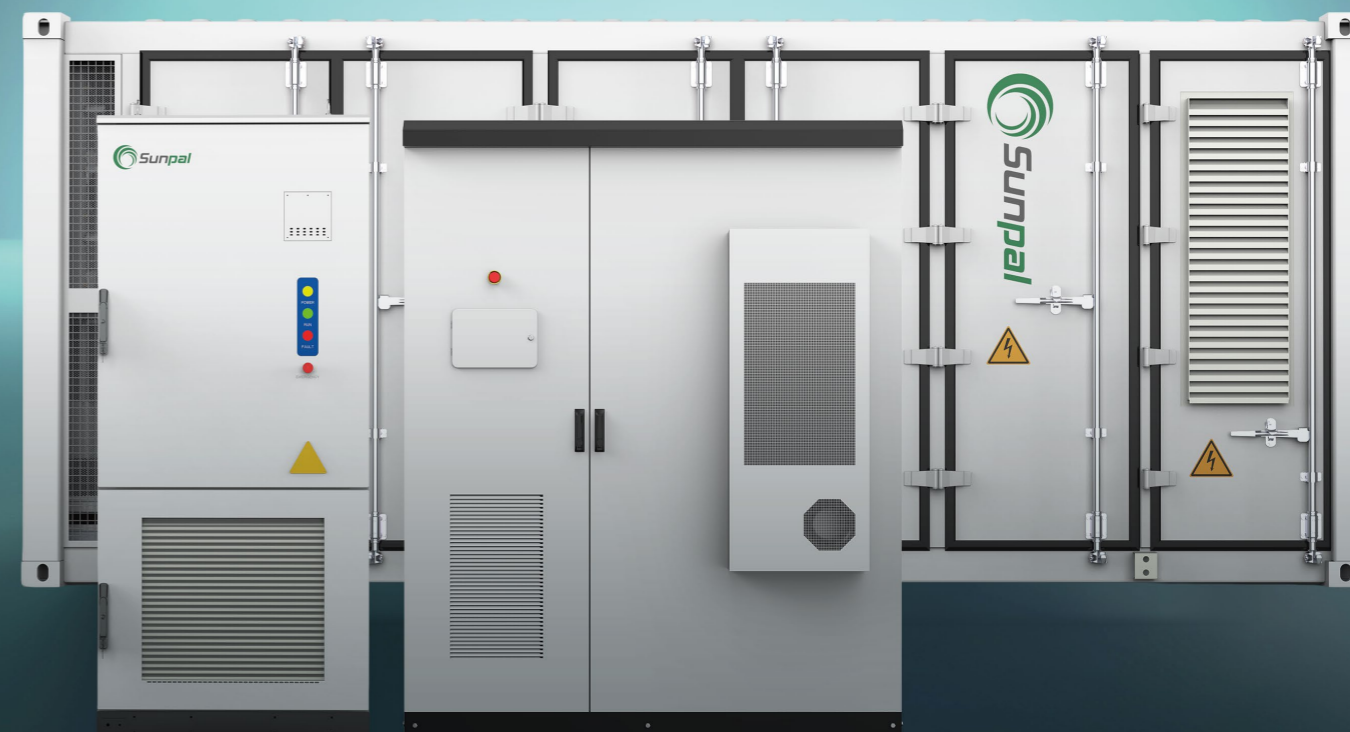


# C&I BESS



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## SUNPAL BESS Turnkey Solution

Brochure of C & I BESS



**MAKING  
MORE POWER**

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# COMPANY INTRODUCTION

Sunpal was founded in 2008 as a dedicated battery energy storage system (BESS) provider by consolidating their expertise in electrochemistry, power electronics and system integration to deliver reliable energy storage solutions globally.

We are humbled to contribute our know-how to our technologies and create a sustainable future for all. Sunpal always is here to take responsibility and always take the mission to liberate human energy sustainably.

We have always adhered to the development concept of "Smart energy powers your life", constantly pursued excellence through technological innovation, and is committed to becoming a global new energy industry leader.

Sunpal Power strives to provide leading solar energy solutions by offering install-ready BESS System packages that can drop shipped throughout the world.

**16+**  
Years Delivery Experience.

**150+**  
Destination Countries

**11,000+**  
Customer Served

**80,000m<sup>2</sup>**  
Factory Area.

# 2008



# CORPORATE CULTURE

About Sunpal



## Our Mission

We are committed to responsible solar system solutions for a better future and adhere to the highest ethical standards in our operations and supply chain. We value responsible sourcing, efficient manufacturing and end-of-life recycling to minimize our environmental footprint.

## Our Vision

We support our global customers with highly efficient solar products, individual advice on system design and financing options. By investing in the continuous improvement of our employees, we foster a culture of innovation and excellence to create a sustainable future for all.

## Our Core Values

**Customer-Centric**  
Respond to our customers beyond expectations and promote customer satisfaction; provide customers with exceptional, efficient and reliable services; build trust and act responsibly towards customers.

**People-Oriented**  
Cultivate a vibrant and collaborative work environment; empower our employees to take ownership; foster a culture of innovation that fuels our collective growth and shared success with our customers.

**Pragmatism**  
Encourage our employees to explore new ideas with practical solutions; keep a long-term vision for the decision-making process; be flexible to adjust our course based on the evolving customer needs and data-driven insights.

# TECHNICAL CERTIFICATE

We offer multiple certifications for all components in our product line that follow local standards and codes required for your specific regions or markets. This ensures safe installations and promotes optimal photovoltaic practices.





# ADVANTAGES

## Fast Deployment

- One - stop service with streamlined coordination
- Pre - installed components for rapid setup
- Factory pre - commissioning halves debugging time

## Cost Efficiency

- Intelligent clusters maximize output and efficiency
- Liquid cooling ensures  $\leq 3^{\circ}\text{C}$  temperature uniformity
- Smart controls lower energy and maintenance costs



## Advanced Safety

- Multi-level monitoring ensures system reliability
- Fire-resistant compartments prevent thermal runaway
- Integrated detection and suppression for rapid risk control

## System Flexibility

- Modular design enhances uptime and scalability
- IP55 outdoor cabinet and IP66 components handle harsh conditions
- Rapid maintenance with 1 - hour part replacement

# OUR PARTNERS

Global Brand Partner <b>EVE</b> ENERGY VERY ENDURE EVE	Global Brand Partner <b>KSTAR</b> KSTAR	Global Brand Partner <b>MEGAREVO</b> MEGAREVO	Global Brand Partner <b>Deye</b> Deye
Global Brand Partner <b>Sinexcel</b> 盛弘电气 Sinexcel	Global Brand Partner <b>HTHIUM</b> HiTHIUM	Global Brand Partner <b>GanfengLithium</b> Ganfeng Lithium	Global Brand Partner <b>HUAWEI</b> HUAWEI
Global Brand Partner <b>BYD</b> BYD	Global Brand Partner <b>HiGEE</b> 海基 HiGEE	Global Brand Partner <b>国轩高科</b> GOTION HIGH-TECH GOTION HIGH-TECH	Global Brand Partner <b>CALB</b> Trust Efficient Win-Win CALB
Global Brand Partner <b>SUNWODA</b> 欣旺达 SUNWODA	Global Brand Partner <b>REPT</b> REPT	Global Brand Partner <b>GROWATT</b> EVE	Global Brand Partner <b>CATL</b> CATL

## One-Stop Solution



**1** Project Survey & Research



**2** Design & Confirm the Configuration



**3** Arrange Production & Shipping

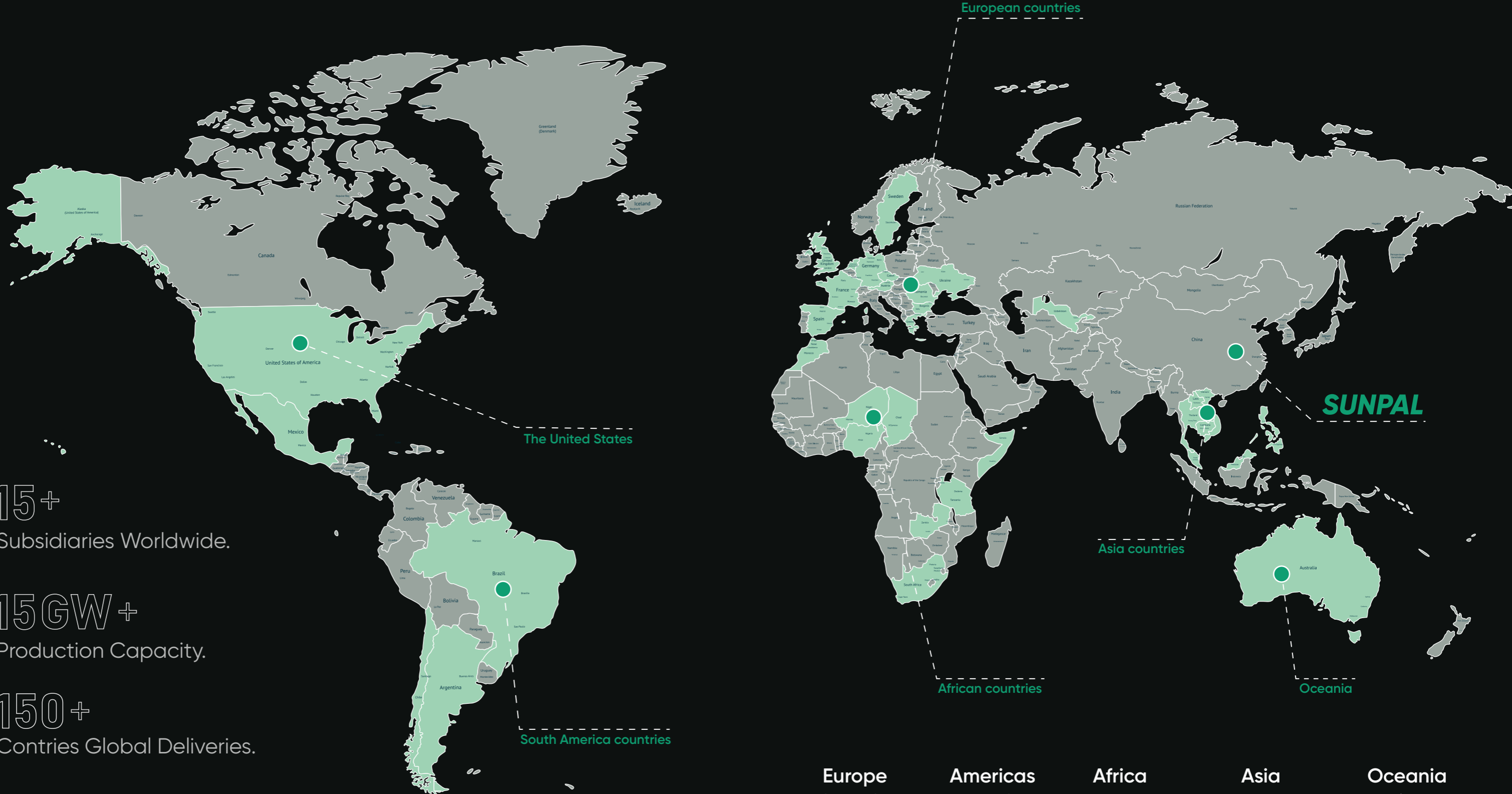


**5** Enjoy Payback



**4** Installation & Debugging

# GLOBAL MARKETS



15+ Subsidiaries Worldwide.

15GW+ Production Capacity.

150+ Countries Global Deliveries.

11,000+ Customer Served.

### Europe

Germany, Czech  
Austria, Romania  
United Kingdom  
France, Spain  
Bulgaria, Greece  
Ukraine, Sweden

### Americas

The United States  
Mexico, Brazil  
Argentina, Chile

### Africa

Morocco, Niger  
Nigeria, Chad  
Somalia, Tanzania  
Zambia, South Africa

### Asia

Uzbekistan  
Vietnam, Laos  
Thailand  
Cambodia

### Oceania

Australia



# SUNPAL FACTORY INTRODUCTION

We adhere to the business philosophy of "everything stems from the customer, everything stems from innovation," and focusing on core technologies and continuously launching "High-quality, High-value, High-return" products under the One Core, One Wing" strategy, creating maximum value for our customers and investors.

The "One Core" refers to our ESS product line, which encompasses ESS systems, residential ESS, mobile power stations. The "One Wing" comprises our pack series products, including OEM services for air cooling & liquid cooling packs for energy storage, standard C/G Power pack solutions for construction machinery, and fast-charging pack solutions.



## DUST-FREE PRODUCTION WORKSHOP





## SKY SERIES

# ALL IN ONE AIR-COOLED ESS CABINET

- ALL IN ONE AIR-COOLED ESS CABINET-TG-eBank-120F(50kW)
- ALL IN ONE AIR-COOLED ESS CABINET-TG-eBank-160F(80kW)
- ALL IN ONE AIR-COOLED ESS CABINET-TG-eBank-221F(100kW)
- ALL IN ONE AIR-COOLED ESS CABINET-TG-eBank-261F(125kW)

With rich expertise in ESS system integration and intelligent O&M, Sunpal's SKY series offers fully integrated outdoor all-in-one ESS solutions, covering 50kW/80kW/100kW/125kW power and 120kWh/160kWh/221kWh/261kWh capacity options. Adopting modular design, self-developed PACK, BMS and EMS systems, high-efficiency air cooling with stable temperature control, and IP54 protection grade, the series supports wide battery voltage range, flexible parallel expansion, multiple MPPT tracking, seamless grid/backup switching and cloud-based O&M. These solutions feature high round-trip efficiency (RTE>90%), large charge/discharge current, and strong compatibility, delivering safe, reliable, economical and flexible energy storage support for industrial & commercial scenarios.



# SKY

# ALL IN ONE 50KW-120KWh AIR-COOLED ESS CABINET



### Economical and Efficient

RTE over 90%, DOD over 95%.



### Safe and Reliable

IP54, optimized ventilation design, temperature difference within 6°C



### Compact & Convenient

1.16m<sup>2</sup>footprint, easy to transport and install.



### Expandable & Modular

Easy modular design supports parallel connection for convenient system expansion.



### Self-developed

PACK, BMS and EMS are all independently developed with good compatibility.



### Easy O&M

Support multiple ways of operation and maintenance, including onsite, cloud.

Model	TG-eBank-120F(50kW)
<b>System Parameter</b>	
System Energy	120.576Wh
Inverter	S6-EH3P50K-H
Transformer	50kW
Communication Access Method	3P4W
Rated Output Voltage	380/400V
Rated Output Power	50kW
Cooling Method	air cooling
Placement Environment	Outdoor
Battery Cabinet+Inverter	Size:L1074*D1200*H2095mm Weight:1.4T
Protection Grade	IP54
<b>General Parameter</b>	
Combination Method	120S1P
Rated Capacity	314Ah
Factory Voltage	384V-396V
Voltage at End of Discharge	≤324V
Recommended Charging Voltage	420V
Internal Impedance	≤120mΩ
Max Charging Current(Icm)	157A
Limited Charging Voltage(Ucl)	432V
Max Discharging Current	157A
Discharge Cut-off Voltage(Udo)	300V
Operation Temperature Range	Charge:0~55°C/Discharge:-20~55°C
Storage Temperature Range	-20°C~50°C
Single Pack Size/Weight	W519*D940*H230 150kg Quantity:6pcs
High Pressure Box Size/Weight	W488*D574*H230 25kg Quantity:1pcs
<b>Inverter Parameters</b>	
Recommended Max. PV Array Size	100kW
Max. Usable PV Input Power	96kW
Max. Input Voltage	1000V
Rated Voltage	600V
Start-up Voltage	180V
MPPT Voltage Range	150-850V
Max. Input Current	4*40A
Max. Short Circuit Current	4*60A
MPPT Number/Max Input Strings Number	4/8
Battery Type	Li-ion
Battery Voltage Range	150-800V
Max. Charge/Discharge Current	70A*2
Number of Battery Port	2
Maximum Charge/Dischargecurrent of Each Port	70A
Communication	CAN/RS485
Rated Output Power	50kW
Max. Apparent Output Power	1.4 times of rated power, 10s 1.6 times of rated power,200ms
Back-up Switch Time	< 10ms
Rated Output Voltage	3/N/PE, 220V/380 V3/N/PE, 230V/400V
Rated Frequency THDv(@linearload)	50 Hz/60 Hz
Rated Frequency THDv(@linearload)	< 3%

# ALL IN ONE 80KW-160KWh AIR-COOLED ESS CABINET



### Economical and Efficient

RTE over 90%, DOD over 95%.



### Safe and Reliable

IP54, optimized ventilation design, temperature difference within 6°C



### Compact & Convenient

1.16m<sup>2</sup>footprint, easy to transport and install.



### Expandable & Modular

Easy modular design supports parallel connection for convenient system expansion.



### Self-developed

PACK, BMS and EMS are all independently developed with good compatibility.



### Easy O&M

Support multiple ways of operation and maintenance, including onsite, cloud.

Model	TG-eBank-160F(80kW)
<b>System Parameter</b>	
System Energy	160.768Wh
Inverter	S6-EH3P80K10-NV-YD-H
Transformer	80kW
Communication Access Method	3P4W
Rated Output Voltage	380/400V
Rated Output Power	80kW
Cooling Method	air cooling
Placement Environment	Outdoor
Battery Cabinet+Inverter	Size:L1450*D1000*H1900mm Weight:1.4T
Protection Grade	IP54
<b>General Parameter</b>	
Combination Method	160S1P
Rated Capacity	314Ah
Factory Voltage	512V-328V
Voltage at End of Discharge	≤432V
Recommended Charging Voltage	560V
Internal Impedance	≤120mΩ
Max Charging Current(Icm)	157A
Limited Charging Voltage(Ucl)	576V
Max Discharging Current	157A
Discharge Cut-off Voltage(Udo)	400V
Operation Temperature Range	Charge:0~55°C/Discharge:-20~55°C
Storage Temperature Range	-20°C~50°C
Single Pack Size/Weight	W519*D940*H230 150kg Quantity:8pcs
High Pressure Box Size/Weight	W488*D574*H230 25kg Quantity:1pcs
<b>Inverter Parameters</b>	
Recommended Max. PV Array Size	80kW
Max. Usable PV Input Power	160kW
Max. Input Voltage	1000V
Rated Voltage	600V
Start-up Voltage	180V
MPPT Voltage Range	150-950V
Max. Input Current	10*42A
Max. Short Circuit Current	10*60A
MPPT Number/Max Input Strings Number	10/20
Battery Type	Li-ion
Battery Voltage Range	300-950V
Max. Charge/Discharge Current	100A*2
Number of Battery Port	2
Maximum Charge/Dischargecurrent of Each Port	100A
Communication	CAN/RS485
Rated Output Power	80kW
Max. Apparent Output Power	1.4 times of rated power, 10s 1.6 times of rated power,200ms
Back-up Switch Time	< 10ms
Rated Output Voltage	3/N/PE, 220V/380 V3/N/PE, 230V/400V
Rated Frequency THDv(@linearload)	50 Hz/60 Hz
Rated Frequency THDv(@linearload)	< 3%

# ALL IN ONE 100KW-221KWh AIR-COOLED ESS CABINET



### Economical and Efficient

RTE over 90%, DOD over 95%.



### Compact & Convenient

1.16m<sup>2</sup> footprint, easy to transport and install.



### Safe and Reliable

IP54, optimized ventilation design, temperature difference within 6°C



### Self-developed

PACK, BMS and EMS are all independently developed with good compatibility.



### Expandable & Modular

Easy modular design supports parallel connection for convenient system expansion.



### Easy O&M

Support multiple ways of operation and maintenance, including onsite, cloud.



Model	TG-eBank-221F(100kW)
<b>System Parameter</b>	
System Energy	221.056Wh
Inverter	S6-EH3P100K10-NV-YD-H
Transformer	100kW
Communication Access Method	3P4W
Rated Output Voltage	380/400V
Rated Output Power	100kW
Cooling Method	air cooling
Placement Environment	Outdoor
Battery Cabinet+Inverter	Size:W1200*D1700*H2100mm Weight:2.0T
Protection Grade	IP54
<b>General Parameter</b>	
Combination Method	220S1P
Rated Capacity	314Ah
Factory Voltage	704V-726V
Voltage at End of Discharge	≤594V
Recommended Charging Voltage	770V
Internal Impedance	≤120mΩ
Max Charging Current(Icm)	157A
Limited Charging Voltage(Ucl)	792V
Max Discharging Current	157A
Discharge Cut-off Voltage(Udo)	550V
Operation Temperature Range	Charge:0~55°C/Discharge:-20~55°C
Storage Temperature Range	-20°C~50°C
Single Pack Size/Weight	W519*D940*H230 150kg Quantity:11pcs
High Pressure Box Size/Weight	W488*D574*H230 25kg Quantity:1pcs
<b>Inverter Parameters</b>	
Recommended Max. PV Array Size	200kW
Max. Usable PV Input Power	200kW
Max. Input Voltage	1000V
Rated Voltage	600V
Start-up Voltage	180V
MPPT Voltage Range	150-950V
Max. Input Current	10*42A
Max. Short Circuit Current	10*60A
MPPT Number/Max Input Strings Number	10/20
Battery Type	Li-ion
Battery Voltage Range	300-950V
Max. Charge/Discharge Current	100A*2
Number of Battery Port	2
Maximum Charge/Dischargecurrent of Each Port	100A
Communication	CAN/RS485
Rated Output Power	100kW
Max. Apparent Output Power	1.4 times of rated power, 10s 1.6 times of rated power,200ms
Back-up Switch Time	< 10ms
Rated Output Voltage	3/N/PE, 220V/380 V3/N/PE, 230V/400V
Rated Frequency THDv(@linearload)	50 Hz/60 Hz
Rated Frequency THDv(@linearload)	< 3%

# ALL IN ONE 125KW-261KWh AIR-COOLED ESS CABINET



### Economical and Efficient

RTE over 90%, DOD over 95%.



### Compact & Convenient

1.16m<sup>2</sup>footprint, easy to transport and install.



### Safe and Reliable

IP54, optimized ventilation design, temperature difference within 6°C



### Self-developed

PACK, BMS and EMS are all independently developed with good compatibility.



### Expandable & Modular

Easy modular design supports parallel connection for convenient system expansion.



### Easy O&M

Support multiple ways of operation and maintenance, including onsite, cloud.



Model	TG-eBank-261F(125kW)
<b>System Parameter</b>	
System Energy	261.248Wh
Inverter	S6-EH3P125K10-NV-YD-H
Transformer	125kW
Communication Access Method	3P4W
Rated Output Voltage	380/400V
Rated Output Power	125kW
Cooling Method	air cooling
Placement Environment	Outdoor
Battery Cabinet+Inverter	Size:W1200*D1700*H2100mm Weight:2.9T
Protection Grade	IP54
<b>General Parameter</b>	
Combination Method	260S1P
Rated Capacity	314Ah
Factory Voltage	832V-858V
Voltage at End of Discharge	≤702V
Recommended Charging Voltage	910V
Internal Impedance	≤120mΩ
Max Charging Current(Icm)	157A
Limited Charging Voltage(Ucl)	936V
Max Discharging Current	157A
Discharge Cut-off Voltage(Udo)	650V
Operation Temperature Range	Charge:0~55°C/Discharge:-20~55°C
Storage Temperature Range	-20°C~50°C
Single Pack Size/Weight	W519*D940*H230 150kg Quantity:13pcs
High Pressure Box Size/Weight	W488*D574*H230 25kg Quantity:1pcs
<b>Inverter Parameters</b>	
Recommended Max. PV Array Size	250kW
Max. Usable PV Input Power	250kW
Max. Input Voltage	1000V
Rated Voltage	600V
Start-up Voltage	180V
MPPT Voltage Range	150-950V
Max. Input Current	10*42A
Max. Short Circuit Current	10*60A
MPPT Number/Max Input Strings Number	10/20
Battery Type	Li-ion
Battery Voltage Range	300-950V
Max. Charge/Discharge Current	100A*2
Number of Battery Port	2
Maximum Charge/Dischargecurrent of Each Port	100A
Communication	CAN/RS485
Rated Output Power	125kW
Max. Apparent Output Power	1.4 times of rated power, 10s 1.6 times of rated power,200ms
Back-up Switch Time	< 10ms
Rated Output Voltage	3/N/PE, 220V/380 V3/N/PE, 230V/400V
Rated Frequency THDv(@linearload)	50 Hz/60 Hz
Rated Frequency THDv(@linearload)	< 3%



## LAND SERIES ALL IN ONE ESS CABINET

- ALL IN ONE AIR-COOLED ESS CABINET-ECO-E64WX
- ALL IN ONE AIR-COOLED ESS CABINET-ECO-E101WX
- ALL IN ONE LIQUID-COOLED ESS CABINET-ECO-E261LP
- ALL IN ONE LIQUID-COOLED ESS CABINET-ECO-E418LP

Leveraging profound expertise in ESS integration and digital monitoring, Sunpal's LAND ECO series presents a full range of all-in-one air-cooled and liquid-cooled PV-plus ESS solutions. Boasting highly integrated core components, flexible modular design, advanced temperature control ( $\leq 3^{\circ}\text{C}$  cell difference for liquid-cooled models) and agile capacity expansion, the series delivers ultra-safe, stable and efficient operation, and greatly elevates the economy and constructability of all ESS projects.



# LAND

# ALL IN ONE ECO-E64WX AIR-COOLED ESS CABINET

ECO-E64WX is a small capacity PV-plus ESS solution provided by Sunpal through its long-term accumulation in the field of ESS integration and digital monitoring technology. Adopting the all-in-one design concept, this PV-plus ESS cabinet highly integrates equipment such as lithium battery ESS, hybrid inverter, HVAC, FSS, BCQ, etc. The product has a more compact structure, easy installation, and flexible capacity expansion, supporting multiple operating modes such as self use, peak shaving, and backup power.



### Economic & Efficient

RTE over 87%, DOD over 95%.



### Safe & Reliable

IP55, optimized ventilation design, temperature difference within 6 °C



### Compact & Convenient

0.96 m<sup>2</sup> footprint, easy to transport and install



### Expandable & Modular

Easy modular design supports parallel connection for convenient system expansion.



### Versatile

Support multiple brands of hybrid inverter, with higher selectivity .



### PV pluggable

Support PV connection, with higher integration.



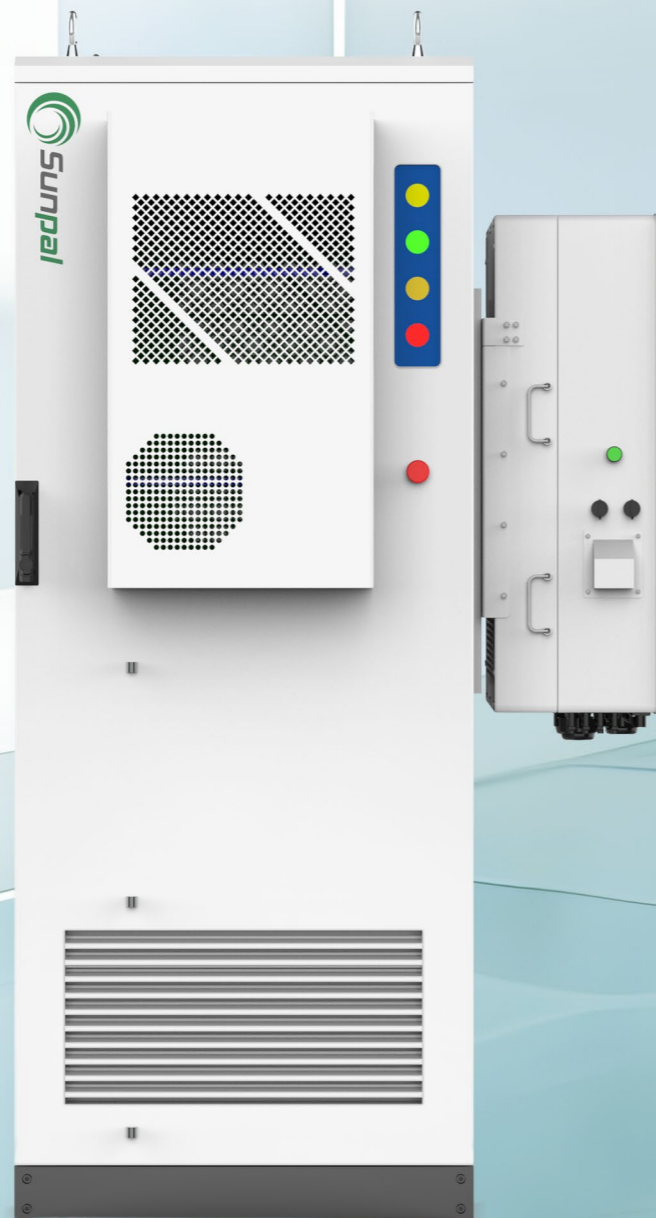
### Self-developed

PACK, BMS and EMS are all independently developed with good compatibility.



### Easy O&M

Support multiple ways of operation and maintenance, including onsite, cloud.



Model	ECO-E64WX				
<b>Battery Input</b>					
Cell Type	LFP 120Ah				
Battery System	1P168S				
Rated Energy	64.512kWh				
Rated Voltage	537.6V				
Voltage Range	470.4V~604.8V				
<b>PV Input</b>					
Recommended Input Power Max	37.5kW	45kW	54kW	60kW	75kW
PV Voltage	200V~850V				
MPPT	4				
MAX. Input Current	30A*4				
<b>AC Output</b>					
Rated Power	25kW	30kW	36kW	40kW	50kW
Max. Power	27.5kVA	33kVA	39.6kVA	44kVA	55kVA
Nominal Voltage	400Vac/3P+N+PE				
Nominal Frequency	50Hz/60Hz				
THDi	< 3%				
DC Ratio	< 0.5%I <sub>pn</sub>				
Power Factor	0.8 leading~0.8 lagging				
<b>General</b>					
Efficiency	≥87%				
Charge/Discharge Rate	0.8P Max.				
DoD	95%(25±2°C)				
Cycle Life	≥5500 Cycles				
Ingress Rating	IP55				
Cooling	Force air colling				
Operating Temperature	-25~55°C				
Humidity	0~95%RH, non-condensing				
Altitude	≤2000m(derating above 2,000m)				
Dimensions (W*D*H)	800*1200*2030mm				
Weight	1 t				
Fire Safety	Aerosol				
Connective	Ethernet/RS485				
Compliance	UN38.3, IEC62477, IEC61000, IEC62619, IEC63056, UL9540A, EN50549				
Grid Connection Certifications	G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1 / EN 50549-10, VDE 0126 / UTE C 15 / VFR:2019, NTS 631 / RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727 , IEC 60068 , IEC 61683, EN 50530, MEA, PEA, PORTARIA N° 140, DE 21 DE MARÇO DE 2022				

# ALL IN ONE ECO-E101WX AIR-COOLED ESS CABINET

The all-in-one air-cooled ESS cabinet integrates long-life battery, efficient balancing BMS, high-performance PCS, active safety system, smart distribution and HVAC into one cabinet, enabling long-term operation with safety, stability and reliability. Through AC side parallel connection, it achieves agile deployment of ESS power station with flexible capacity expansion.



1P fast charge /discharge rate.



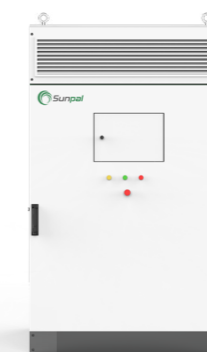
Support DC-DC modular expansion to achieve PV access.



Support hybrid inverter(optional) to achieve integration of PV and ESS.



Model	ECO-E101WX
<b>DC Side</b>	
Cell Type	LFP 120Ah
Battery System	1P264S
Rated Energy	101kWh
Rated Voltage	844.8V
Voltage Range	739.2V~950.4V
<b>AC Side</b>	
Rated Power	100kW
Max. Power	110kW
Nominal Voltage	400Vac/3P+N+PE
Nominal Frequency	50Hz/60Hz
THDi	≤3%
DC Ratio	<0.5%Ipn
Power Factor	-1 lagging~1 leading
<b>General</b>	
Efficiency	≥89%
Charge/Discharge Rate	1P
DoD	95% (25±2°C)
Cycle Life	≥5500 cycles
Ingress Rating	IP55
Cooling	Forced air cooling
Operating Temperature	-25~55°C
Humidity	0~95%RH, non-condensing
Altitude	≤2000m(derating above 2,000m)
Dimensions (W*D*H)	1,250*1,200*2,150 (mm)
Weight	2,000kg
Fire Safety	Aerosol
Connectivity	Ethernet/RS485
Compliance	UN38.3, IEC62477, IEC61000, IEC62619, IEC63056, UL9540A, EN50549



# ALL IN ONE ECO-E261LP LIQUID-COOLED ESS CABINET

The all-in-one liquid-cooled ESS cabinet adopts advanced cabinet-level liquid cooling and temperature balancing strategy. The cell temperature difference is less than 3°C, which further improves the consistency of cell temperature and extends the battery life. The modular design makes the parallel solution more flexible and has higher energy density, which significantly improves the economy, safety and construction convenience of ESS projects.



### Compact

1.8m<sup>2</sup> footprint only, easy transportation & fast installation.



### High Integration

261kWh energy in one cabinet with remarkable endurance.



### Efficient Cooling

Optimal in-PACK duct design, achieve high-efficient cooling and low energy consumption.



### Long Cycle Life

Over 8,000 times cycle life, excellent performance of battery system.



### Flexible Expansion

Modular design, simplified parallel expansion.



### Ultimate Safety

In-PACK fire warning and protection with aerosol, prevent heat diffusion and runaway.



Model	ECO-E261LP
<b>DC Side</b>	
Cell Type	LFP314Ah
PACK	52.54kWh/1P52S
Battery System	261.24kWh/1P260S
Voltage Range	728~936Vdc
PACK Ingress Rating	IP65
<b>AC Side</b>	
Rated Power	125kW
Max. Power	137kW
THDi	≤3%
DC Ratio	<0.5%In
Nominal Voltage	400Vac/3P+PE
Power Factor	0.98 lagging~0.98 leading
Nominal Frequency	50Hz/60Hz
<b>General</b>	
Efficiency	≥89%
Charge/Discharge Rate	0.5P
DoD	95% (25±2°C)
SOC Accuracy	<3%
Cycle Life	≥8,000 cycles
Connectivity	Ethernet /RS485
Ingress Rating	IP55
Cooling	Active liquid cooling
Operating Temperature	-25°C~55°C
Humidity	5~95%RH, non-condensing
Noise	≤75dB
Altitude	≤2,000m (derating above 2,000m)
Fire Safety	Aerosol
Dimensions (W*D*H)	1,350*1,350*2,250 (mm)
Weight	2,800kg
Compliance	UN38.3, IEC62477, IEC61000, IEC62619, IEC63056, UL9540A, EN50549



# ALL IN ONE ECO-E418LP LIQUID-COOLED ESS CABINET

The ECO -E418LP features advanced pack - level liquid cooling and temperature balancing , maintaining cell temperature differences within 3°C. This enhances cell temperature consistency and extends battery life . Its modular design enables flexible parallel configurations and higher energy density , significantly improving the cost - effectiveness , safety , and installation convenience of ESS projects .



### Compact

2m<sup>2</sup> footprint only, easy transportation & fast installation.



### High Integration

418kWh energy in one cabinet with remarkable endurance.



### Efficient Cooling

Optimal in-PACK duct design, achieve high-efficient cooling and low energy consumption.



### Long Cycle Life

Over 8,000 times cycle life, excellent performance of battery system.



### Flexible Expansion

Modular design, simplified parallel expansion.



### Ultimate Safety

In-PACK fire warning and protection with aerosol, prevent heat diffusion and runaway.



Model	ECO-E418LP-4A400	ECO-E418LP-3A480	ECO-E418LP-2A690	ECO-E418LP-2A800
<b>DC Side</b>				
Cell Type	LFP / 314 Ah			
Pack Configuration	52.248 kWh / 1P52S			
System Configuration	418 kWh / 1P416S			
Rated DC Voltage	1331.2 V			
DC Voltage Range	1164.8 ~ 1497.6 V			
Max. Charge/Discharge Rate	0.25~0.5 P			
Max. Depth of Discharge	100% (25 ± 2°C)			
<b>AC Side</b>				
Rated Output Power	125kW*	150kW	215kW	215kW
Max. Apparent Power	137.5kW*	165kW	237kW	237kW
Rated AC Voltage	400V	480V	690V	800V
AC Voltage Range	-15%~+10%			
Grid Type	3P3W			
Rated Frequency	50 Hz / 60 Hz			
Power Factor	0.99/ -1 ~ +1			
THDi	≤3%			
DC Ratio	< 0.5% Ipn			
<b>General</b>				
Max. Efficiency	≥90%			
Cycle Life	≥ 8,000 cycles			
Communication	Modbus TCP/RTU			
Fire Suppression System	Aerosol			
Ingress Rating	IP55			
Cooling	Liquid cooling + Air cooling			
Operating Temperature	-25°C~55°C (Derating after 45°C)			
Anticorrosion Rating	C4 (C5 optional)			
Humidity	5~95% RH (non-condensing)			
Noise	≤ 80 dB			
Altitude	4000m (Derating above 2000m)			
Dimensions (W*D*H)	1,500*1,350*2,400 mm			
Weight	3,800 kg			
Compliance	UN38.3, IEC62477-1, IEC61000, IEC62619, IEC63056, UL9540A, EN50549			

\* Derating to 90% when baery volatge > 1300V.

## MARINE SERIES

# ALL-IN-ONE LIQUID-COOLED ON/OFF-GRID ESS CONTAINER

- 20FT 2.17MWh All-in-one Liquid-cooled ESS Container-ECO-E20FT2170LP
- 10FT 723kWh All-in-one Liquid-cooled ESS Container-ECO-B10FT723LP-2
- 10FT 1044kWh All-in-one Liquid-cooled ESS Container-ECO-E10FT1044LP-2

With rich expertise in ESS system integration and digital monitoring, Sunpal's MARINE ECO series presents all-in-one liquid-cooled on/off-grid ESS container solutions in standard 10ft/20ft specifications. Boasting highly integrated core systems, string-based independent cluster management, advanced hybrid cooling ( $\leq 3^{\circ}\text{C}$  cell temperature difference) and seamless on/off-grid switching, the solutions enable flexible multi-power access, ensure ultra-safe and stable long-term operation, and boost the economy and adaptability of industrial and commercial ESS projects.



# MARINE

# 2.17MWh ALL IN ONE ECO-E20FT2170LP LIQUID-COOLED ESS CONTAINER



Sunpal's innovative 400V all-in-one container solution integrates PCS, EMS, BMS, cooling system, fire suppression system, and AC combiner cabinet and other components. The highly integrated system and high-quality 314Ah battery cells provide higher energy density with smaller dimensions. And the efficient hybrid cooling system ensures stable operation, maintaining a cell temperature difference within 3°C. The standard 20ft container design enables easy transportation and installation, allowing for rapid deployment, which provides a wide application possibility for commercial, industrial, and grid-side energy storage scenarios.

Model	ECO-E20FT2170LP
<b>DC Side</b>	
Cell Type	LFP314Ah
PACK	48.23kWh/1P48S
Battery System	2170.3kWh/9P240S
Voltage Range	672-864Vdc
<b>AC Side</b>	
Rated Power	1000kW
Max. Power	1100kW
THDi	≤3%
DC Ratio	<0.5%Ipn
Nominal Voltage	400Vac/3P+N+PE
Power Factor	-1 lagging ~ 1 leading
Nominal Frequency	50Hz/60Hz
<b>General</b>	
System Efficiency	≥88%
Charge/Discharge Rate	0.5P
DoD	95% (25±2°C)
Cycle Life	8000cycles@±25°C, 95%DOD 0.5P
Communication	Ethernet /RS485
Ingress Rating	IP55
Cooling System	Liquid Cooled + Forced Air Cooled
Operating Temperature	-25°C~55°C *
Humidity	5~95%RH, non-condensing
Noise	≤80dB
Altitude	≤2,000m (derating above 2,000m)
Fire Suppression System	Aerosol system (pack level and container level) , water spray system
Dimensions (W*D*H)	6058*2438*2591 (mm)
Weight	25t
Compliance	UN38.3, IEC62477-1, CE/EMC, IEC62619, IEC63056, UL9540A, IEC62933, EN50549

\*: Power decreased after 45°C



### Hybrid Cooling System

The liquid-cooled battery cooling system combined with an air-cooled PCS cooling system provides dual assurance for system efficiency.



### All-in-One Design

Highly integrated 3S system, cooling system, and fire protection system, delivering greater capacity within a smaller footprint.



### String-Based Solution

Each battery cluster is independently managed, ensuring higher efficiency and system stability.



### Standard 20ft Container

Pre-tested and pre-installed before delivery, enabling easy transportation, simple commissioning, and shorter lead times.

# 723kWh ALL IN ONE ECO-B10FT723LP-2 LIQUID-COOLED ESS CONTAINER



The ECO-B10FT723LP -2 is a highly integrated, standard 10-ft containerized energy storage system designed for commercial and industrial applications, with a rated AC output voltage of 400V. The system integrates STS system, providing strong off-grid load capability and supporting seamless on/off-grid switching with in 20ms. It is equipped with dedicated interfaces for diesel generator connection and PV inverter connection, enabling multiple power sources to supply the system. This flexible design allows the system to adapt to various application scenarios and diverse user requirements.

Model	ECO-B10FT723LP-2
<b>Battery Side</b>	
Cell Type	LFP/314Ah
System Grouping Method	1P240S*3
Rated DC Voltage	768V
Rated Energy	723kWh,100%DOD (25 2°C) 0.5P
DC Voltage Range	DC672~864V Minimum single-cell voltage: 2.8V Maximum single-cell voltage: 3.6V
<b>Grid Side</b>	
Rated Output Power	375kW
Maximum AC power	412 kW (for 1 minute)
Grid Rated Voltage	400Vac/3P+N+PE
Rated Frequency	50Hz/60Hz
Power Factor	-0.99~+0.99
AC Current Distortion Rate	≤3%
DC Ratio	<0.5% pn
<b>General</b>	
Efficiency	≥88%
Charge/Discharge Rate	≤0.5P
DoD	95% DOD
Ingress Protection Rating	IP55
Cooling Method	Active Liquid Cooling
Operating Temperature	-25°C~55°C
Relative Humidity	0~95%RH
Operating Altitude	≤2000m
Dimensions (W*D*H)	2991×2438×2591mm
Total Weight	10t
Communication	Ethernet/RS485
Fire Suppression System	PACK-level aerosol ,space-grade aerosol fire extinguishing
Certification	GB/T36276, GB/T 34120, GB/T34131, UN3536, IEC62619 IEC63056, UL9540A, IEC62477, IEC61000



### All-in-One 10-ft Container

Highly integrated 3S system,cooling system, and fire protection system,delivering greater capacity within a smaller footprint.



### Seamless On/off-grid Switching

The systemequipped with an integrated STS, enabling seamless on-grid and off-grid switching within 20ms.



### String-Based Solution

Each battery cluster is independently managed, ensuring higher efficiency and system stability.



### Multiple Power Source Options

With reserved interfaces for diesel generator and PV inverter, the system supports multiple power sources, suiting a wide range of scenarios.

# 1044kWh ALL IN ONE ECO-E10FT1044LP-2 LIQUID-COOLED ESS CONTAINER



The ECO-E10FT1044LP-2 is a highly integrated, standard 10-ft containerized energy storage system designed for commercial and industrial applications, with a rated AC output voltage of 400V. The system integrates STS system, providing strong off-grid load capability and supporting seamless on/off-grid switching within 20ms. It is equipped with dedicated interfaces for diesel generator connection and PV inverter connection, enabling multiple power sources to supply the system. This flexible design allows the system to adapt to various application scenarios and diverse user requirements.

Model	ECO-E10FT1044LP-2
<b>Battery Side</b>	
Cell Type	FP / 314 Ah
Pack Configuration	52.2 kWh / 1P52S
System Configuration	1044 kWh / 4P260S
Rated DC Voltage	832 V
DC Voltage Range	728 ~ 936 V
<b>Grid Side</b>	
Rated Output Power	500 kW
Max. Apparent Power	550 kVA
Rated AC Voltage	400 Vac / 3W+N+PE
Rated Frequency	50 Hz / 60 Hz
Power Factor	0.99/ -1 ~ +1
THDi	≤3%
DC Ratio	<0.5% I <sub>pn</sub>
<b>General</b>	
Cycle Life	≥ 8,000 cycles
Communication	Modbus TCP/IP
Fire Suppression System	Aerosol system(pack level and container level), water spray system
Ingress Rating	IP54
Cooling	Liquid cooling+Forced air cooling
Operating Temperature	-25°C~55°C (Derating after 45°C)
Anticorrosion Rating	C4 (C5 optional)
Humidity	5~95% RH (non-condensing)
Noise	≤ 80 dB
Altitude	3000m (Derating above 2000m)
Dimensions (W*D*H)	2991*2438*2591 mm
Weight	14 t
Certification	UN38.3, IEC62477-1, CE/EMC, IEC62619, IEC63056, UL9540A, EN50549

\*Note: The value indicated herein is a recommended reference based on PF=0.7. When the load involves motors or other types of impact loads, it is recommended to equip the system with a soft starter. Please contact Elecnova for further technical support prior to order placement.



### All-in-One 10-ft Container

Highly integrated 3S system, cooling system, and fire protection system, delivering greater capacity within a smaller footprint.



### Seamless On/off-grid Switching

The system equipped with an integrated STS, enabling seamless on-grid and off-grid switching within 20ms.



### String-Based Solution

Each battery cluster is independently managed, ensuring higher efficiency and system stability.



### Multiple Power Source Options

With reserved interfaces for diesel generator and PV inverter, the system supports multiple power sources, suiting a wide range of scenarios.

# NATURE SERIES ALL IN ONE ESS CABINET

- ALL IN ONE AIR-COOLED ESS CABINET-Monet-50TS(DC50)(100kWh)
- ALL IN ONE AIR-COOLED ESS CABINET-Monet-100TS(DC100)(215kwh)
- ALL IN ONE LIQUID-COOLED ESS CABINET-Monet-100TS(DC100)(232kwh)

The NATURE Monet Series outdoor energy storage cabinet integrates energy storage batteries, modular PCS, energy management monitoring system, power distribution system, environmental control system, and fire control system.

It adopts modular PCS for easy maintenance and expansion. The outdoor cabinet adopts front maintenance to reduce the occupied area and maintenance channel. It has the characteristics of safe and reliable operation, fast deployment, low cost, high energy efficiency, and intelligent management.



# NATURE

# ALL IN ONE Monet-50TS(DC50)(100kWh) AIR-COOLED ESS CABINET

The system has been commercialized, integrating energy storage batteries, energy storage converters, photovoltaic converters, energy management monitoring systems, power distribution systems, environmental control systems, and fire control systems. It can fully control the operation status and risks of the system.



Model	Monet-50TS(DC50)(100kWh)
Battery Rated Capacity	100kWh
Battery Rated Voltage	844.8V
Battery Voltage Range	739.2V~950.4V
Battery Type	Lithium Iron Phosphate battery (LFP)
Battery Cell Capacity	120Ah
Series of Battery	1P*24S*11S
Maximum Charge and Discharge Current	60A
Photovoltaic Rated Capacity	50kW
Photovoltaic Voltage Range	200-550V
Rated AC Power	50kW
Rated AC Current	72A
Rated AC Voltage	400V, 3W+N+PE/3W+PE
Rated AC Frequency	50/60Hz
THDI	< 3% (Rated power)
Power Factor	-1Leading to+1 lagging
THDU	< 3% (Linear Load)
Degree of Protection	IP54
Isolation Mode	Industrial Transformer Isolation
Shutdown Self-discharge	< 100W (Without transformer)
Display	LCD
Relative Humidity	0 ~ 95% (no condensation)
Noise	< 78dB
Ambient Temperature	-25°C to +60°C(with derating at temperatures above 45°C)
Cooling Mode	Intelligent air-cooled
Altitude	3000m (> 3000m reduction)
Communication Interface	CAN/Ethernet / 485
Size (W * D * H)	1300*1030*2100mm
Weight (approx.)	2150kg

### • Model Description

Monet- 50 T S (DC50) (100kWh)

- Battery rated capacity
- DC rated power
- S stands for STS, and N/A means missing
- With isolation transformer
- AC rated power
- Series name

# ALL IN ONE Monet-100TS (DC100) (215kWh) AIR-COOLED ESS CABINET

Real-time acquisition of local load power, photovoltaic power generation priority is self-generation and self-use, and surplus electricity storage; When the power generated by photovoltaic power generation is insufficient to provide local load, the battery storage is prioritized.

The protection level is IP54, which can perfectly cope with various types of weather in the outdoor environment.



Model	Monet-100TS (DC100) (215kWh)
Battery Rated Capacity	215kWh
Battery Rated Voltage	768V
Battery Voltage Range	672V~864V
Battery Type	Lithium iron phosphate battery (LFP)
Battery Cell Capacity	280Ah
Series of Battery	1P*20S*12S
Maximum Charge and Discharge Current	140A
Photovoltaic Rated Capacity	100kW
Photovoltaic Voltage Range	200~450V
Rated AC Power	100kW
Rated AC Current	144A
Rated AC Voltage	400V, 3W+N+PE/3W+PE
Rated AC Frequency	50/60Hz
THDI	< 3% (Rated power)
Power Factor	-1 Leading to+1 lagging
THDU	< 3% (Linear Load)
Degree of Protection	IP54
Isolation Mode	Industrial Transformer Isolation
Shutdown Self-discharge	< 100W (Without transformer)
Display	LCD
Relative Humidity	0 ~ 95% (no condensation)
Noise	< 78dB
Ambient Temperature	-25°C to +60°C(with derating at temperatures above 45°C)
Cooling Mode	Intelligent air-cooled
Altitude	3000m (> 3000m reduction)
Communication Interface	CAN/Ethernet / 485
Size (W * D * H)	1800*1200*2300mm
Weight (approx.)	3100kg

### • Model Description

Monet- 100 T S (DC100) (215kWh)

- Battery rated capacity
- DC rated power
- S stands for STS, and N/A means missing
- With isolation transformer
- AC rated power
- Series name

# ALL IN ONE Monet-100TS (DC100) (232kWh) AIR-COOLED ESS CABINET

It adopts door-mounted embedded integrated air conditioning, which does not occupy cabinet space, improves the available space of outdoor cabinets, has better structural integrity at the top, and has good waterproof performance.

The local control screen can achieve diversified functions such as system operation monitoring, energy management strategy development, equipment remote upgrading, etc.



Model	Monet - 100TS (DC100) (232kWh)
Battery Rated Capacity	232kWh
Battery Rated Voltage	832V
Battery Voltage Range	728V~936V
Battery Type	Lithium iron phosphate battery (LFP)
Battery Cell Capacity	280Ah
Series of Battery	1P*52S*5S
Maximum Charge and Discharge Current	140A
Rated AC Power	100kW
Rated AC Current	180A
Rated AC Voltage	400V, 3W+N+PE
Rated AC Frequency	50/60Hz
THDI	< 3% (Rated power)
Power Factor	-1 leading to +1 lagging
THDU	< 3% (Linear Load)
Degree of Protection	IP54
Protective Class	I
Isolation Mode	No - Isolation (Adding isolation transformer is optional)
Shutdown Self-discharge	< 0.1% Rated Power (Without transformer)
Display	LCD
Relative Humidity	0 ~ 95% (no condensation)
Noise	< 78dB
Ambient Temperature	-25°C to +60°C(with derating at temperatures above 45°C)
Cooling Mode	Liquid - cooled
Altitude	3000m (> 2000m reduction)
Communication Interface	CAN/Ethernet / 485

## • Model Description

### Monet- 100 T S (DC100) (232kWh)



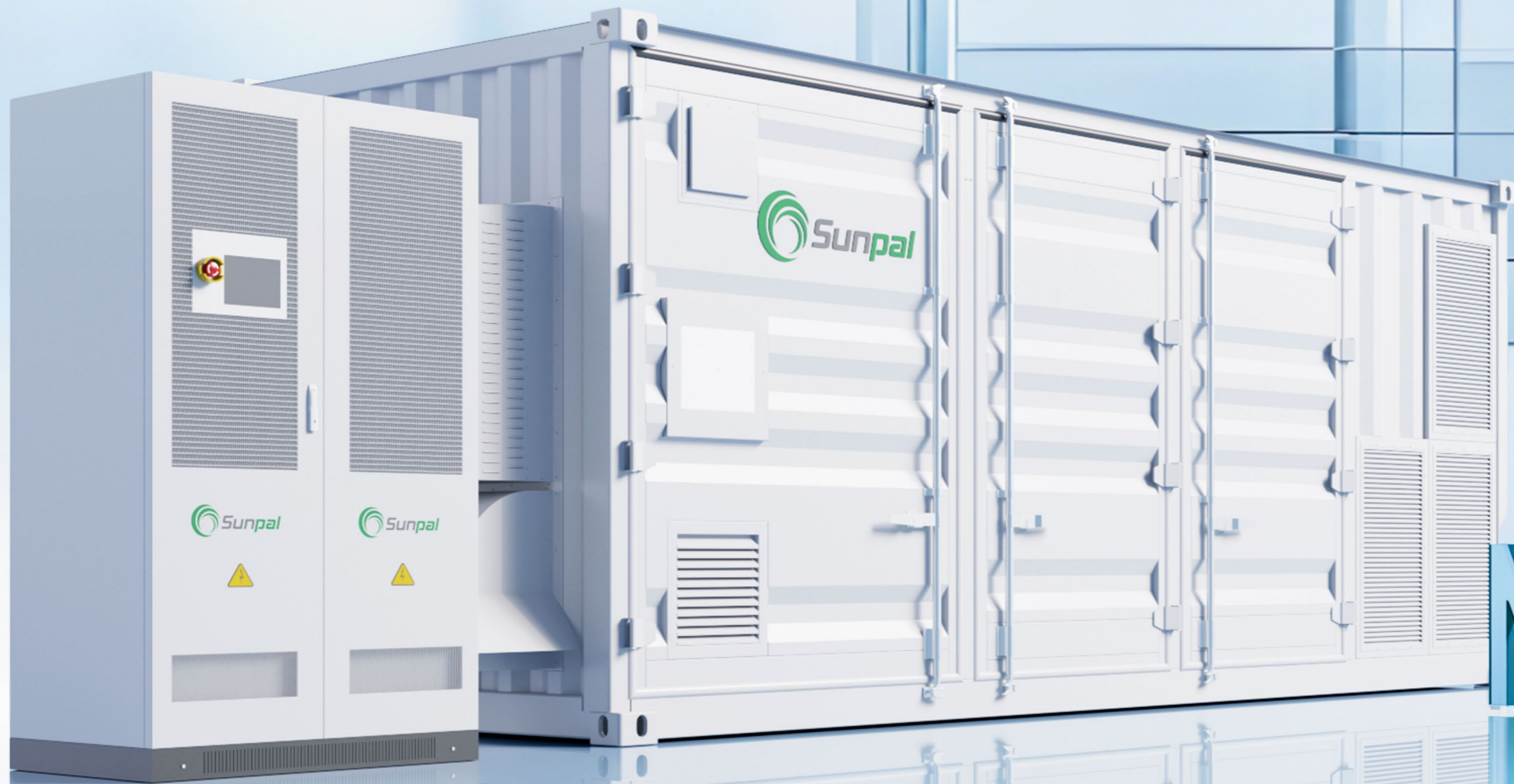
# NATURE SERIES

## 20FT ALL IN ONE ESS CONTAINER

- 20FT ALL IN ONE AIR-COOLED ESS CONTAINER-Alice-500TS(DC500)(1075kWh)
- 20FT ALL IN ONE AIR-COOLED ESS CONTAINER-Alice-1000TS(DC1000)(2150kWh)

The NATURE Alice Series integrates energy storage converter, storage battery, isolation transformer, cooling, fire protection, power distribution, dynamic loop monitoring and energy management, friendly grid adaptability, accepting grid scheduling, active and reactive power compensation, supporting peak shaving and valley filling, demand -side response, and assisting in new energy grid -connected applications, etc.

The IP55 protection level adapts to the harsh outdoor environment, which is perfectly suited to the needs of industrial and commercial energy storage.



# NATURE

# 20FT ALL IN ONE Alice-500TS(DC500)(1075kWh) AIR-COOLED ESS CONTAINER

**Diverse Functions:** It supports peak shaving and valley filling, demand-side response, backup power supply, and other major functions; it enables remote updates of operational strategies and firmware upgrades, resulting in lower operation and maintenance costs.

**High Integration:** The system is productized, integrating energy storage batteries, PCS(Power Conversion System), power distribution, temperature control, fire protection, water immersion door sensors, and monitoring communication, providing comprehensive control over the system's operational status and risks.



Model	Monet-(DC500)
<b>Photovoltaic(PV) Port</b>	
PV Voltage Range	250~500V (MPPT)
Max.PV Input Current	10*160A
MPPT Quantity	1/5/10
<b>Battery Port</b>	
Battery Voltage Range	600~950V
DC Side Bus Power	500kW
Number of DC Side Inputs	1

Model	Alice- (1075kWh)
<b>Battery Parameters</b>	
Battery Rated Capacity	215kWh*5
Battery Rated Voltage	768V
Battery Voltage Range	672~864V
Series of Battery	5P*20S*12S
Adaptive Battery	LFP
Cell Capacity	280Ah
<b>General Parameters</b>	
Degree of Protection	IP55
Ambient Temperature	-25°C to +60°C (derating above 45°C)
Relative Humidity	0 ~ 95% (no condensation)
Fire Extinguishing System	Perfluorohexane/heptafluoropropane pipeline fire extinguishing system
Battery Compartment Cooling Method	Air Conditioning
Electrical Compartment Cooling Method	Intelligent Air Cooling
Altitude	3000m (> 2000m reduction)
Communication Interface	RS485 / CAN
Dimensions (W * D * H)	6058*2438*2591mm
Weight (approx.)	12t

### • Model Description

Alice- 500 T S (DC500) (1075kWh)



# 20FT ALL IN ONE Alice-1000TS(DC1000)(2150kWh) AIR-COOLED ESS CONTAINER

Flexible and Convenient: Modular PCS allows for linear expansion of battery units and bidirectional energy storage inverter units; it possesses independent charging and discharging control capabilities for multiple battery packs, enhancing battery utilization and safety.

Safe and Intelligent: A fault escalation handling mechanism responds to preset fault scenarios; customized BMS (Battery Management System) provides comprehensive measurement and protection functions; it supports cloud-based dispatching and operational report analysis.

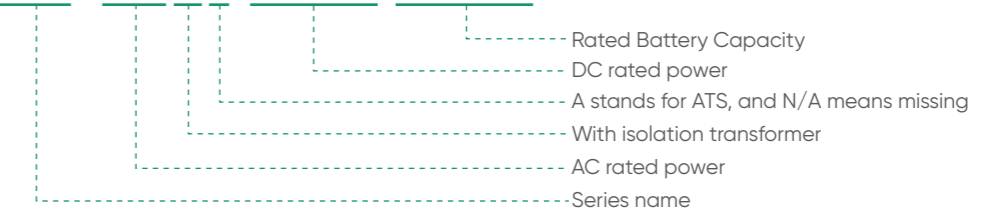


Model	Monet-(DC500)*2
<b>Photovoltaic(PV) Port</b>	
PV Voltage Range	315 - 550V (Minimum battery voltage - 50V)
Max.PV Input Current	10*160A
MPPT Quantity	1/5/10
<b>Battery port</b>	
Battery Voltage Range	600~950V
DC Side Bus Power	500kW
Number of DC Side Inputs	1

Model	Alice- (2150kWh)
<b>Battery Parameters</b>	
Battery Rated Capacity	215kWh*10
Battery Rated Voltage	832V
Battery Voltage Range	672~864V
Series of Battery	10P*20S*12S
Adaptive Battery	LFP
Cell Capacity	280Ah
<b>General Parameters</b>	
Degree of Protection	IP54
Ambient Temperature	-25°C to +60°C((Derating above 45°C)
Relative Humidity	0 ~ 95% (no condensation)
Fire Extinguishing System	Perfluorohexane/heptafluoropropane pipeline fire extinguishing system
Battery Compartment Cooling Method	Air Conditioning
Electrical Compartment Cooling Method	Intelligent Air Cooling
Altitude	3000m (> 2000m reduction)
Communication Interface	RS485 / CAN
Dimensions (W * D * H)	12196*2438*2896mm (Container); 800*800*2100mm(Combiner Converter)
Weight (approx.)	27.5t

### • Model Description

Alice- 1000 T A (DC1000) (2150kWh)



# NATURE SERIES CERTIFICATE

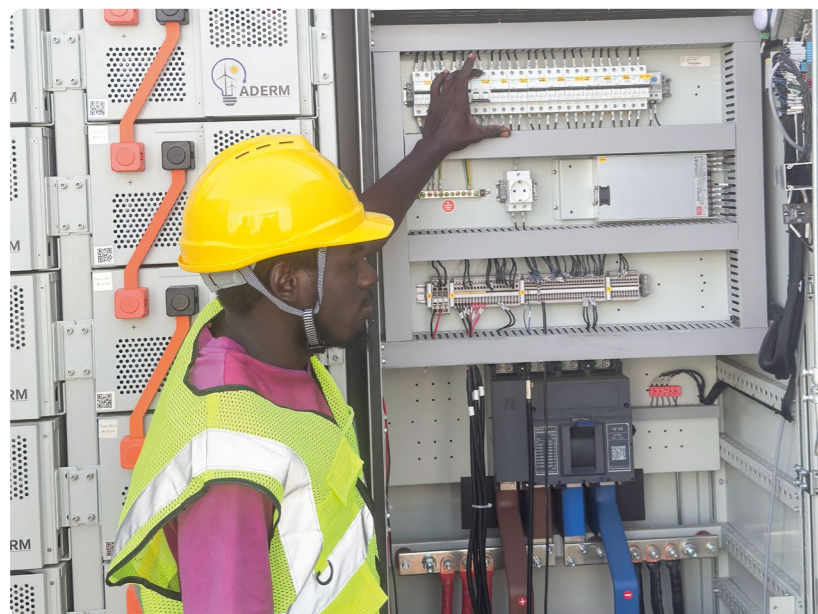
Country	Classification	Standard
Thailand	Grid Tied	MEA, Anti - backflow
Thailand	Grid Tied	PEA
Europe (CE), South Africa, Vietnam, India/Pakistan	Safety Standard	IEC62477 - 1:2012+A1 IEC62477 - 1:2012+A1+A1
		IEC62477 - 1:2012+A1
	EMC	EN/IEC 61000 - 6 - 2:2019 EN/IEC 61000 - 6 - 4:2019
	Energy Efficiency & Environment	IEC 61683:1999 IEC 60068 - 2 - 1:2007 IEC 60068 - 2 - 2:2007 IEC 60068 - 2 - 14:2007 IEC 60068 - 2 - 24:2009 IEC 60068 - 2 - 30:2005
Vietnam, India/Pakistan	Grid Tied	IEC 61727:2004 IEC 62116:2014
	EMC	IEC 61000, IEC 62920
Europe (CE)	Safety Standard	IEC 62109, IEC62477
	Grid Tied	IEC 61727, IEC 62116
Europe	Grid Tied	EN 50549 - 9, EN 50549 - 10
Belgium	Grid Tied	C10/11.2019
Netherlands Deviation	Grid Tied	Netherlands Deviation
South Africa	Grid Tied	NRS - 097
Germany	Grid Tied	VDE - AR - N 4105, VDE0124 - 100
UK	Grid Tied	G99
UK	Grid Tied	G100

\*All the above certificates are issued by TUV

### 📍 Lebanon



### 📍 South Africa



### 📍 Germany



### 📍 Aruba

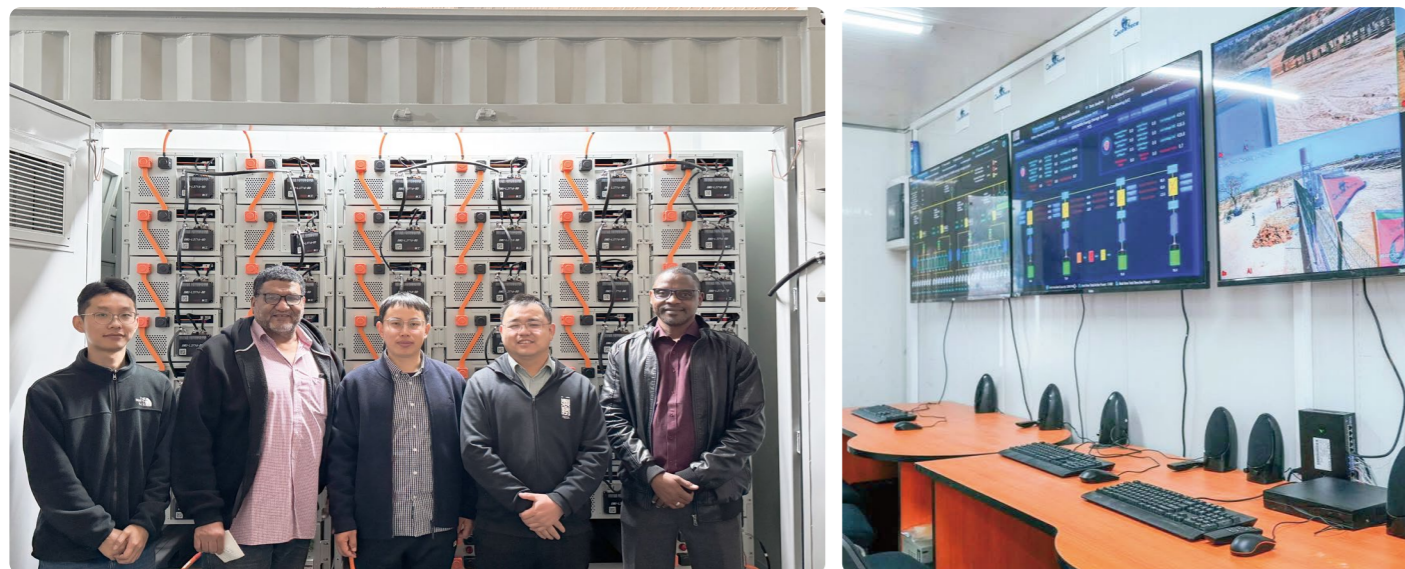


# GLOBAL PROJECT

## 📍 Czech Republic



## 📍 South Africa



## 📍 Chad



## 📍 Afghanistan

