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Sungrow

5 July 2022

11:00 am – 12:00 pm | CEST, Berlin

10:00 am – 11:00 am | BST, London

12:00 pm – 1:00 pm | EEST, Athens



Marija Maisch

Editor
pv magazine

pv magazine
webinars

The pressing need for powerful storage: Technology trends, safety optimization, and challenges for deployment



Cuby Chang

European solution manager
Sungrow

Welcome!

Do you have any questions? ? 

Send them in via the Q&A tab.  We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 

We'll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience.  



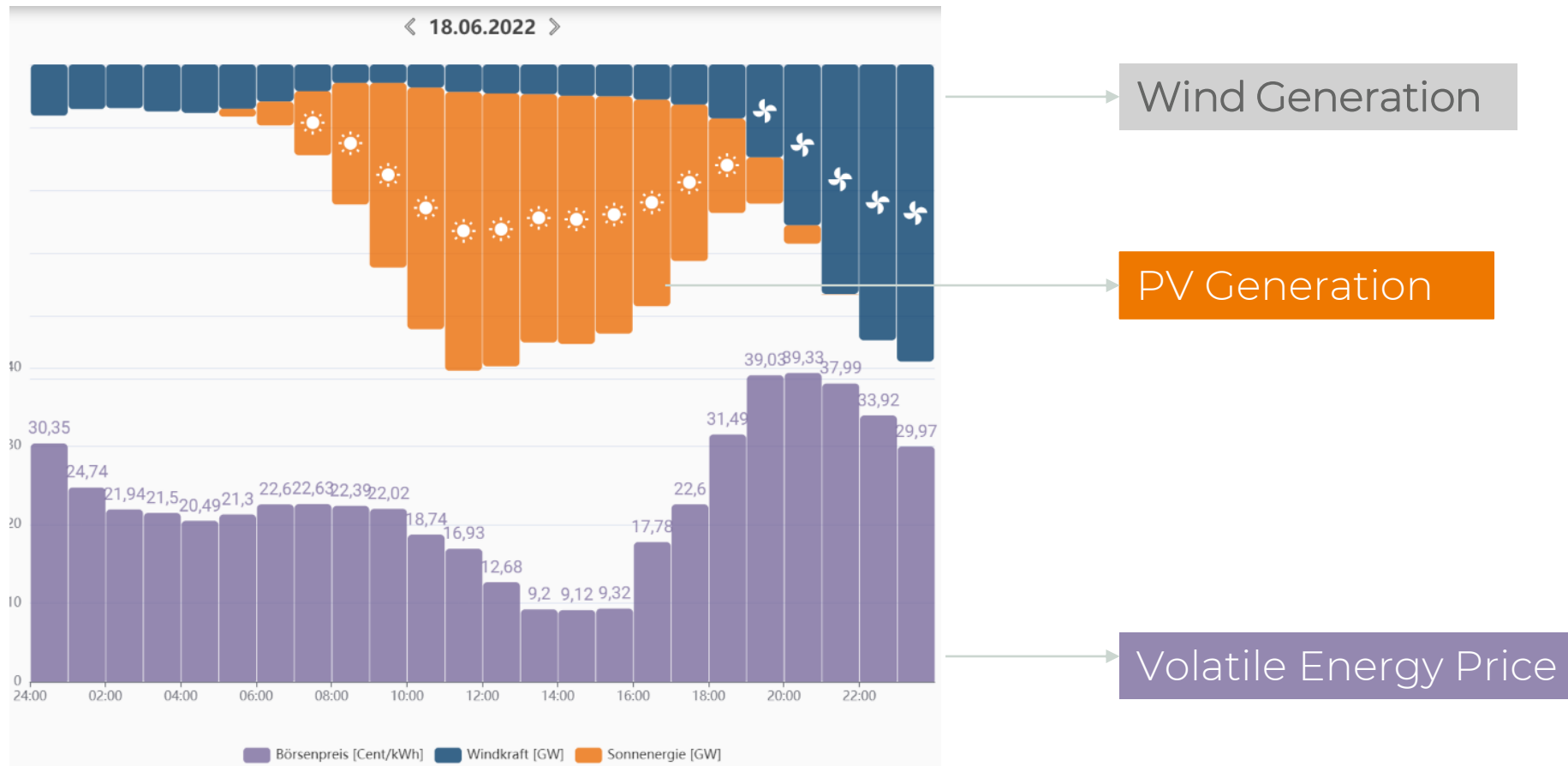
SUNGROW EUROPE 2022

**PowerTitan
Liquid Cooled ESS**

VOLATILE PRICES FOR ENERGY IN EU MARKETS

2

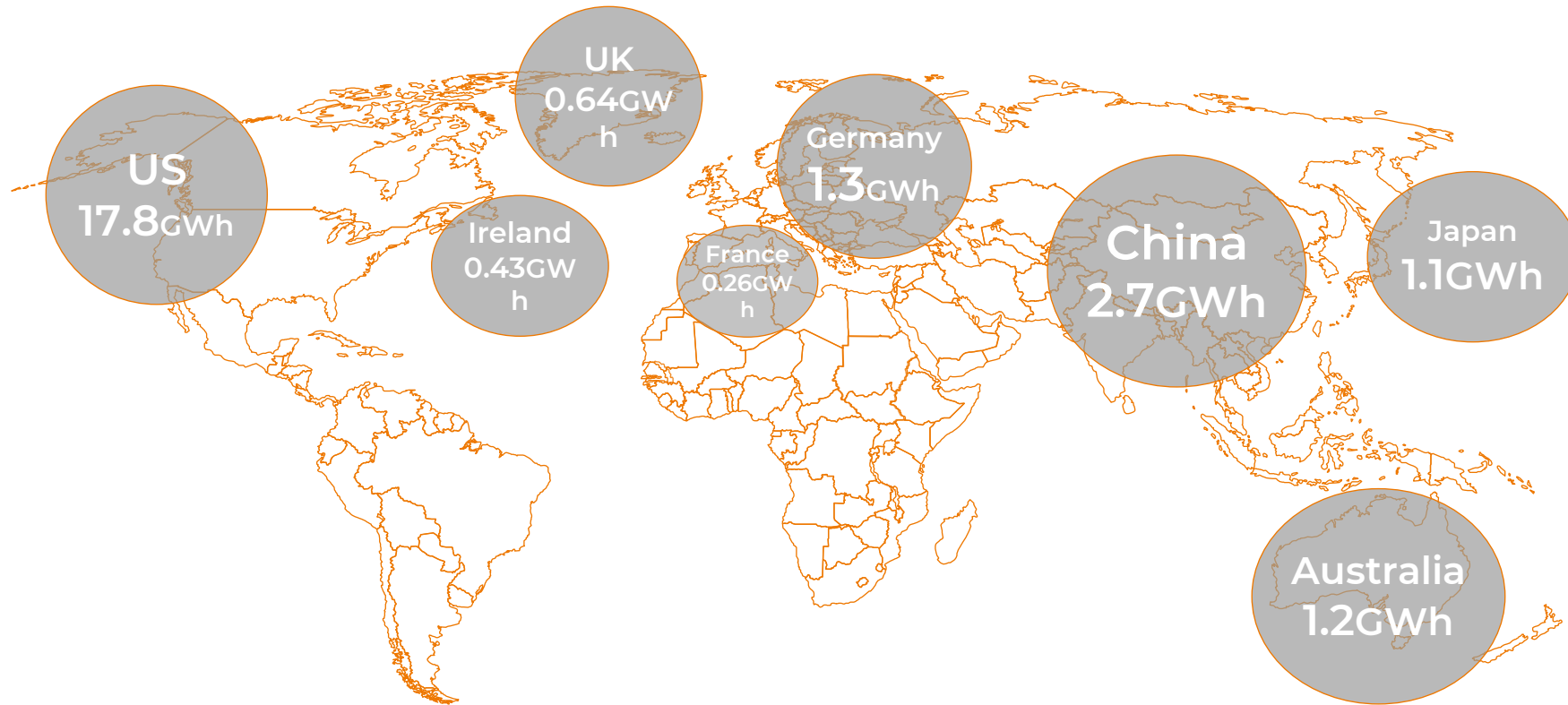
RESULT: PUZZLED END-CONSUMERS



Example: prices for customers in Germany with variable power tariff:
(the 30ct/kWh difference between 3pm and 6pm is comparable to above 300€/MWh)



RENEWABLE ENERGY + ESS IS TREND



86%

Estimated proportion of
power generated by
renewable energy in 2050

**28.2
GWh**

Global installed capacity
of BESS in 2021



ESS CHALLENGES



HIGH COST



LOW DISCHARGE



LOW FLEXIBILITY



SAFETY ISSUES



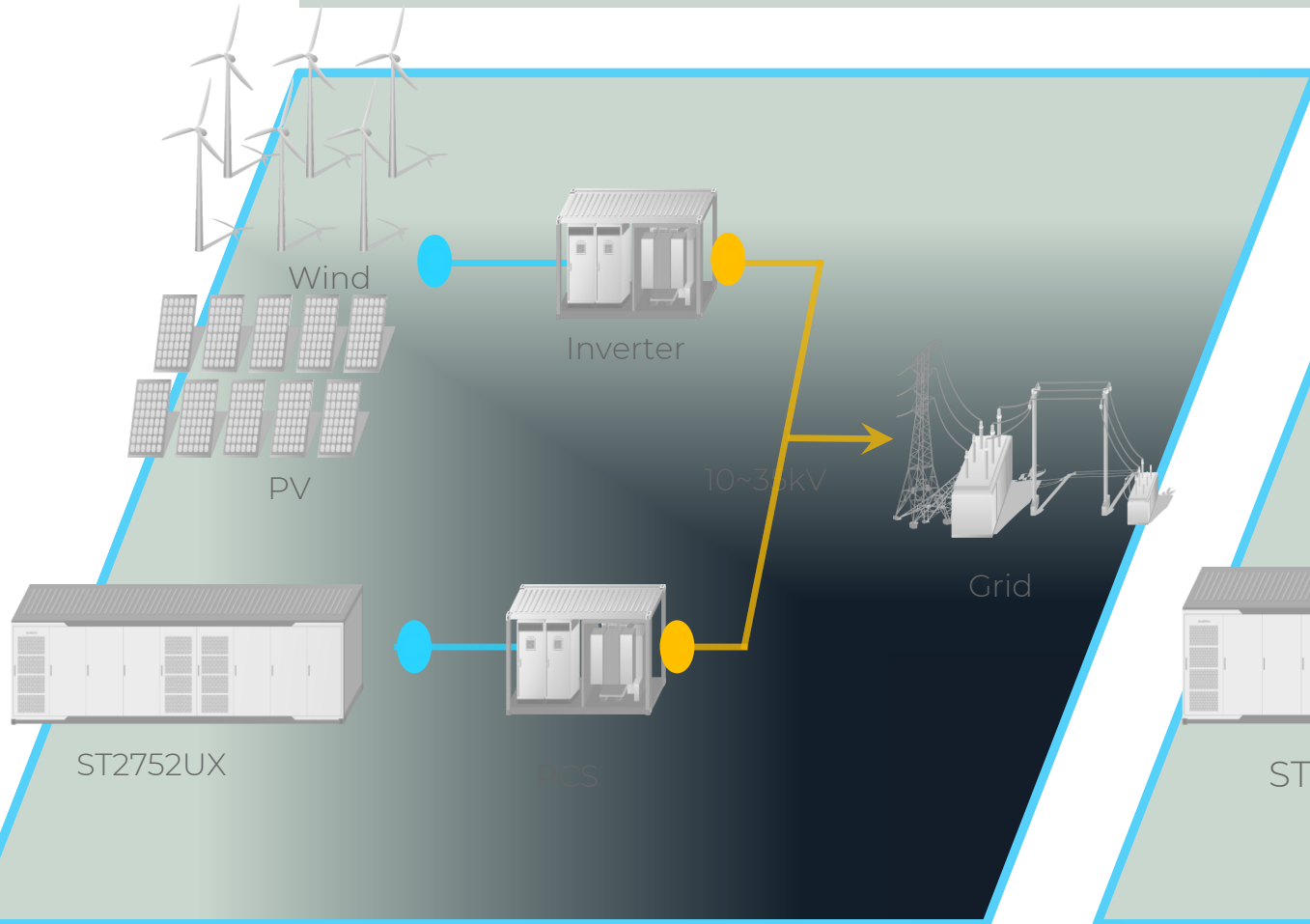
POWERTITAN ST2752UX

LIQUID COOLED ENERGY STORAGE SYSTEM

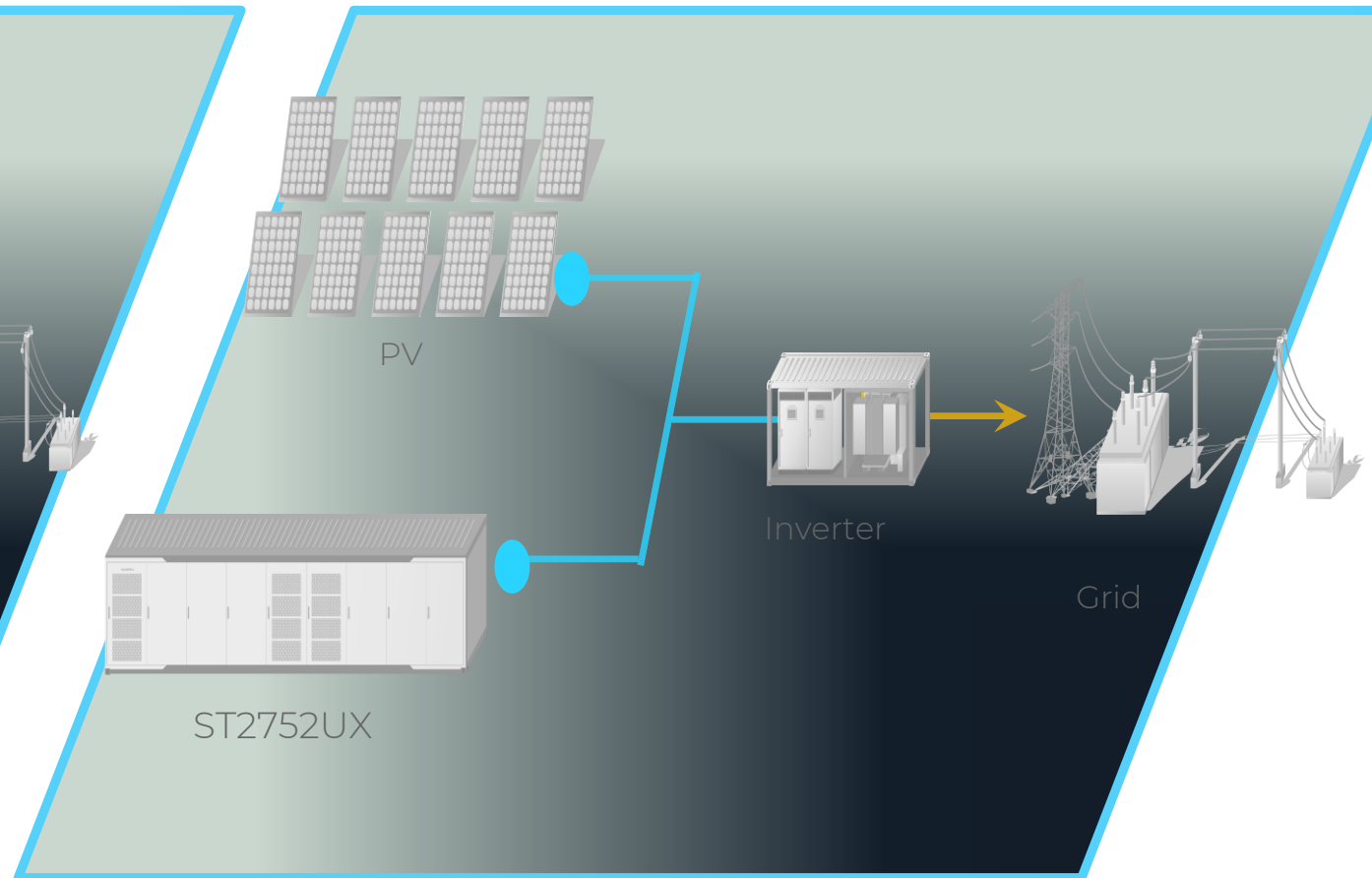


WAYS TO COUPLE POWER TITAN

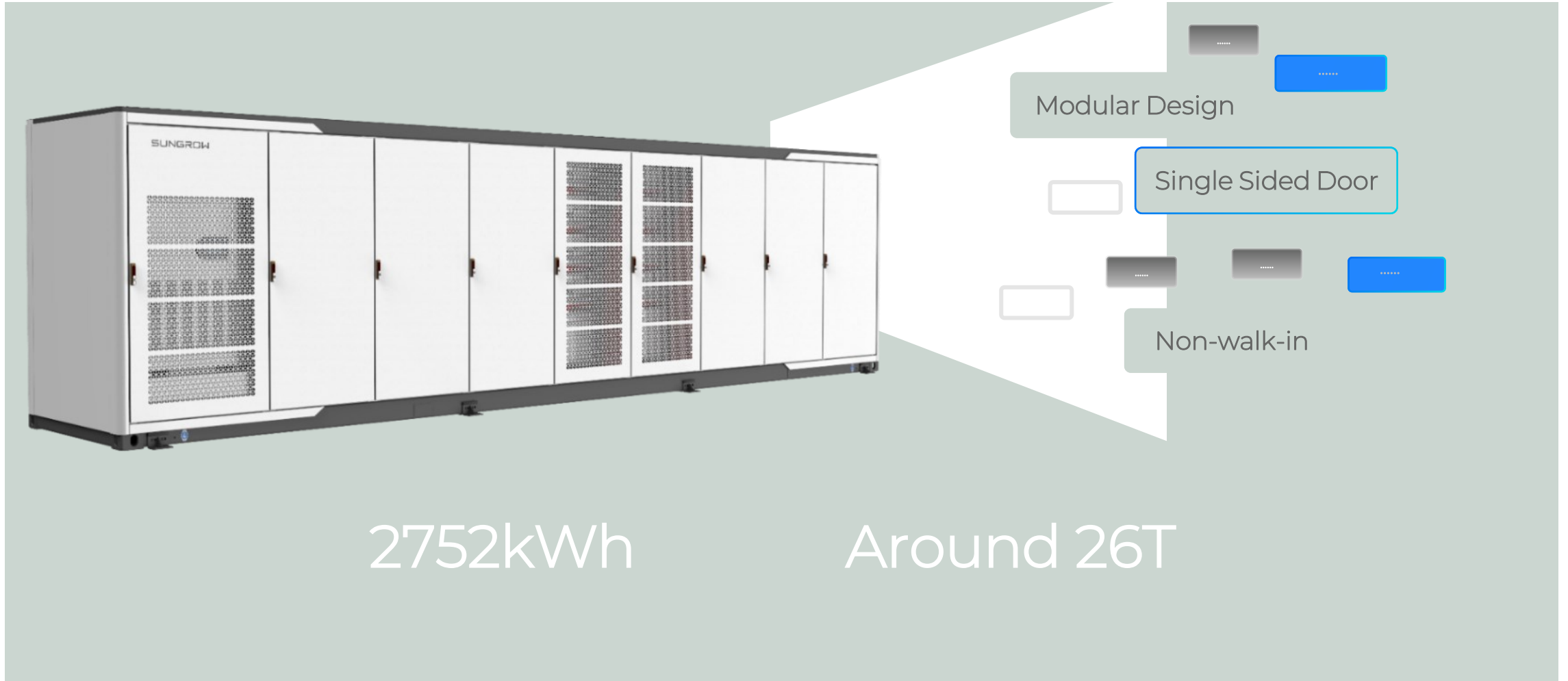
AC Coupling



DC Coupling



OPTIMISING CAPEX



HIGHLY INTEGRATED CONFIGURATION



Pre-installation

- ✓ Battery pack installation
- ✓ PCS and transformer wiring

Reduce installation time by 50%

Pre-commissioning

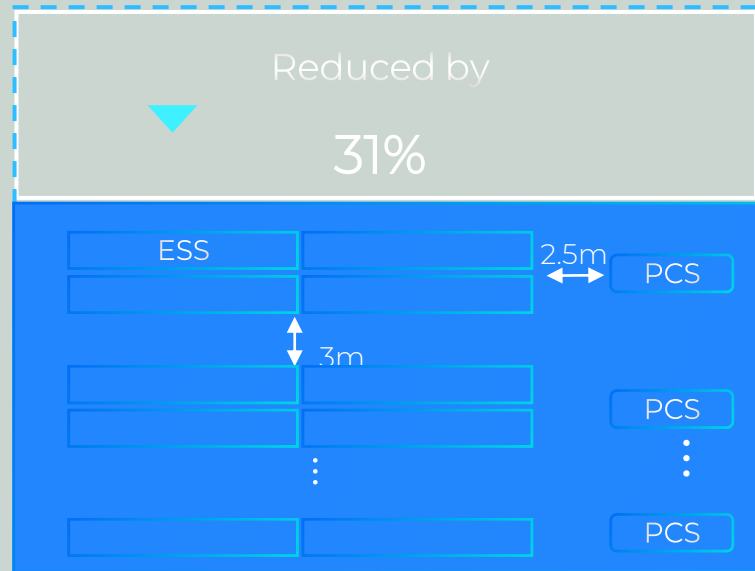
- ✓ Protection
- ✓ IP config
- ✓ Monitoring
- ✓ Control logic
- ✓ Communication
- ✓ Charge-discharge

Reduce on-site commissioning time by 50%



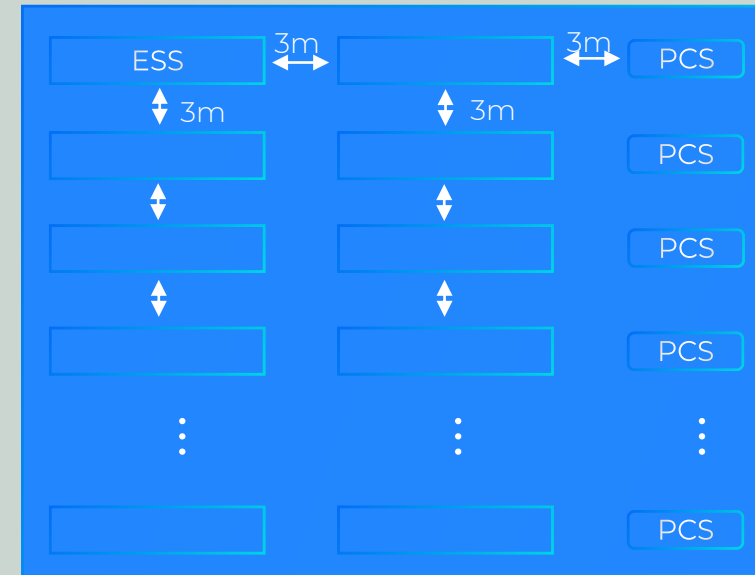
BACK-TO-BACK INSTALLATION

USED LAND AREA REDUCED BY 31%



2308m²

Liquid-cooling PowerTitan



2896m²

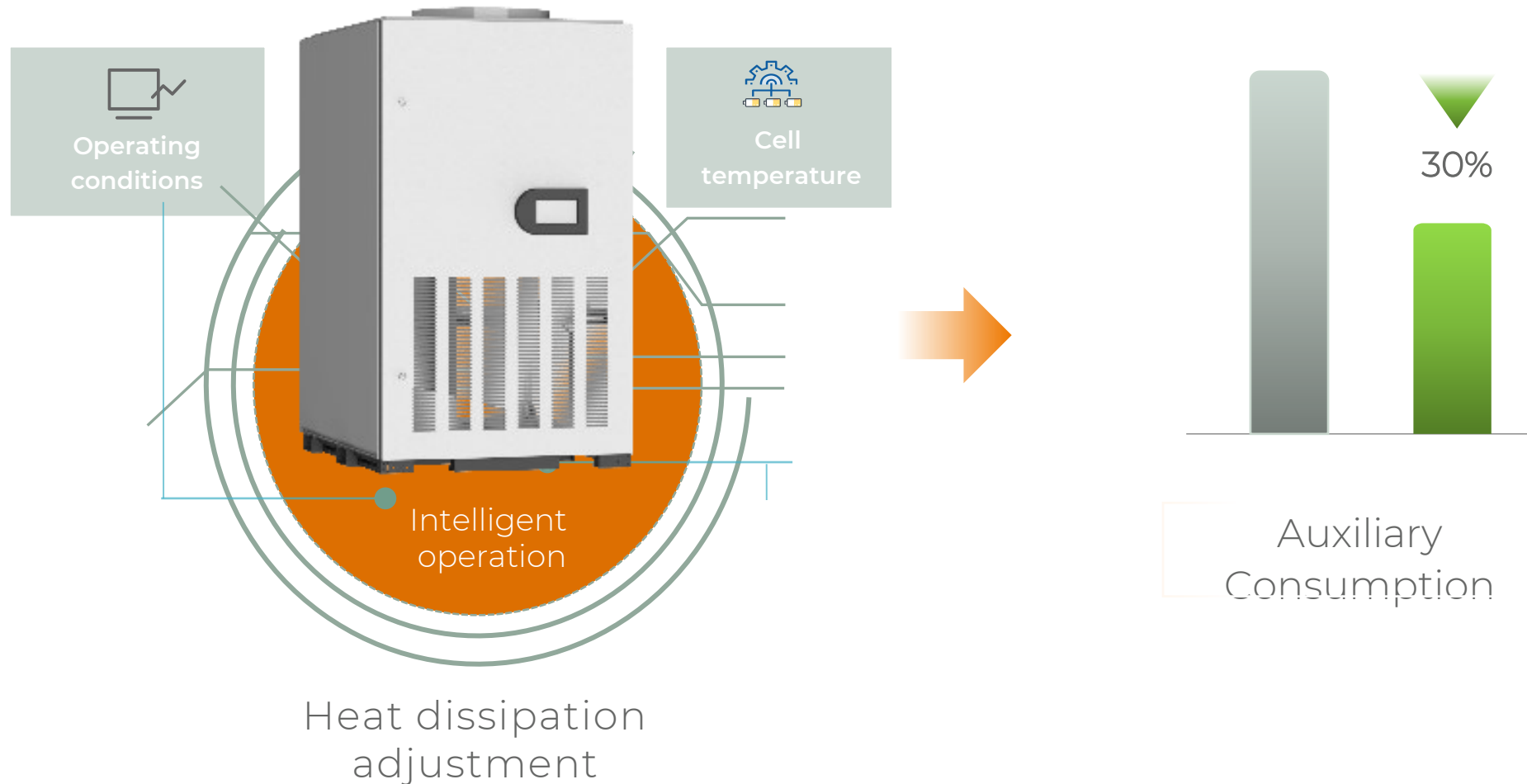
Traditional Air-cooling ESS

*50MW/100MWh project



AI LIQUIDCOOLING TECHNOLOGY

AUXILIARY LOST REDUCED BY 30%



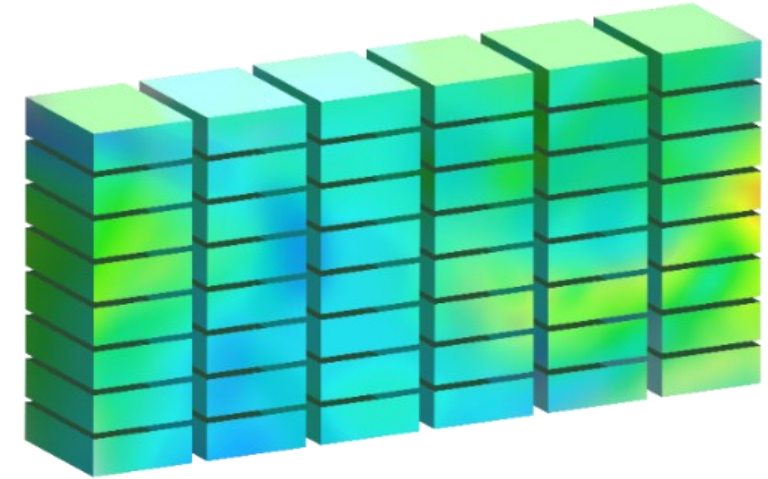
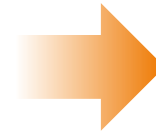
INTELLIGENT TEMPERATURE CONTROL SYSTEM

11

SYSTEM SERVICE LIFE INCREASED BY 10%, DISCHARGED ENERGY INCREASED BY 14%



Battery Thermal Management



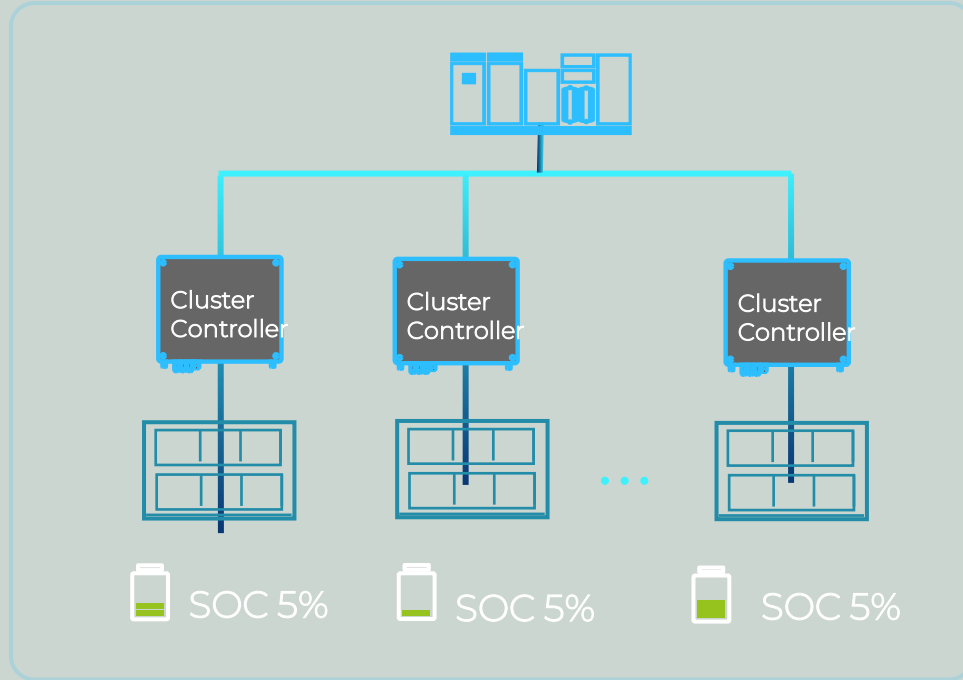
$< 2.5^{\circ}\text{C}$

Max. Temperature Difference
Between Cells

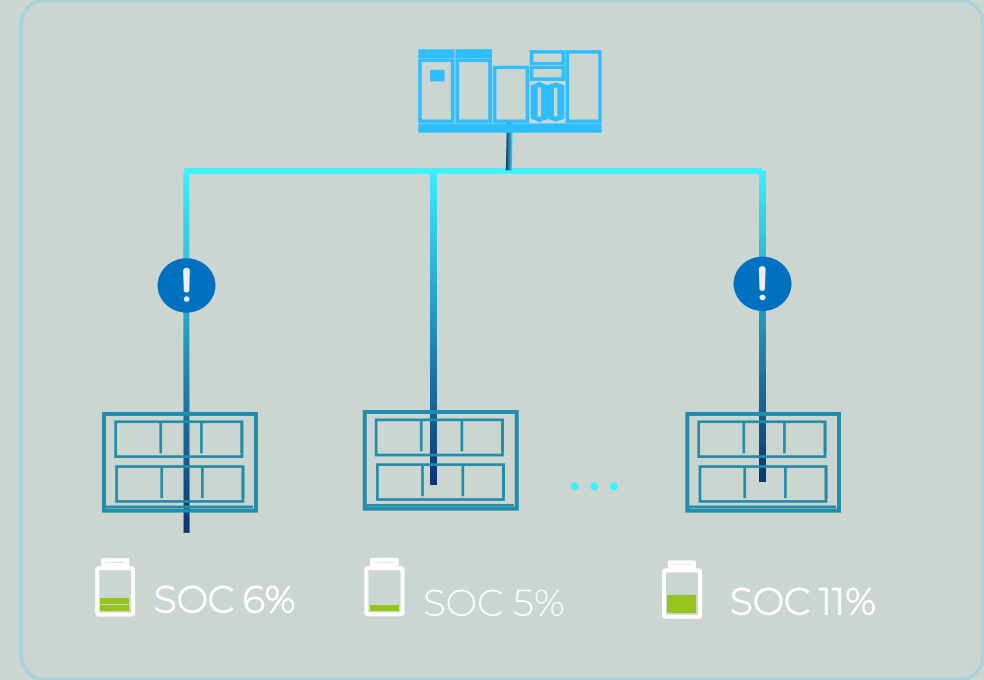


CLUSTER-LEVEL ENERGY MANAGEMENT

AVAILABLE ENERGY INCREASED BY 7%



Liquid-cooling PowerTitan



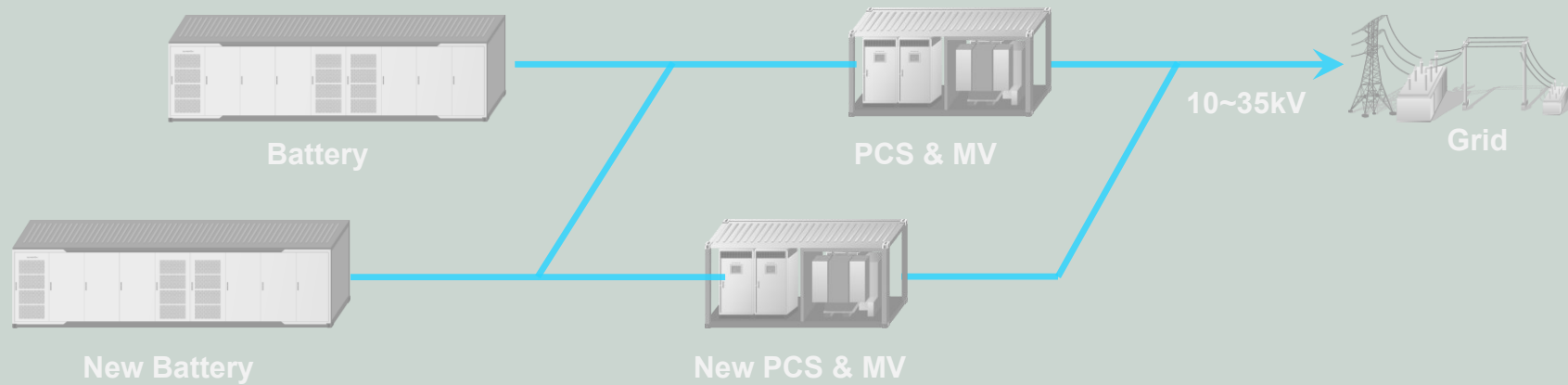
Traditional Air-cooling ESS



SUPPORT MIXTURE USE OF OLD AND NEW BATTERIES

13

EASY TO EXPAND



No additional PCS and Transformer required

25%

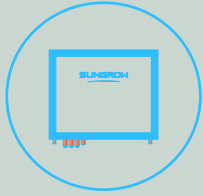
Reduced Initial Investment



SIMPLE MAINTENANCE

LABOR COST REDUCED BY \$150000 / YEAR

SOC automatic calibration:

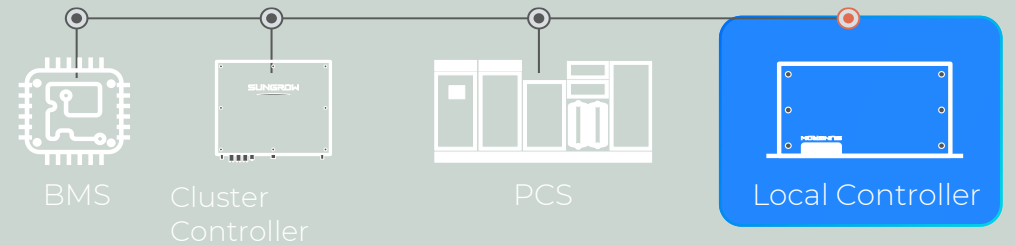


PowerTitan:
Automatic SOC
calibration



Traditional:
Manual SOC
calibration

System one-click upgrade:



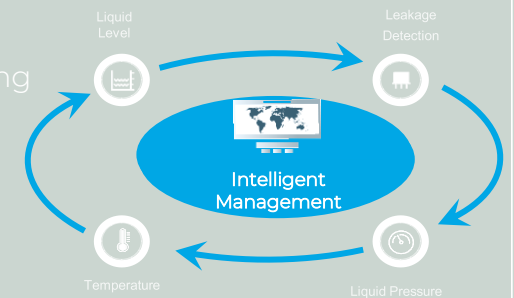
Trickle dynamic coolant replenishment:

- No frequent manual coolant replenishment
- Keep the optimal heat dissipation



Online monitoring:

- Online monitoring of liquid-cooling system
- Timely warning of liquid leakage



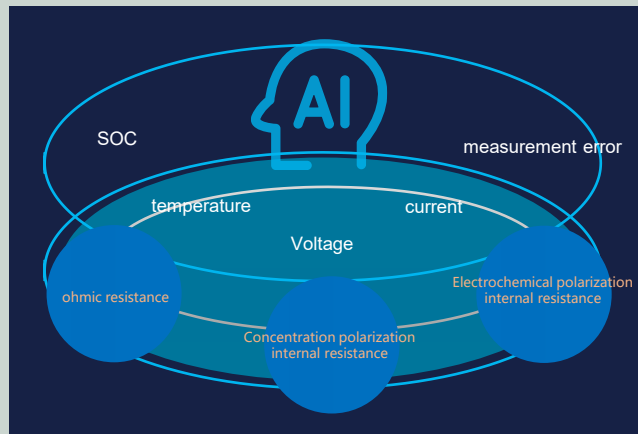
*100MWh project



EARLY WARNING OF FAULTY CELLS

BLOCKING THERMAL RUNAWAY AT VERY BEGINNING

Cell health AI calculation



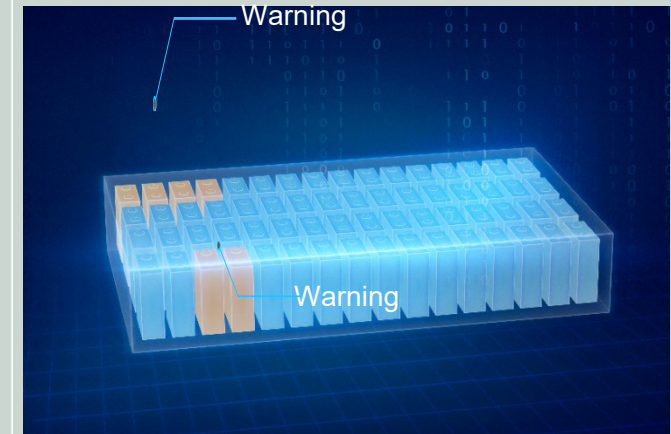
Deviation analysis based on internal resistance

Real time monitoring



Comprehensive evaluation of multiple parameters

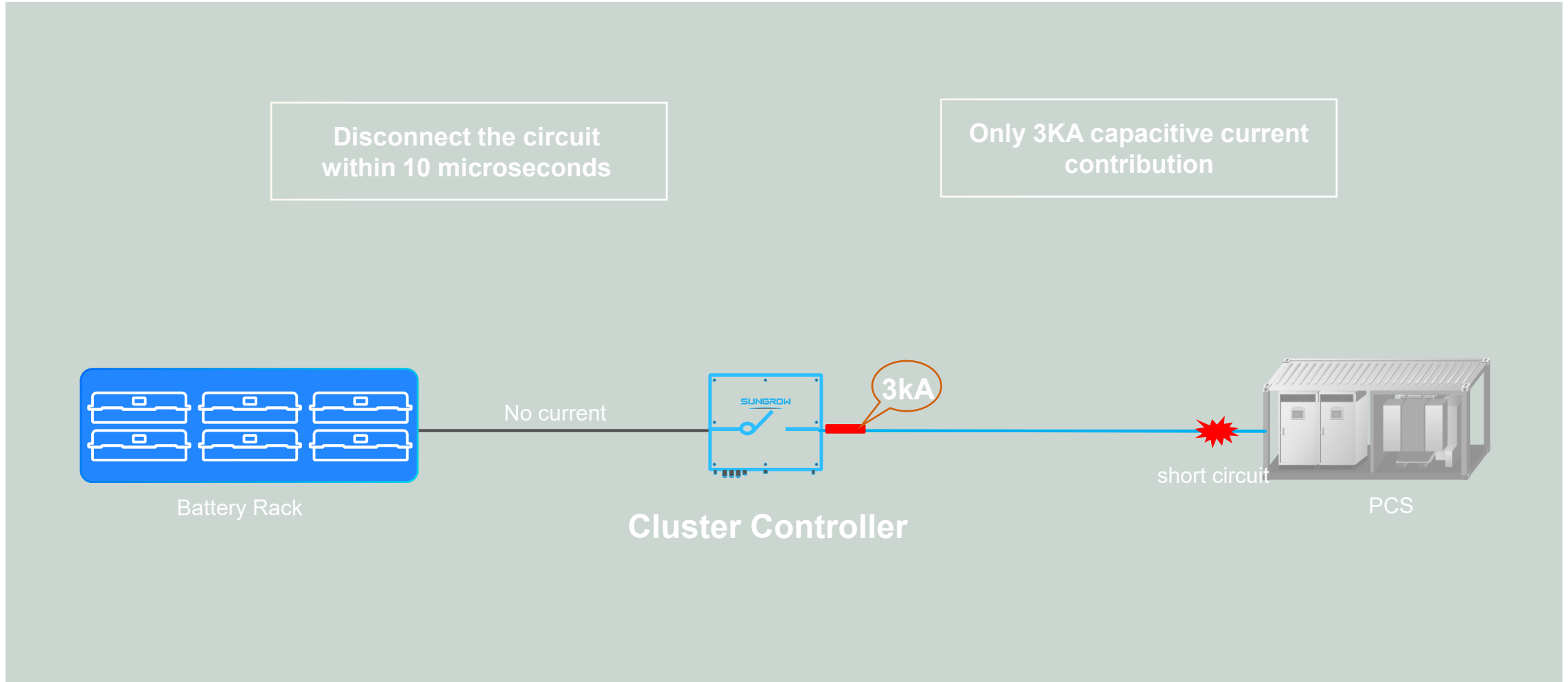
Faulty cell early warning



Early warning of short circuit, rapid capacity degradation, voltage sag etc.

MICROSECOND SHORT CIRCUIT PROTECTION

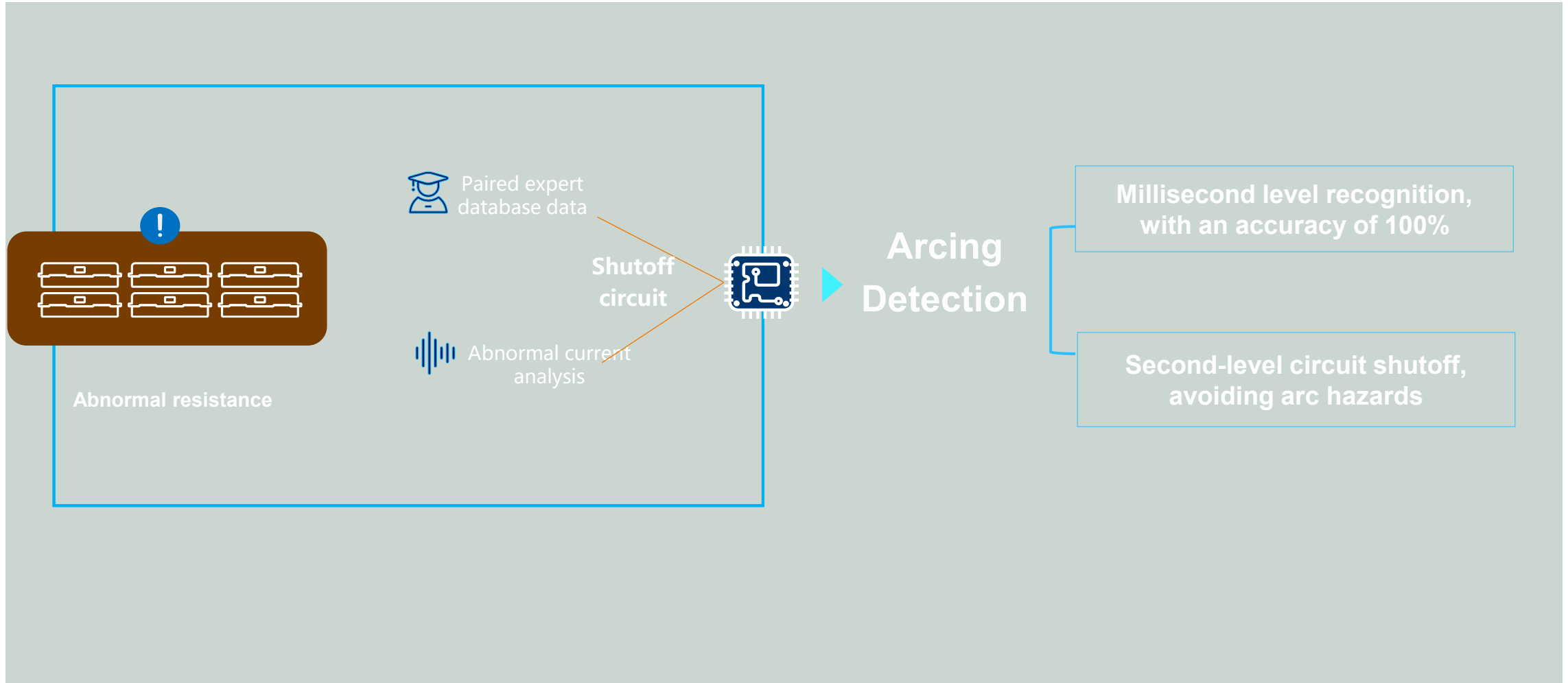
ENSURING BATTERY & SYSTEM SAFETY



ARCING DETECTION AND CIRCUIT SHUTOFF

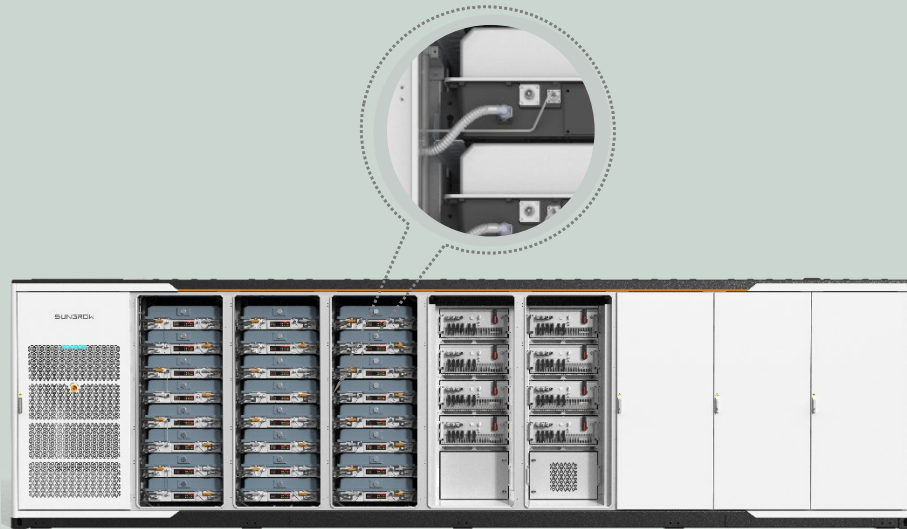
17

REDUCING HAZARDS OF ELECTRICAL ACCIDENTS

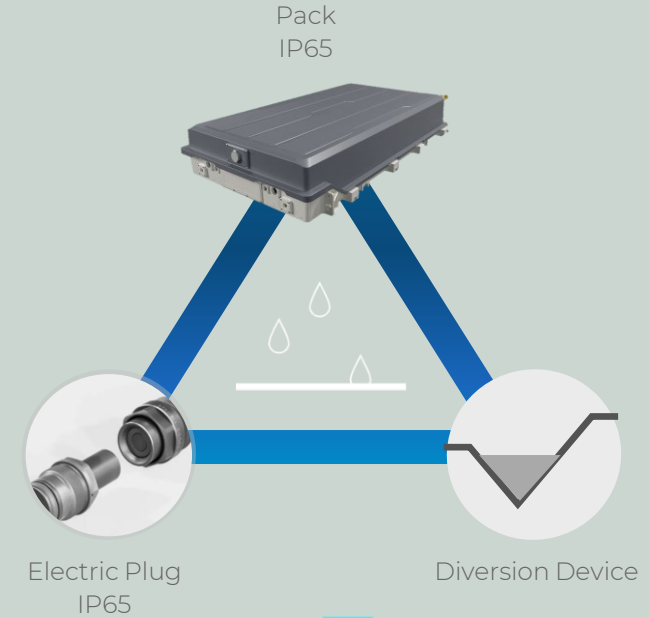


TWO-LEVEL ANTI-LEAKAGE DESIGN

ENSURING SYSTEM OPERATION



Patented Connector
Applications 100,000+. 0 Fault
Reported

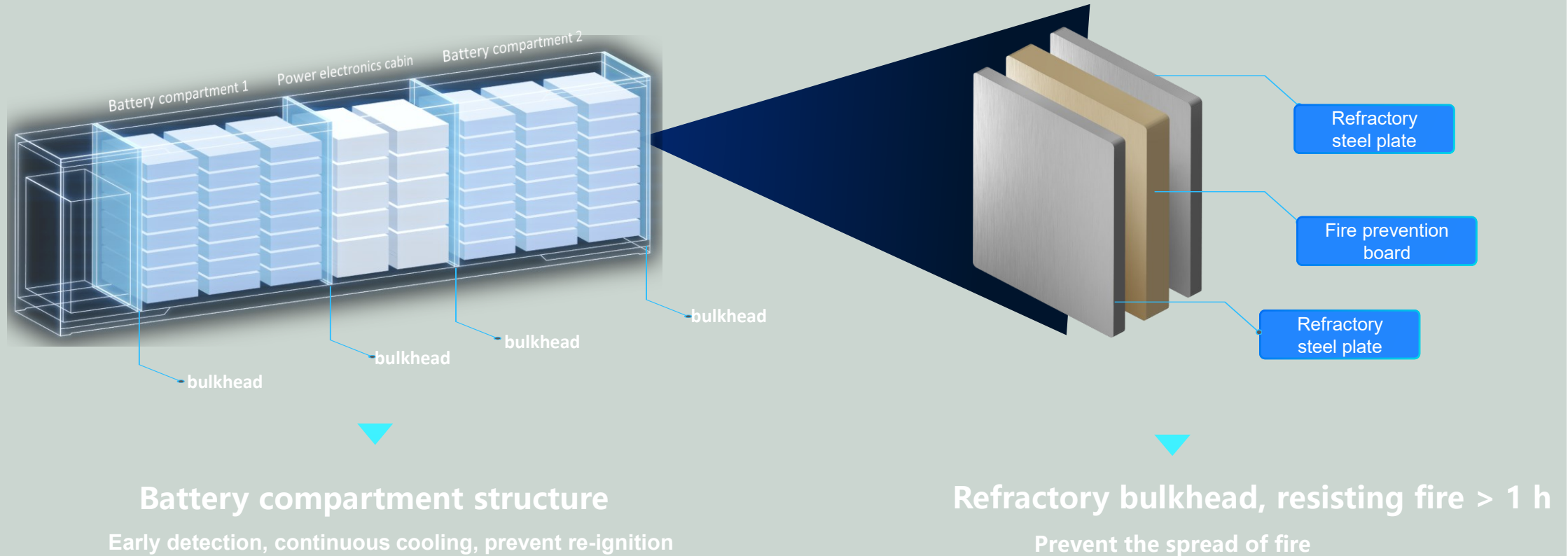


Waterproof Design to
Ensure Safety



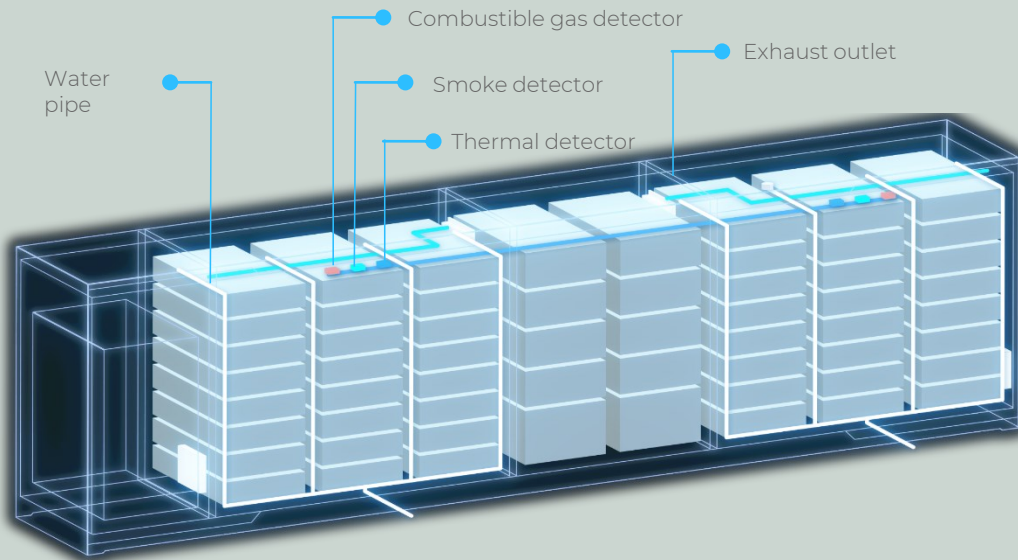
COMPARTMENT DESIGN

PREVENTING SPREAD OF FIRE



RELIABLE FSS

ENSURING SYSTEM SAFETY



Early detection, continuous cooling, prevent re-ignition

Meet NFPA855 / 69 safety requirements

*Obtained UL9540A certification

Standard Requirements

PowerTitan

- Smoke detector
- Thermal detector
- Combustible gas detector
- Exhaust system
- FSS: Gas/Water FSS



POWERTITAN

DATASHEET



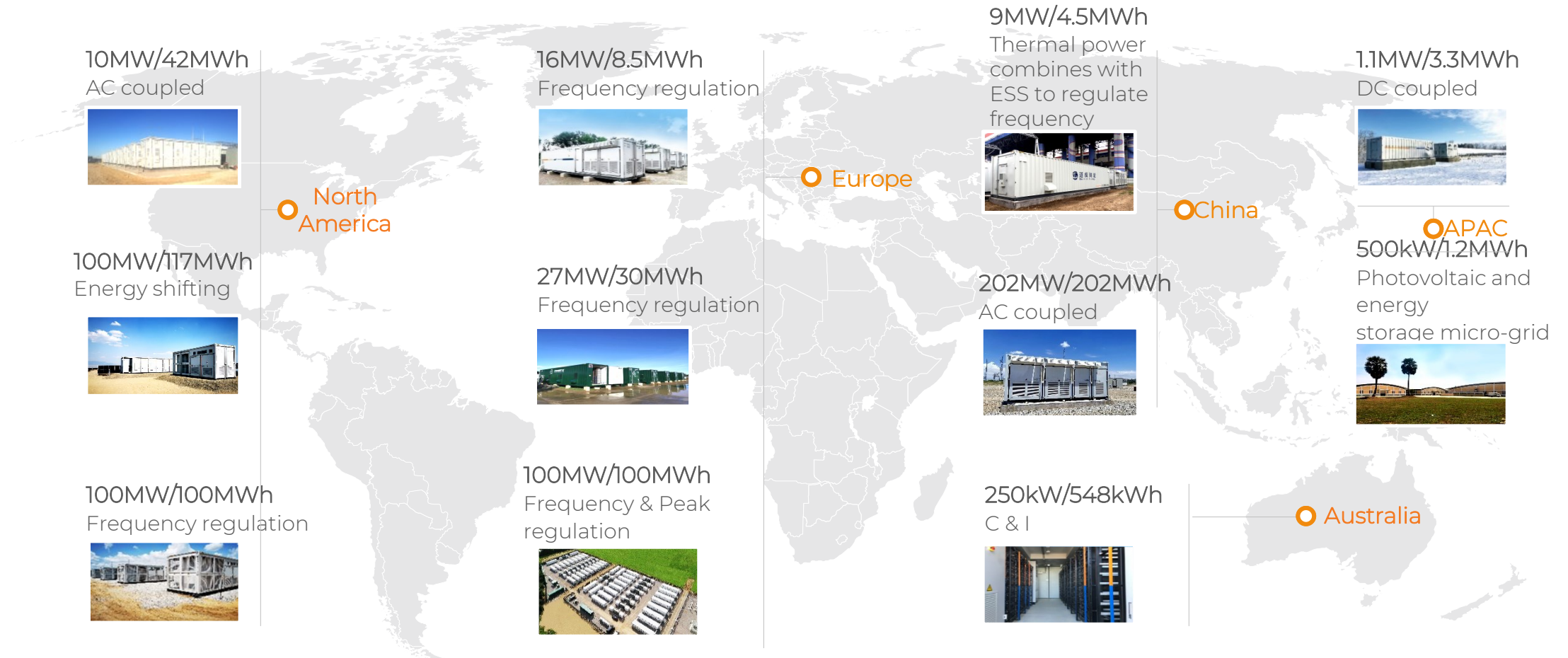
Type Designation	ST2752UX
Battery Data	
Cell type	LFP
Battery capacity(BOL)	2752kWh
System output voltage range	1160~1500V
GENERAL DATA	
Dimensions(W*H*D)	9340*2600*1730mm
Weight	~26400kg
Degree of protection	IP54
Operating temperature range	-35 -50°C (>45°C derating)
Relative humidity	0-95% (non-condensing)
Max. working altitude	3000m
Cooling concept of battery chamber	Liquid cooling
Fire safety	Fused sprinkler heads, NFPA69 explosion prevention and ventilation IDLH gases
Communication interfaces	RS485, Ethernet
Communication protocols	Modbus RTU, Modbus TCP
Compliance	CE, IEC62477-1, IEC61000-6-2, IEC61000-6-4, IEC62619



REFERENCES

2021 ESS Shipments **3GWh+**

Safety Accidents **0**



REFERENCES

USA 100MW PV & 25MWDC/117MWH DC COUPLED ENERGY STORAGE PROJECT IN NEVADA



COD time	2021.6
Location	Nevada
Capacity	PV: 100MWac, ESS: 25MW/117MWh
Feature	<ul style="list-style-type: none">• DC coupled PV&ESS energy transfer application• The largest DC coupled project application



REFERENCES

UK-ESS:100MW/100MWH PROJECT IN MINETY



COD time	2020
Location	UK
Capacity	ESS: 100MW/100MWh
Feature	<ul style="list-style-type: none">• Europe's largest battery energy storage power station, which can provide emergency support power in the event of an accident on the main grid, effectively improving the level of grid security• Sungrow provides integrated solutions such as battery, PCS, etc.



REFERENCES

Location	Project	Capacity	Contract signature	Location
USA	KCE TX-13	50MW/100MWh	2021	USA
USA	KCE TX-19	50MW/100MWh	2021	USA
USA	KCE TX-21	50MW/100MWh	2021	USA
Thailand	Super SPP	45MW/136.24MWh	2021	Thailand
USA	DeCordowa	296MW/320MWh	2020	USA
USA	Flower Valley II	110MW/220MWh	2020	USA
USA	Crossett BESS project	210MW/227MWh	2020	USA
USA	Crossett BESS project	214MW/231MWh	2020	USA
USA	Road runner	57MW/86MWh	2020	USA



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<https://uk.sungrowpower.com/com>

sales@sungrow-emea.com



An aerial photograph of a dense, lush green forest, likely a coniferous forest, covering the entire background of the image. The trees are tightly packed, creating a textured, green canopy.

SUNGROW

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THANK YOU!

Clean power for all

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Q&A



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Thermo-acoustic heat pump for residential applications

by Emiliano Bellini



Most-
read
online!

Romania introduces new rules for solar on agricultural land

by Emiliano Bellini



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Thursday, 7 July 2022

4:00 pm – 5:00 pm AEST, Sydney

8:00 am – 9:00 am CEST, Berlin

Tuesday, 12 July 2022

5:00 pm – 6:00 pm CEST, Berlin

11:00 am - 12:00 pm EDT, New York City

Many more to come!

**Delivering
value in
the APAC
region**

**Navigating the
UFLPA:
Geopolitical
Risk in the PV
Supply Chain**

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joining today!**