidity	5%~95%, non-condensing	
Installation altitude	Greater than 2000 meters need to be used at a reduced rate of 1% for every 100 meters. Maximum altitude 3000 meters	
Cabinet ip rating	IP20	
Cabinet color	RAL7035	





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## **Liquid-cooled Battery Box**

#### **Core Advantages**



- The design of high-precision explosion-proof valves ensures good safety performance
- The battery has a low internal resistance, a ... high discharge rate, and a stable discharge platform



Environmentally friendly. Certified by the ISO 14000 environmental system, the products comply with GB, UN, and ROHS directives

## **Power Conversion System**

#### **Core Advantages**

Designed with three-phase four-wire, it has the functions of active and reactive power control for single-phase and three-phase Support the seamless switching function ... between grid-connected and off-grid modes, with a switching time of less than 20 ms 100% three-phase unbalanced loading capacity ÷÷ to adapt to various working conditions **1** Equipped with PQ, VF, VSG and black start functions

Battery Side Parameters	
Grouping method	1P48S
Nominal power	43kWh
Nominal voltage	153.6V
Voltage range	134.4V~172.8V
Charging and discharging method	CC /CP
Standard charging power/current	21.5kW/140A
Standard discharge power/current	21.5kW/140A
Operating temperature charge/discharge	0°C~55°C/-20°C~55°C
Recommended ambient temperature range	20°C~30°C
Self-discharge rate/month	≤3%/month

System Parameters	
Cooling	liquid cooling
Liquid cooling flow rate	5L/min
Communication	CAN
Auxiliary power system	24Vdc
Wiring method	Plug in quickly
Dimension	W858*D1067*H240mm
Weight	300kg±8kg
IP rating	IP67
Storage temperature (6 months/1 month)	0°C~35°C/20°C~45°C
Storage humidity	<85% RH, non-condensing
Applicable system voltage level	≤1500Vdc
Altitude	≤4000m(contamination level II)
NTC	28 个

DC Side		
Operating voltage range	615V~950V/650V~950V	
Maximum current	170A	
AC Side		
Rated voltage	230V/400V	
Rated voltage range	±15%	
Rated frequency	50/60Hz	
Wiring method	Three-phase three-wire/three-phase four-wire	
Rated power	105kW	
Maximum power	116kW	
Maximum current	167A	
Power factor	≥0.99/-1~1	
Current distortion rate	<3% (Rated power)	
Dc component	<0.5%	
Maximum efficiency	98.5%	
General Parameters		
Dimension (W*H*D)	500*270*670mm	
Weight	59kg	
Altitude	4000m(Reduced capacity when >2000m)	
Operating temperature	-30°C~55°C (Reduced capacity when >45°C)	
Humidity	5%RH~95%RH, non-condensing	
Cooling	Intelligent air-cooled	
Protection	IP20	
Communication	CAN/RS485/Ethernet	
Storage temperature	-45°C~70°C	



## **Energy Management System**

## **Product Solutions**

#### **Core Advantages**



#### Intelligent diagnosis of the whole cabinet, quickly identifying hidden dangers and locating faults



High-performance industrial-grade CPUs ensure rapid response to required instructions

Support localized deployment to ensure the <u>-</u>+ security of user data

Friendly human-computer interaction interface, improving the efficiency of operation and maintenance management





#### **Hardware Parameters** ARM industrial grade CPU 4-core 1.8GHz 8GB EMMC storage **Onboard 8GB FLASH** 2GB LPDDR4 Onboard 2GB RAM 256GB hard drive Onboard 256GB hard drive On-shelf size 25.7\*18.5\*4.5cm (W\*D\*H) Main unit size 21\*16.5\*4.5cm (W\*D\*H) Approximate weight 2kg 4G Full Netcom (supports Full Netcom 4G Cat.1 or 4G Cat.4) Wireless network DC24V/1A or DC12V/2A Power supply 10W (Full load operation <15W) Operating power consumption

#### **Communication Interface**

Ethernet	Total 6 Ethernet, of which: 2 WANs, 10/100/1000M adaptive 4 LAN, 10/100M adaptive
Industrial serial port	8-way RS485
CAN bus	2-way
DI	16-way
DO	8-way (relay outputs) of which 2-way are normally closed and 6-way are normally open

#### **Other Parameters** MTBF >100000 hours Operating temperature -20°C ~ 60°C Storage temperature 40°C ~ 85°C Operating humidity ≤95%RH (non-condensing)







#### **Grid-connected energy** storage solution

The grid -connected energy storage solution offers a more economical energy solution for industrial and commercial scenarios with uneven loads throughout the day, such as farms and communities.

#### **Grid-connected and** off-grid energy storage solutions

Through DC coupling with photovoltaic systems, it can provide efficient and sustainable energy to the majority of industrial and commercial users, reduce dependence on the power grid, and improve energy utilization efficiency.



By means of DC coupling with the photovoltaic system, it provides efficient and sustainable energy for a large number of industrial and commercial users, reduces the dependence on the power grid, and improves the efficiency of energy utilization.

## **Typical Cases**

## An integrated photovoltaic-storage-charging project in a certain zero-carbon industrial park in Taicang



Scale: PV 1.6MW, ESS 1.2MWh Location: Jiangsu Project: Taicang Industrial Park Zero Carbon Project

#### **Solution Topology**



#### Ρ

Grid power AC Bus400V	Factory equipment, lighting, etc.
ESS <b>N+</b> PCS <b>N+</b>	
DC Bus716V	AC charging piles
Medium -voltage direct current PV array Other medium -voltage direct current power sources (such as small generators, dieselgenerators, etc.). Medium-voltage direct current wind power generation. Office electricity consumption	DC charging piles DC charging piles adds (central air tioning, assembly etc.)
Achieve maximum efficiency and absorb new energy power to the completely solving the problems of wind and solar power	greatest extent (97%), r curtailment. 9
Simultaneously realize AC capacity expansion and DC capacity construction costs of power channels, and ensure the power supply	expansion, save the r for fast charging piles.
	0
It has the integrated capacity of independent source-grid-load-s traditional "virtual power station" with a "physical powe	storage, replacing the er station".

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## **Typical Cases**

#### The 2MW/4.3MWh Energy Storage Project of a Pharmaceutical Co., Ltd. in Zhejiang



Scale: ESS 2MW/4.3MWh Location: Zhejiang Project: A pharmaceutical energy storage project in Zhejiang



#### **Customer Load**



#### **Project Features**



Load curve during the morning peak period

Load curve during the noon valley period

and two discharging, that is, the municipa age system when the electricity is	I
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ct (EMC) model is adopted, and the recovered within four years.	6
	<b>و</b>
	· · · · · · · · · ·
a backup power supply and participating nd side response.	Ó

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## **Project Anthology**



C & I Energy Storage Projects in Italy

C & I Energy Storage Projects in Germany



Energy Storage System Project in Zhejiang





## **Service Support**

Remote Support: Respond immediately and check for faults

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On-site Support: For global projects, arrival within 24 hours





Fault elimination







Continuous Optimization: Conduct regular customer satisfaction surveys



Adhere to the concept of global localized operation and service







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