

FSE Solutions Sales Map

CHINA

Kunshan
Xiamen
Ningbo
Huizhou
Guangzhou
Suzhou
Jinjiang

VIETNAM

Ha Tinh
Renze

TAIWAN

Taipei
Taoyuan
Hsinchu
Taichung
Changhua
Nantou
Yunlin
Tainan
Kaohsiung

JAPAN

Tokyo
Kyoto

USA

Texas
Louisiana

INDONESIA

PHILIPPINES



台塑新智能科技股份有限公司
FORMOSA SMART ENERGY TECH CORP.

HEADQUARTERS

A5 9F., No. 380, Sec 6, Nanjing E. Rd.,
Neihu Dist., Taipei City, Taiwan
Tel +886-2-2712-2211 Fax +886-2-2712-8381



R & D CENTER

2F., No. 24, Wuquan 3rd Rd., Wugu Dist.,
New Taipei City, Taiwan
Tel +886-2-2299-3318 Fax +886-2-2299-3567

MODULE PLANT

No. 359, Sec 3, Zhongshan Rd., Changhua City,
Changhua County, Taiwan
Tel +886-4-723-6101 Fax +886-4-726-6561

BATTERY CELL & MODULE PLANT

No. 28, Lunan Rd., Lukang Township,
Changhua County, Taiwan
Tel +886-4-723-6101 Fax +886-4-726-6561



Formosa Smart Energy Solutions and Products

FORMOSA
SMART
ENERGY

Energy
Conservation

Energy
Storage

New
Energy

Recycling



FORMOSA SMART ENERGY

Due to its climate-friendly nature, new energy generated from renewable natural resources such as wind and sunlight is considered the path towards a more sustainable future.

Renewable energy not only helps reduce our reliance on traditional energy generated from non-renewable resources such as coal, oil and natural gas, which leaves a significant negative impact on the environment, it also creates the opportunity for a new energy-economic development model to emerge.

Over **3,000**
Client Applications

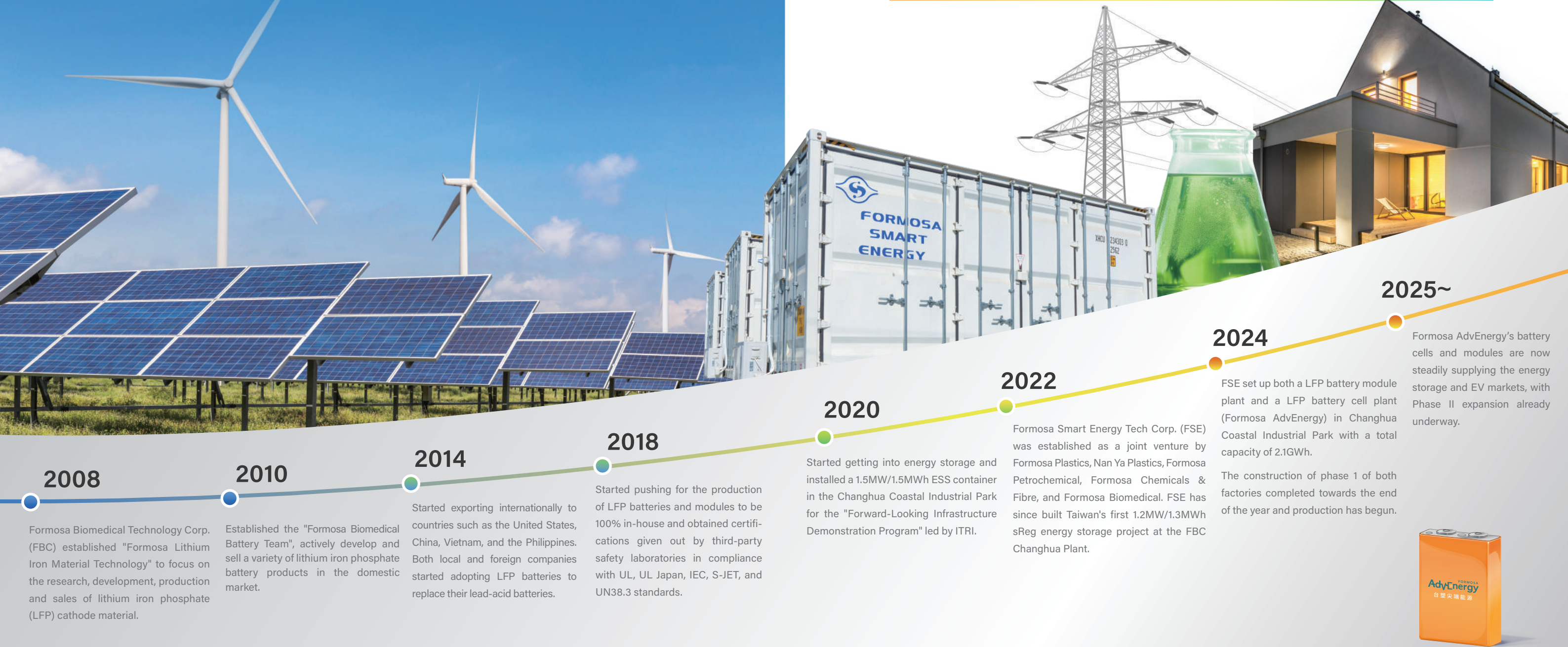
Over **25**
Construction Sites
Around the World

Over **15**
Years of Experience

PRODUCT OVERVIEW

LFP Battery Cell	3
LFP Battery Pack (Module)	5
Commercial & Industrial Energy Storage System	9
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EV Battery System	15
Tubular Photobioreactors	17

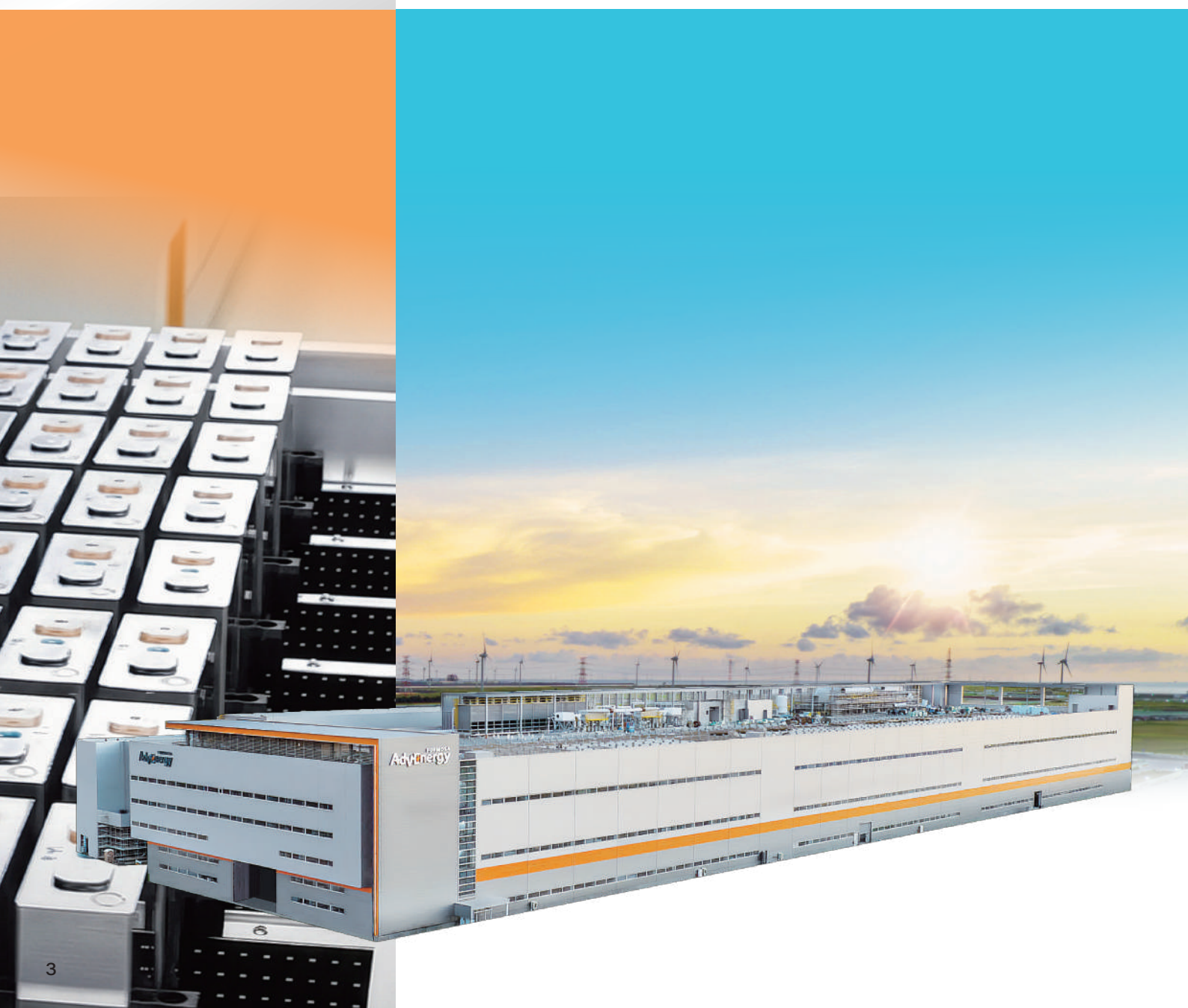
▶ Trustworthy
▶ Systematic
▶ Safe
▶ Intelligent



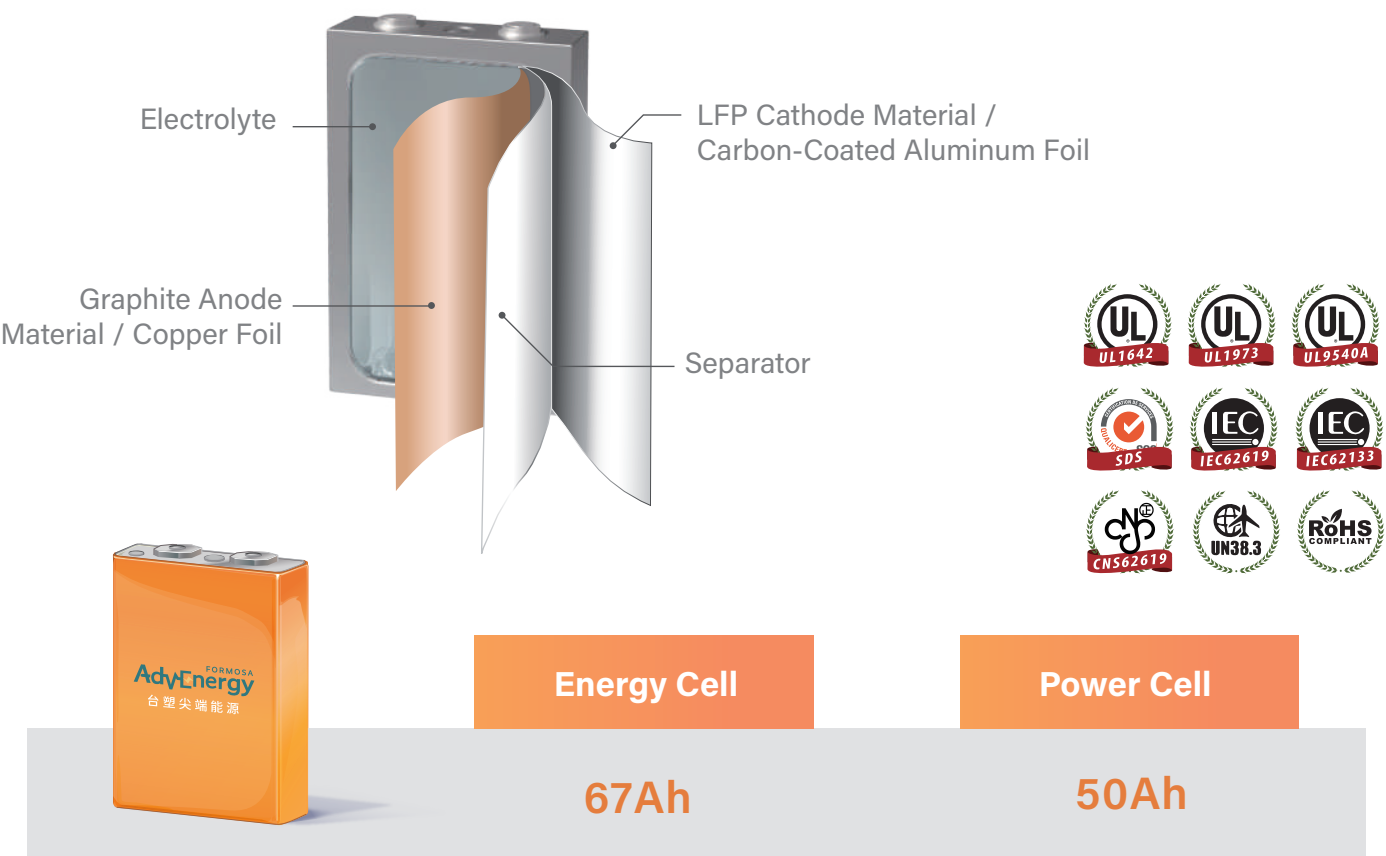
Taiwan's largest LFP Battery Plant

Backup supply systems and energy storage systems are becoming increasingly more mainstream when it comes to improving grid instability, increasing the power generation efficiency of traditional power plants, and speeding up the penetration rate of renewable energy.

At Formosa Smart Energy Tech Corporation (FSE), we take a bottom-up approach with the design of our energy storage systems. We have integrated our very own battery management system (BMS), the only BMS in Taiwan that has been extensively tested and certified. Our careful design paired with our BMS helps to ensure our ESS can be optimized for use in a wide-range of applications, creating more value for our customers.



LFP BATTERY CELL



APPLICATION	C&I, Residential ESS, EV	UPS, Electric Vehicle, High-power Supply
ENERGY DENSITY	175 Wh/kg	128Wh/kg
VOLUMETRIC ENERGY DENSITY	353 Wh/L	279 Wh/L
25°C CYCLE LIFE	≥4000	≥3000
45°C CYCLE LIFE	≥2000	≥1500
DIMENSION (INCLUDING OUTER FILM)	D42.9 * W100 * H141 mm	D42.9 * W100 * H141 mm
WEIGHT	1235±37g	1250g±37g

● Please refer to the product datasheet for more details.

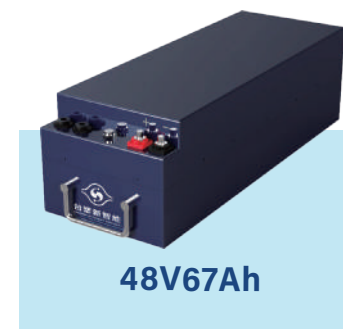
LFP BATTERY PACK



Item	24V UPS		48V UPS	12V DC Charger
Specification	24V50Ah	24V67Ah	96V50Ah	12V134Ah
Model	LFP-24V050AH-B	LFP-24V067AH-B	LFP-96V050AH-B	LFP-12V134AH-B
DC Voltage	25.6 V	25.6 V	96 V	12.8 V
Capacity	1.28 kWh	1.72 kWh	4.8 kWh	1.72 kWh
MAX Charging Current	100 A (2C)	67 A (1C)	100 A (2C)	110 A (0.8C)
MAX Discharging Current	325 A (6.5C)	110 A (1.6C)	400 A (8C)	130 A (0.97C)
Configuration	8S1P	8S1P	30S1P	4S2P
Dimension D*W*H	575*130*208 mm	575*130*208mm	846*280*200mm	351*221*184mm
Weight	17 kg	17 kg	64 kg	13.6 kg

• Please refer to the product datasheet for more details.

LFP BATTERY PACK



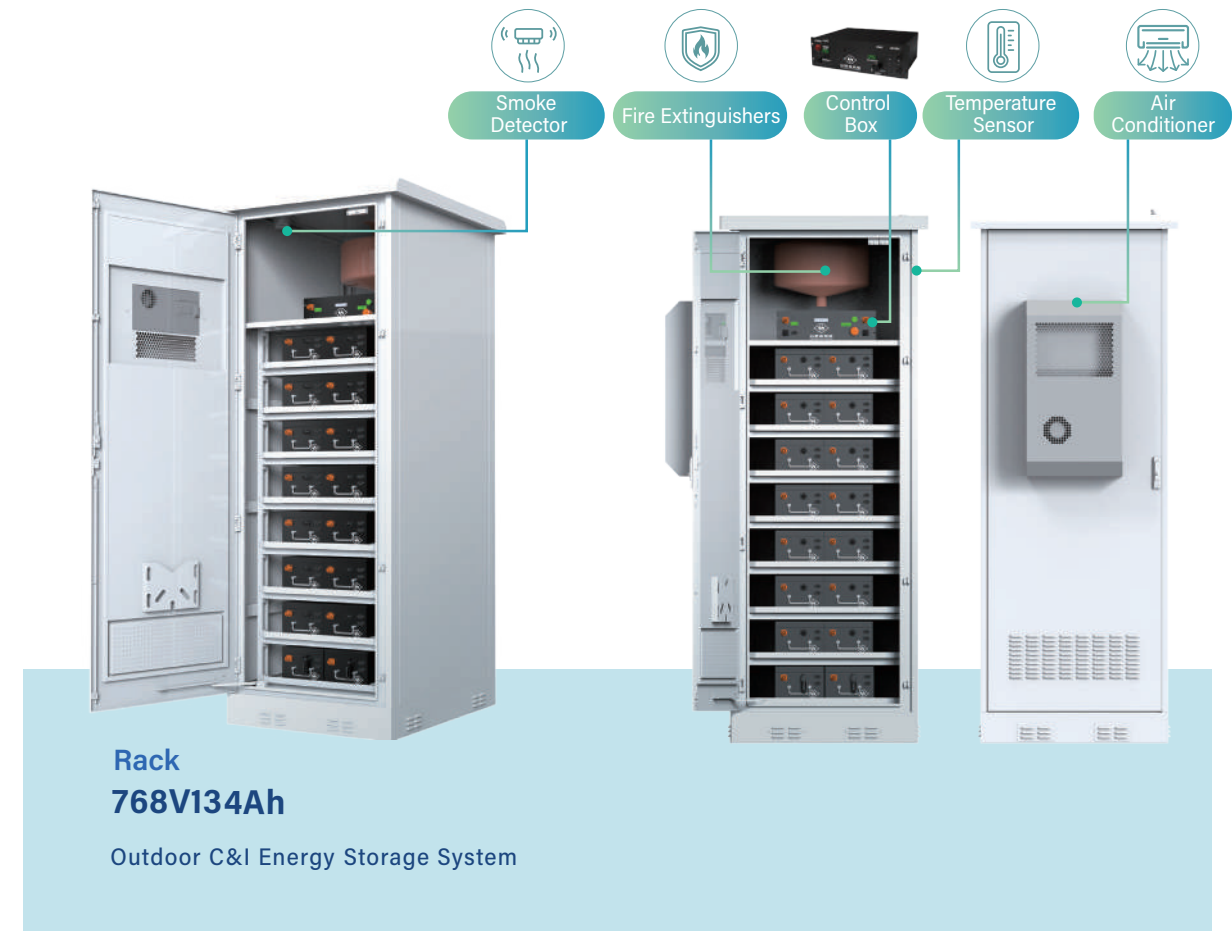
48V ESS		
Specification	48V67Ah	48V134Ah
Model	LFP-48V067AH-A	LFP-48V134AH-A
DC Voltage	51.2 V	51.2 V
Capacity	3.43 kWh	6.86 kWh
MAX Charging Current	53.6 A (0.8C)	110 A (0.8C)
MAX Discharging Current	110 A (1.6C)	110 A (0.8C)
Configuration	16S1P	16S2P
Dimension D*W*H	612*221*184mm	950*235*181mm
Weight	30 kg	57 kg

• Please refer to the product datasheet for more details.

Transformations lasting over 15 years

In accordance with Formosa Plastics Group's collective working spirit of "creating a moral world through diligence, striving for excellence", all battery modules are subject to the same standardized assembly process, undergo at least two charge and discharge tests, and go through a battery cell matching procedure to ensure the customer is provided with a perfect battery system.





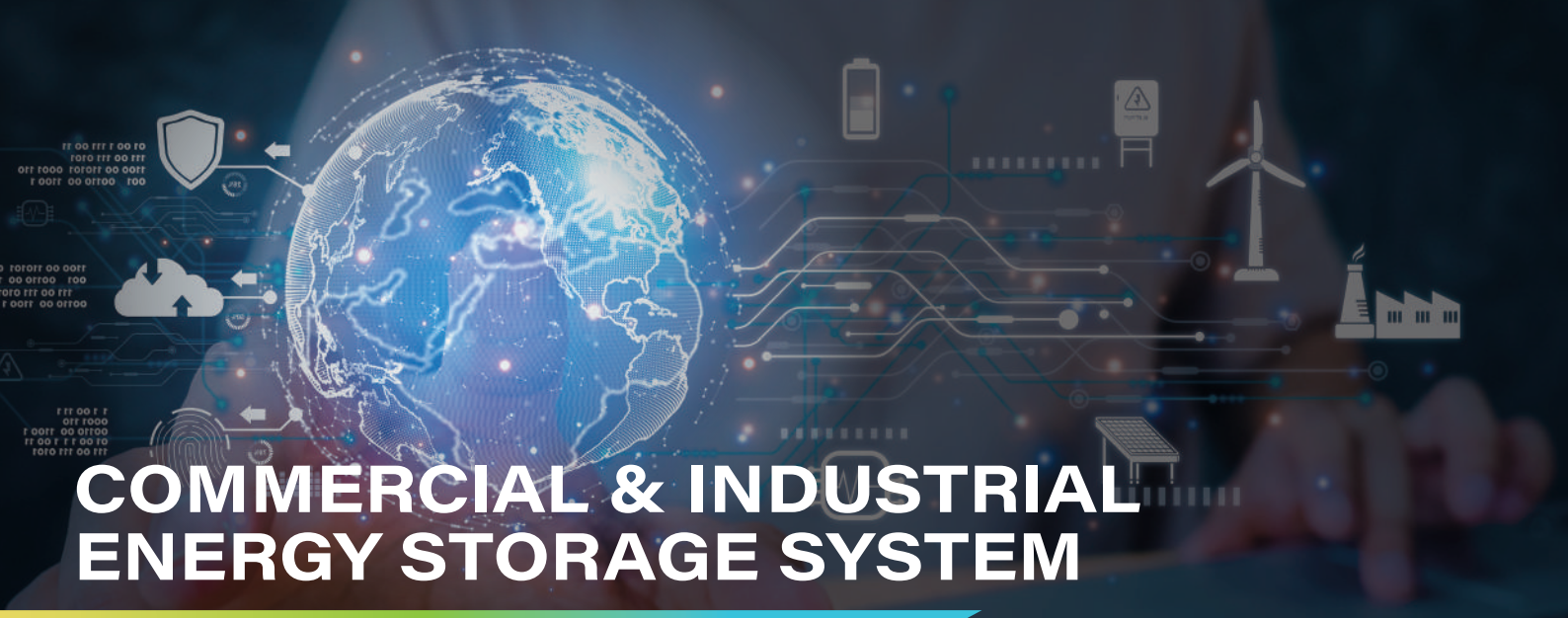
UPS				
Item	Factory Backup		Data Center	DC Charger
Specification	480V50Ah	480V67Ah	576V100Ah	108V134Ah
Model	US050-160IMS5	US067-160AMS1	HC480HU	DC134-036BPS1
DC Voltage	512 V	512 V	576 V	115.2 V
Capacity	25.6 kWh	34.3 kWh	57.6 kWh	15.4 kWh
MAX Charging Current	100 A (2C)	67 A (1C)	200 A (2C)	110 A (0.8C)
MAX Discharging Current	325 A (6.5C)	110 A (1.6C)	405 A (8C)	130 A (0.97C)
Configuration	20S1P	20S1P	6S2P	9S1P
Dimension D*W*H	800*600*2100mm	800*600*2100mm	946*667*2150mm	800*650*1600mm
Weight	563 kg	563 kg	1200 kg	278kg

• Please refer to the product datasheet for more details.



Outdoor ESS		
Specification	768V134Ah	1056V134Ah
Model	ES134-256CMF2α	ES134 -352GMF1
DC Voltage	819.2 V	1126.4 V
Capacity	109.77 kWh	150.93 kWh
MAX Charging Current	100 A (0.7C)	100 A (0.7C)
MAX Discharging Current	110 A (0.8C)	110 A (0.8C)
Configuration	16S1P	22S1P
Equipment	Air Conditioning System, Fire Fighting Equipment, Smoke Detector, Temperature Sensor	
Dimension D*W*H	1000*1250*2550mm	1000*1250*2550mm
Weight	1325 kg	1700 kg

• Please refer to the product datasheet for more details.



CELL CONSISTENCY

Battery Cell Balancing System

With our battery cell balancing system , subtle electrical differences introduced during the cell manufacturing process can be corrected, and the time decay exacerbated by DC internal resistance can be offset. Not only does our balancing system extend the safe operating lifespan of the battery system, it also helps expand the operational range and enhances the stability of the battery system.



Hierarchical BMS



Smart Balancing System



Redundant Subsystems



Double Protection

BMS FEATURES

Our battery management system passes the IEC/UL60730-1 certification standard

Programmed with smart balancing algorithms and equipped with a two-stage isolation control system, redundant subsystems, a self-reset system, and a remote control system, our BMS allows for high-precision and contact-less ampere-hour measurement calculations.



COMMERCIAL & INDUSTRIAL ENERGY STORAGE SYSTEM



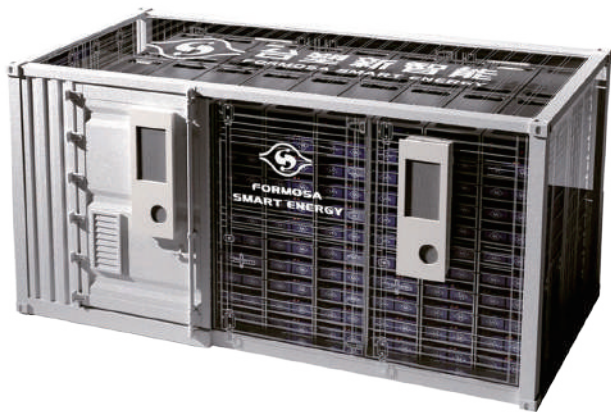
ESS			
Specification	768V67Ah	768V134Ah	1056V134Ah
Model	BR108-256AMF	ES134-256CMF2	ES134-352GMF1
DC Voltage	819.2 V	819.2 V	1126.4 V
Capacity	54.88 kWh	109.77 kWh	150.93 kWh
MAX Charging Current	67 A (1C)	100 A (0.7C)	100 A (0.7C)
MAX Discharging Current	110 A (1.6C)	110 A (0.8C)	110 A (0.8C)
Configuration	16S1P	16S1P	22S1P
Dimension D*W*H	667*545*2001mm	985*560*2001mm	985*560*2439mm
Weight	654kg	1150kg	1480kg

• Please refer to the product datasheet for more details.



ENERGY STORAGE SYSTEM

20'CONTAINER TEU



Utilizes LFP batteries

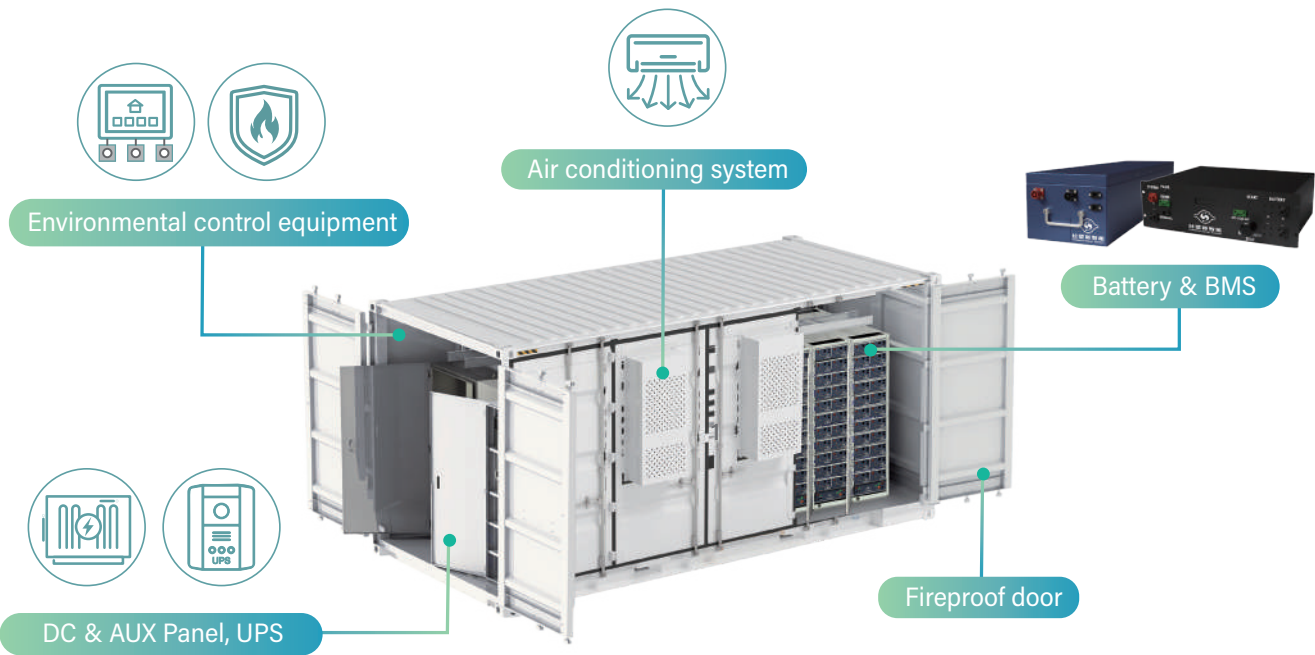


Ingress Protection rating : IP54



Corrosion Class: ISO 12944 C5

Complies with ISO 1496, TIR certification, International Convention for Safe Containers(CSC) and container standards, IEEE 693 HIGH LEVEL standards.



ENERGY STORAGE SYSTEM

ESS			
Model	FESS 20-134A	FESS 20-134B	FESS 20-134C
DC Voltage	819.2 V	1126.4 V	1126.4 V
Capacity	1.97 MWh	2.71 MWh	3.01 MWh
MAX Charging Current	100 A (0.7C)/Rack	100 A (0.7C)/Rack	100 A (0.7C)/Rack
MAX Discharging Current	110 A (0.8C)/Rack	110 A (0.8C)/Rack	110 A (0.8C)/Rack
Configuration	16S18P	22S18P	22S20P
Dimension D*W*H	6058*2438*2896mm	6058*2438*2896mm	6058*2438*2896mm
Weight	26.8 ton	33 ton	36 ton

Equipment

- DC Busbar
- Temperature Sensors
- Residual Current Device
- HMI
- Gas Detectors
- Surge Arrester
- Air Cooling System
- UPS System
- Liquid Alarm Sensors
- Fire Protection System
- High-Voltage Fuse
- High Current DC Disconnecter
- Smoke Detectors

*Based On The Actual Application Requirements Of The Project.

• Please refer to the product datasheet for more details.





RESIDENTIAL ENERGY STORAGE SYSTEM

The image is for illustrative purposes only. Actual product may vary.

STANDARD
MODULE

10-YEAR
WARRANTY

OVER 3,600
CYCLE LIFE

SMART
BALANCING

AUTOMATIC
POWER-OFF
PROTECTION

FIREPROOF
MATERIALS

SMART
NEW CHOICE,
LIGHTING UP
MY HOME.



RESIDENTIAL ESS



Residential ESS

HB134-016EME1 HB268-016EME1

Nominal Capacity [Ah]	134	268
Nominal Voltage [V]	51.2	51.2
Energy [kWh]	6.86	13.72
Dimension [L*W*H, mm]	580*300*605	580*300*1055
Weight [kg]	77	143.5

Please refer to the product datasheet for more details.



Hybrid PCS

FSE HESS 6KW

Power [kW]	6
Nominal Discharge Current [A]	25A
Nominal Discharge Voltage [Vac]	120/208/240
Nominal Discharge Voltage [Vac]	48
Maximum Charging Current [A]	120
IP Rating	IP65
Operating temperature range	-10~55°C
Dimension [L*W*H, mm]	700*515*215.5
Weight [kg]	41

Can be used as
an emergency power supply

Can be paired with
a photovoltaic (PV) system

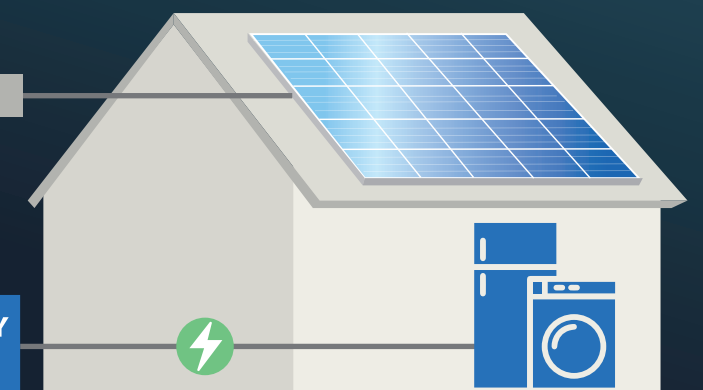
Can be stacked to increase
energy storage capacity

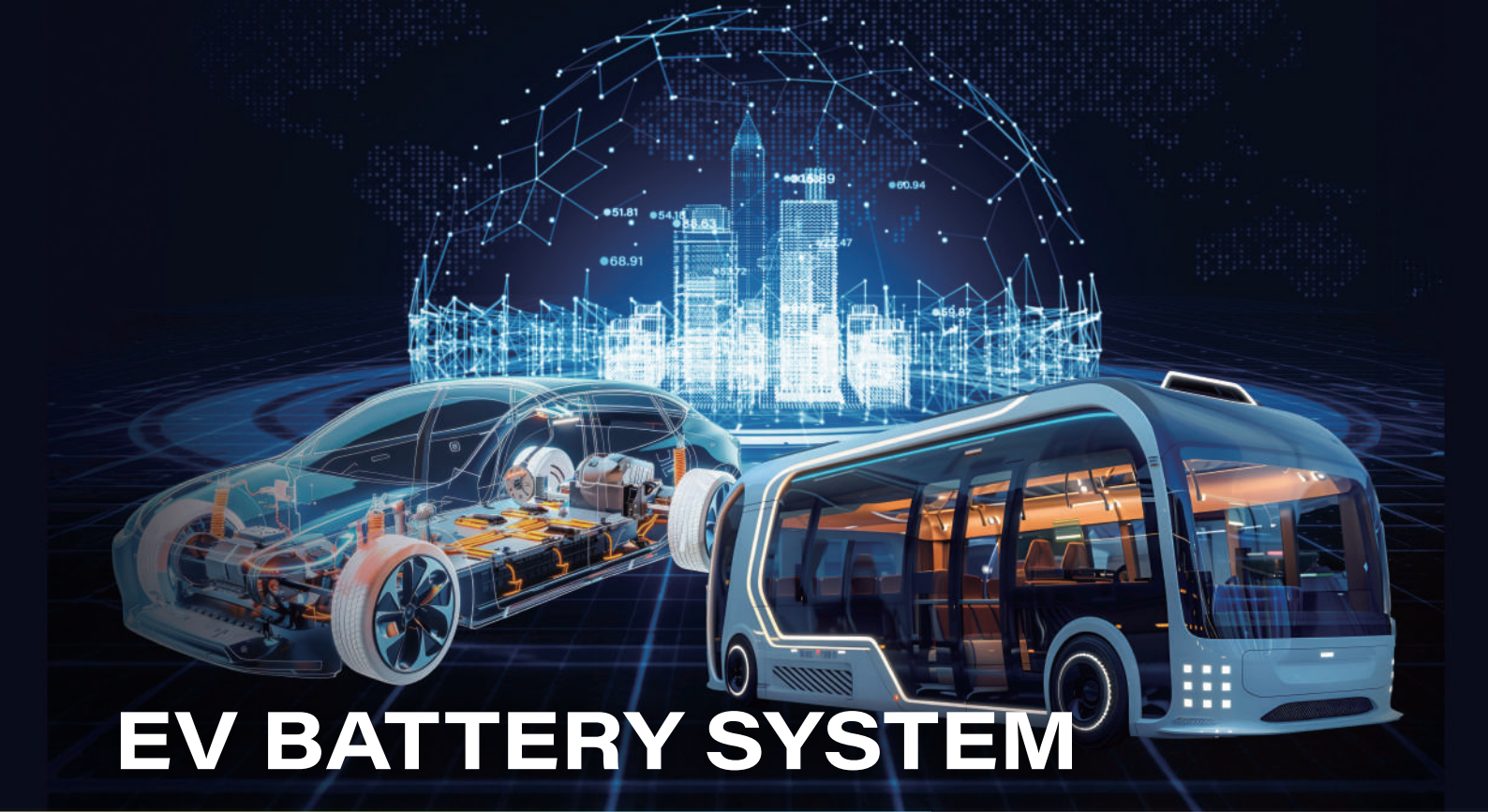
Can be used strategically to
decrease electricity costs

The residential energy storage system
can be charged with clean energy, which
helps us move towards a Net-Zero
sustainable future safely and reliably.



RESIDENTIAL ENERGY
STORAGE SYSTEM





High Safety & High Energy Density Battery System



CNS16160

The BSMI of the Ministry of Economic Affairs implements voluntary product verification for batteries and battery systems used in electric vehicles.



IEC62133
IEC62620

Safety requirements for lithium-ion cells and batteries used in electric road vehicles.



UL1973
UL2580

Safety standards for electric vehicle batteries (modules).



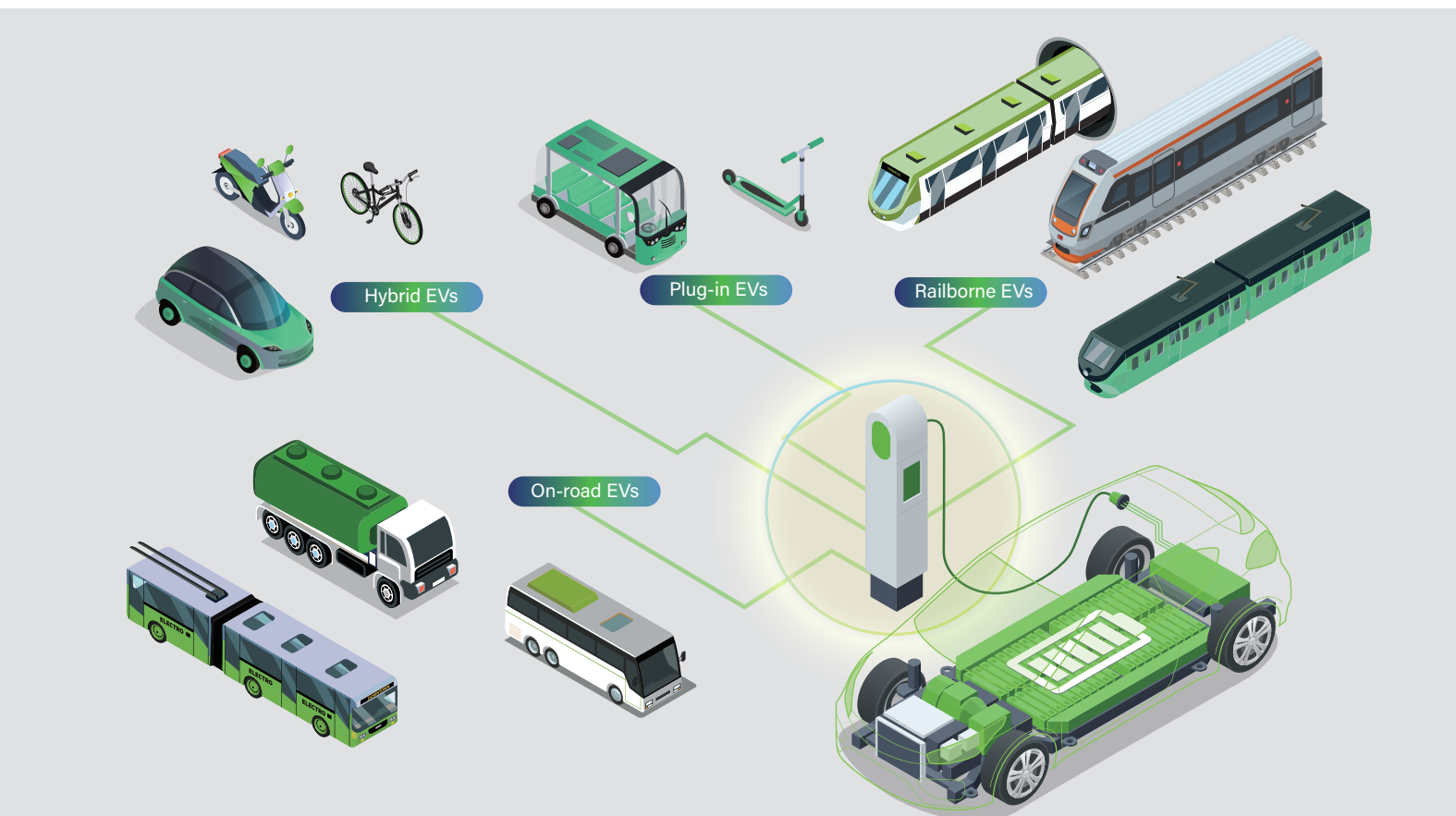
UN38.3

UN safety standard for the shipment of batteries



ECE R100.03

EU safety standards for automotive power batteries.



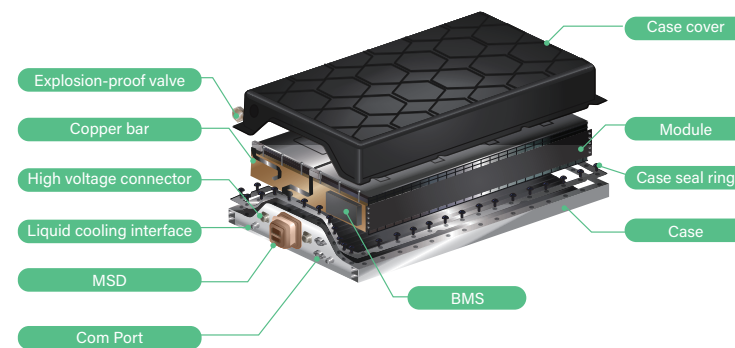
EV BATTERY SYSTEM

Electric Bus Battery System

The battery system capacity is approximately 250-300kWh.



The power battery system of Formosa Smart Energy uses domestically produced cells with high energy density and long cycle life. The pack for electric bus is equipped with 30.8 kWh capacity and 153.6V.



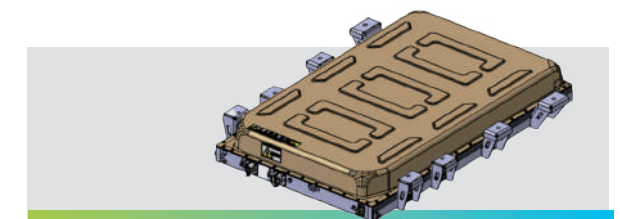
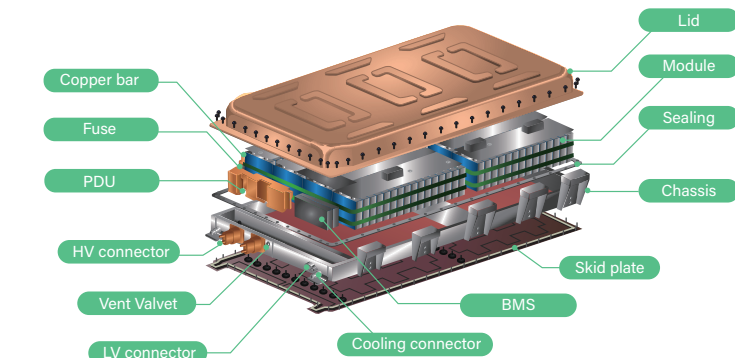
Configuration	3P48S
Nominal Energy	30.87 kWh
Weight Energy Density	≥134 Wh/kg
Nominal Voltage	153.6V
Operational Temperature	Charging: 0~55°C Discharging: -30~60°C
Thermal Management	Liquid cooling
IP Level	IP67
Dimension	1200*710*200 mm
Weight	230 kg

Electric Commercial Vehicle Battery System

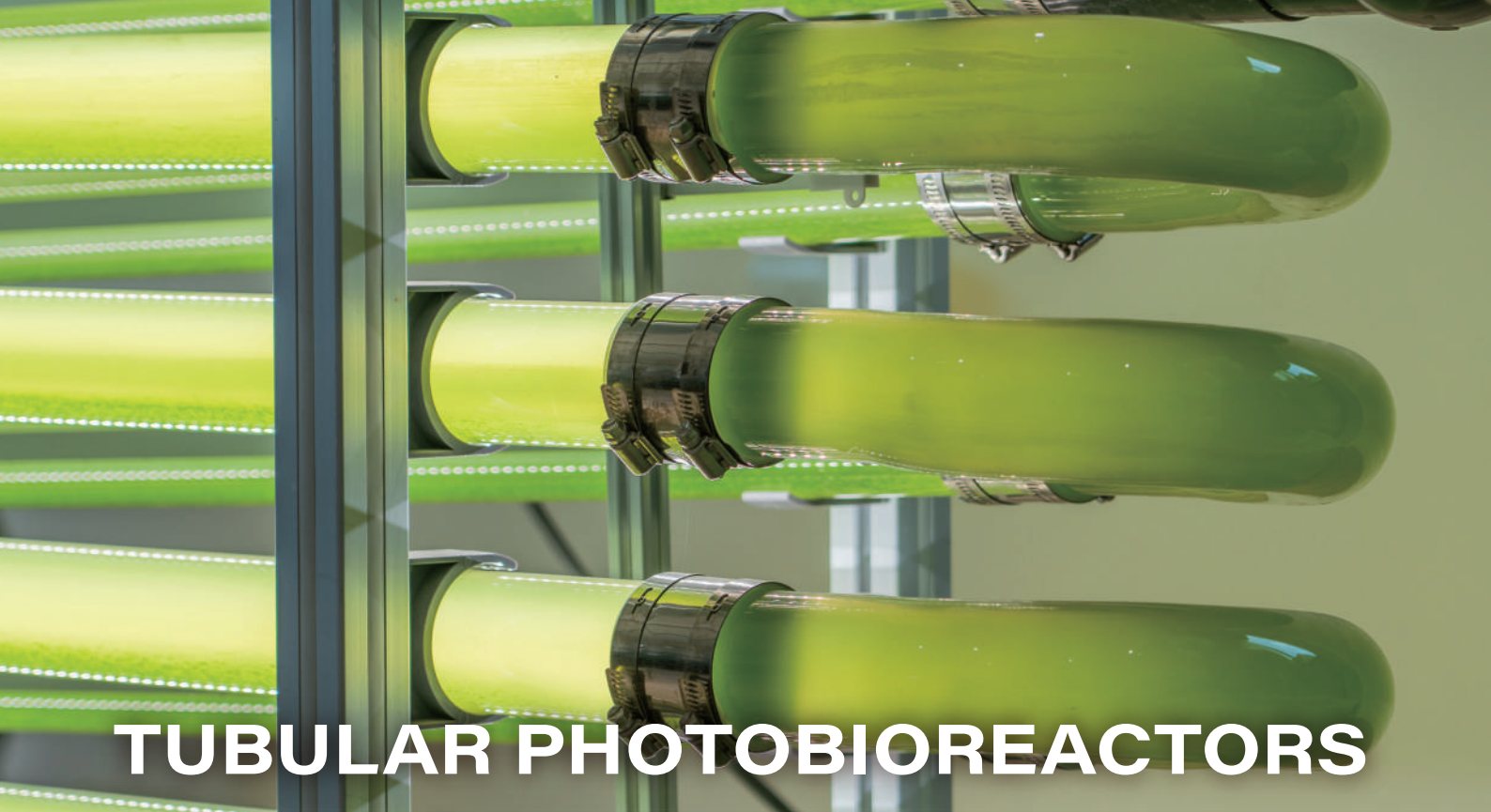
Formosa Smart Energy has started collaborating with domestic automakers to design new electric commercial vehicle models that can utilize our 44.5 kWh battery system.



Formosa Smart Energy's electric commercial vehicle battery system is manufactured with domestically produced battery cells with both higher energy density and longer cycle life. The battery pack used has a capacity of 44.5kWh, and a voltage of 332.8V.



Configuration	2P12S/2P14S
Nominal Energy	44.5kWh
Weight Energy Density	>123Wh/kg
Nominal Voltage	332.8V
Operational Temperature	Charging: 0~55°C Discharging: -30~60°C
Thermal Management	Liquid cooling
IP Level	IP67
Dimension	1525*906*211mm
Weight	360kg



TUBULAR PHOTOBIOREACTORS



- Pipeline Design
- Semi-Automatic Cleaning
- Space-Efficient
- Controlled Environment
- High Carbon-Fixation Efficiency

Model	50L Photobioreactor	150L Photobioreactor	600L Photobioreactor	5000L Photobioreactor
Number of Tubes	10	24	64	352
Volume of Tubes	30	70	400	4,000
TanK [L]	20	100	200	1,000
Land area [L*W*H, cm]	200*100*120	220*100*170	850*150*200	2,500*150*250
Operating temp. [°C]	15~40	15~40	15~40	15~40
Light	RGB	RGB	RGB	RGB



The official website of CH Algae
Industrial Business



The official website of InnoGT
Agricultural Business

MICROALGAE APPLICATION

WASTEWATER TREATMENT

ZSMF-02
Remove Molybdenum

- pH 4~5
- Applicable Industry : Chemical raw materials manufacturing
- Dosage: 0.1~0.15% (w/w)
- Reaction Time: 10 mins
- Removal Rate: 80~90%

ZMF-03
Remove Zinc

- pH 7~9
- Applicable Industry : Metal-related Manufacturing, Optoelectronics Industry
- Dosage: 0.1% (w/w)
- Reaction Time: 10 mins
- Removal Rate: up to 99%

BMF-06
Remove Boron

- pH9-10
- Applicable Industry : Metal-related Manufacturing
- Dosage: 0.1% (w/w)
- Reaction Time: 10 mins
- Removal Rate: up to 70~80%

NJ01
Multipurpose Agent

- pH 4~8
- Applicable Industr : Food Industry, Daily Necessities
- Replace traditional PAC, resulting in 20% less sludge.

*Dosage adjustable based on wastewater characteristics

AGRICULTURAL APPLICATION

InnoGreat BioM1

Specification 1,000g/bg

Function

- Formulate with microalgae powder as a nutrient source
- Support large-scale cultivation of various aerobic bacteria
- Beneficial for agricultural and aquacultural applications
- Promote environmental friendly and sustainable practices

InnoGreat algae

Specification 1,000g/btl

Function

- Improve water quality and sediment conditions in aquaculture.
- Serve as a preferred nutritional feed for rotifers and other zooplankton.

