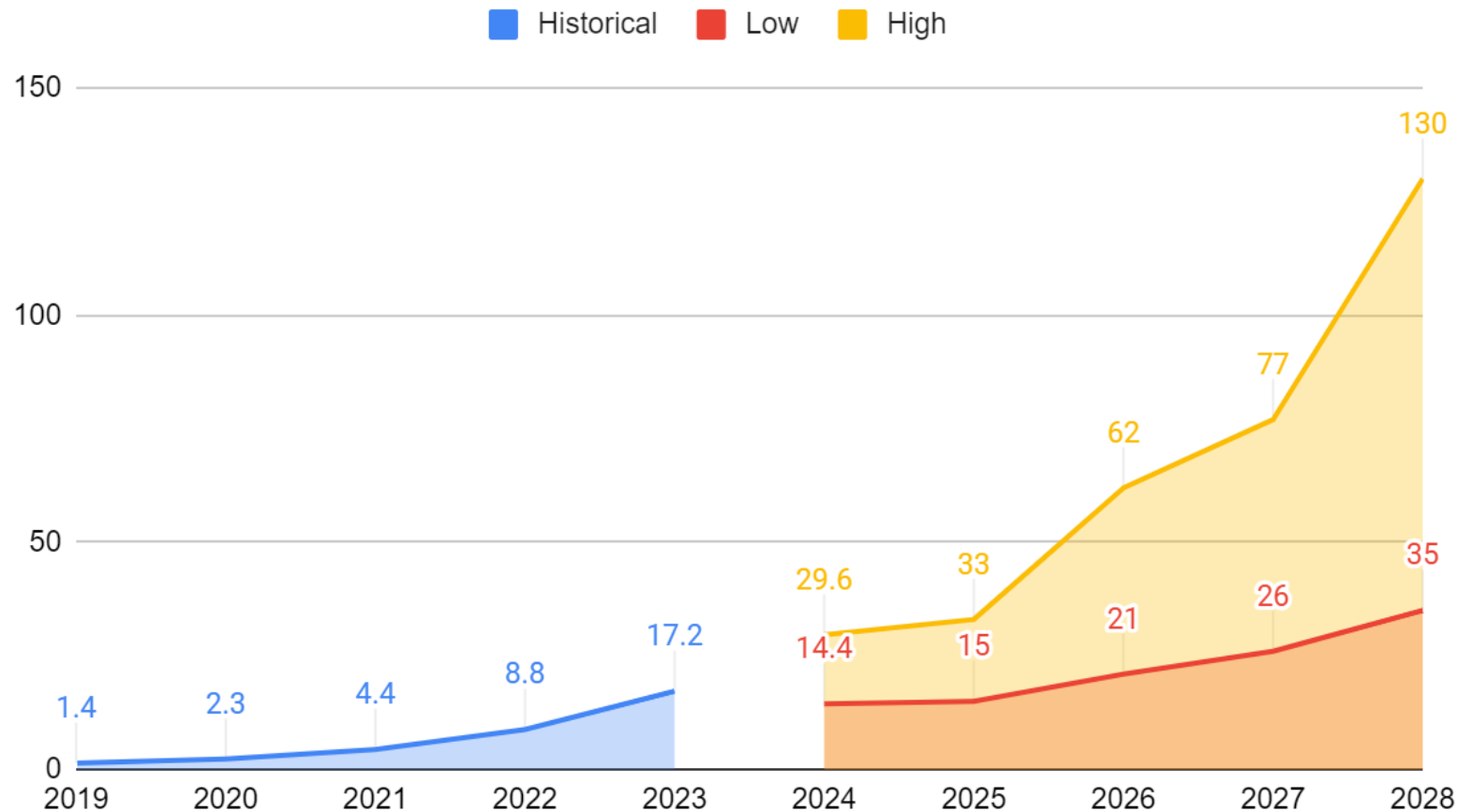


The main title of the presentation, "Utility Scale Inverters and Storage with Liquid Cooling and Fire Protection", is displayed in a large, bold, cyan font. The text is centered within a white, multi-sided rectangular frame that has a technical, circuit-like appearance with small square markers at its corners and midpoints. The background of the slide is a dark blue, stylized map of the world with glowing white and cyan lines representing power grids and data connections.

Market Information

European BESS Market in GWh



2023:
17.2 GWh

2028:
LOW
35 GWh

2028
HIGH
130 GWh

Financial Revenue Model for Utility Scale Battery



1. Renewable Integration

Maximizing renewable energy use: Store excess renewable energy and release it when production from sources like solar and wind is low.

2. T&D Deferral

Reducing infrastructure costs: Use batteries to manage peak loads, deferring costly transmission and distribution upgrades.

3. Ancillary Services

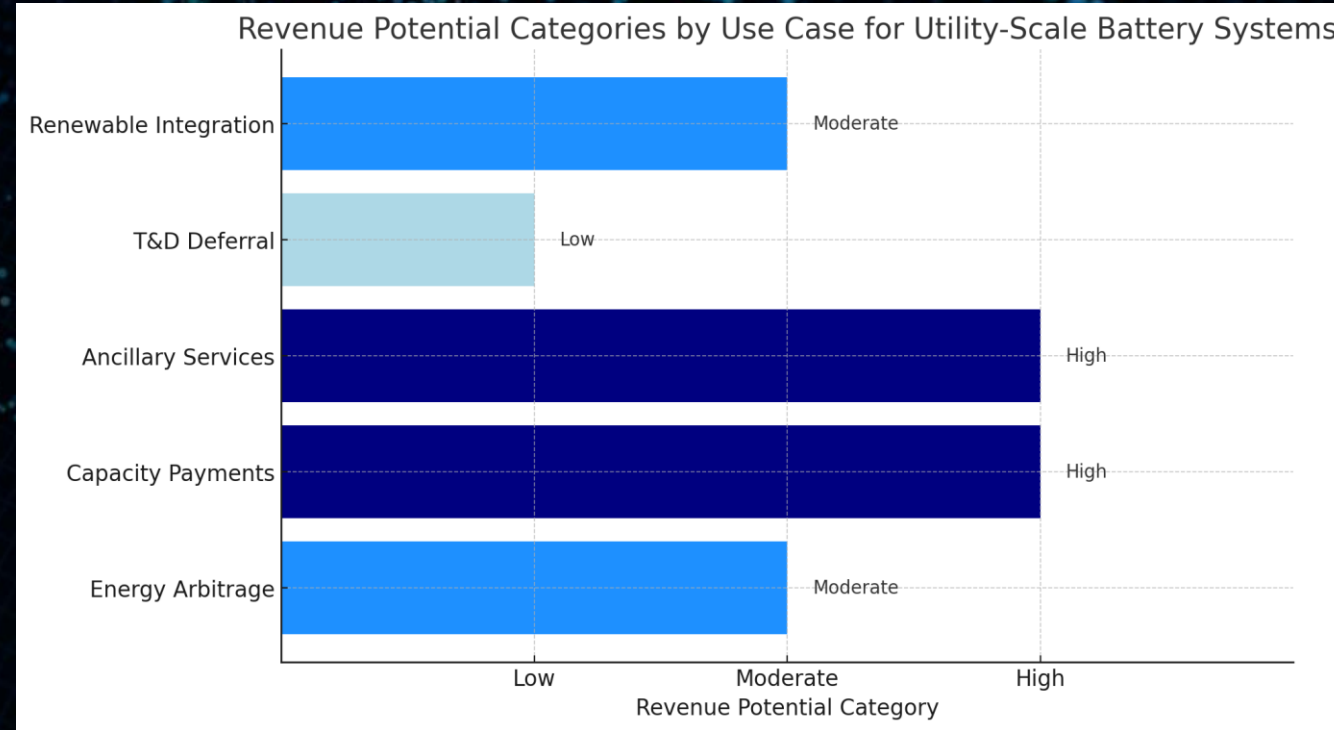
Stabilizing the grid: Provide essential services like frequency regulation and voltage support to maintain grid stability.

4.. Capacity Payments

Ensuring grid reliability: Receive payments for maintaining battery capacity to supply energy during peak demand.

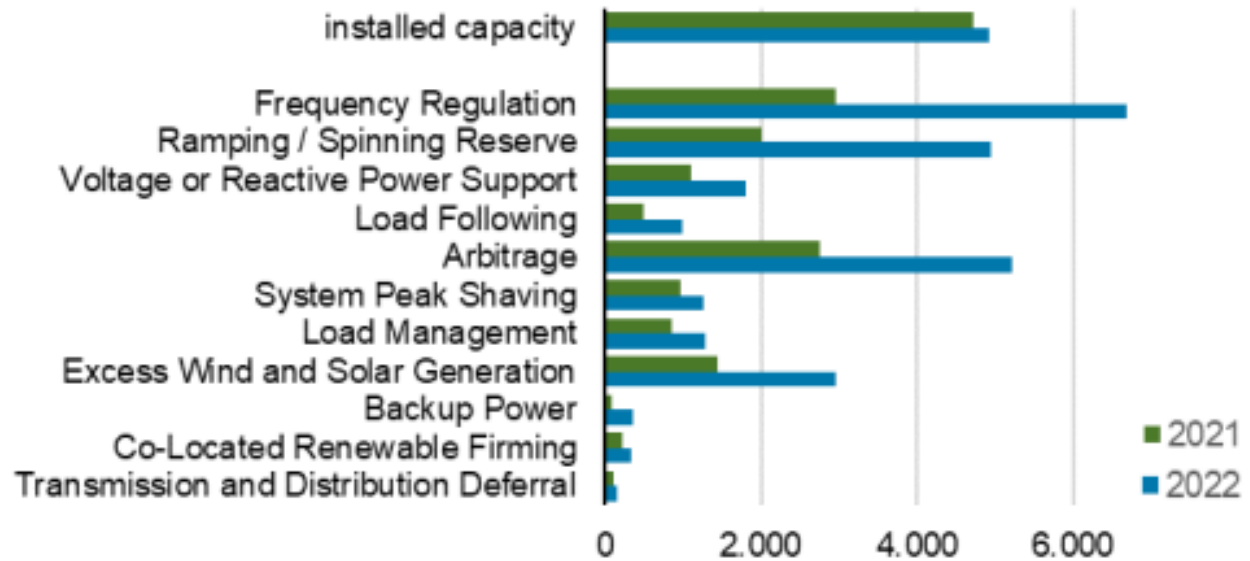
5. Energy Arbitrage

Leveraging market price fluctuations: Buy low-cost electricity during low demand and sell at higher prices during peak demand.



Financial Revenue Model for Utility Scale Battery Changes over Time (2021 vs 2022 US Market)

Applications served by large-scale battery storage, MW (2021 vs. 2022)



Significant recent growth in the following applications

- Frequency regulation
- Spinning reserve
- Arbitrage
- Excess renewable generation

Regulations overview applicable in the German market



Energy Arbitrage

EEG 2021 §11: Supports market-based pricing through the Market Premium and Direct Marketing, enabling profitable energy arbitrage.

Capacity Payments

EnWG §13a: Provides mechanisms for grid stability, including network reserve payments, indirectly supporting capacity payments.

Ancillary Services

Netzregelverbund: Regulates the provision of grid stabilization services such as frequency and voltage control, allowing battery storage to participate.

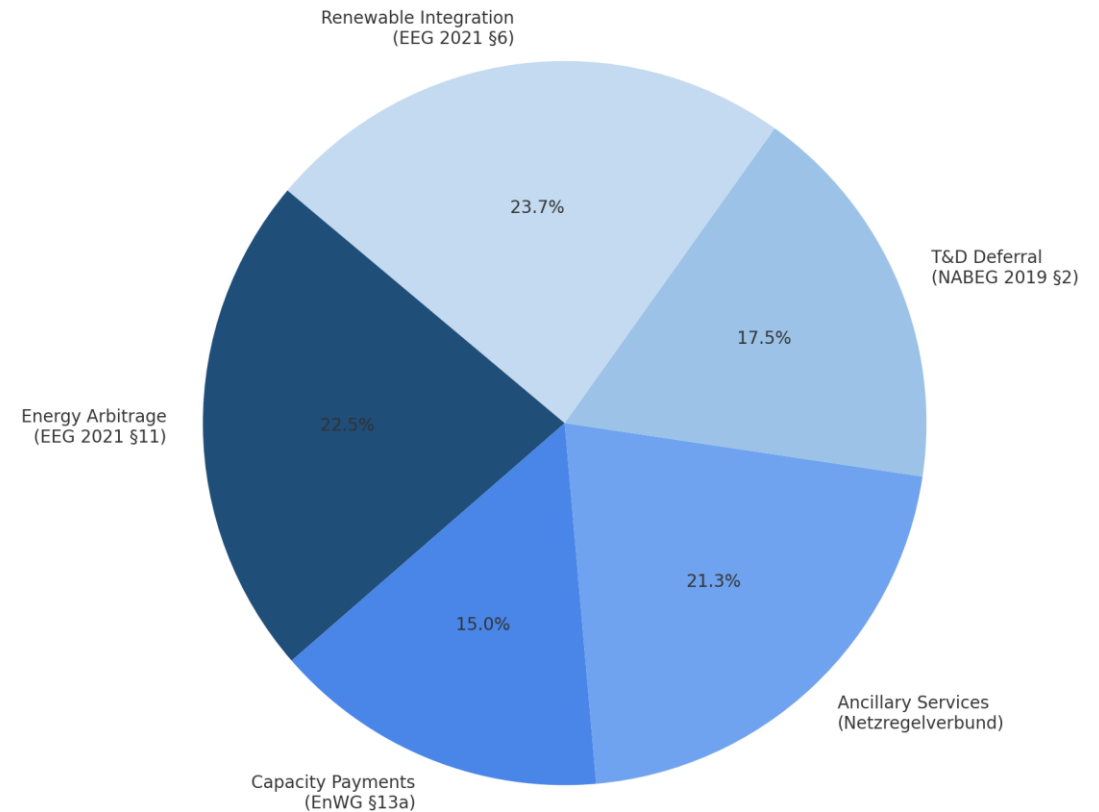
T&D Deferral

NABEG 2019 §2: Encourages the use of innovative solutions like battery storage to reduce the need for costly grid expansion.

Renewable Integration

EEG 2021 §6: Prioritizes grid access and transmission for renewable energy sources, increasing the need for battery storage to manage surplus energy.

Applicability of Revenue Streams for Utility-Scale Battery Storage in Germany



Lighting the World with Green Energy



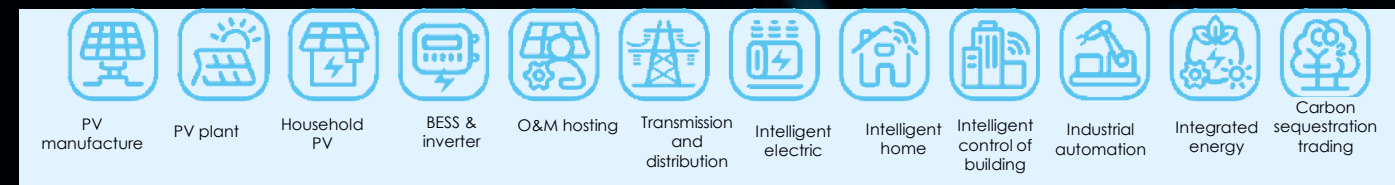
Founded in 1984, CHINT Group Co., Ltd.

(hereinafter referred to as "CHINT") is a global leading smart energy solutions provider.

Chint continuously works on localized operation to build a world-class enterprise.



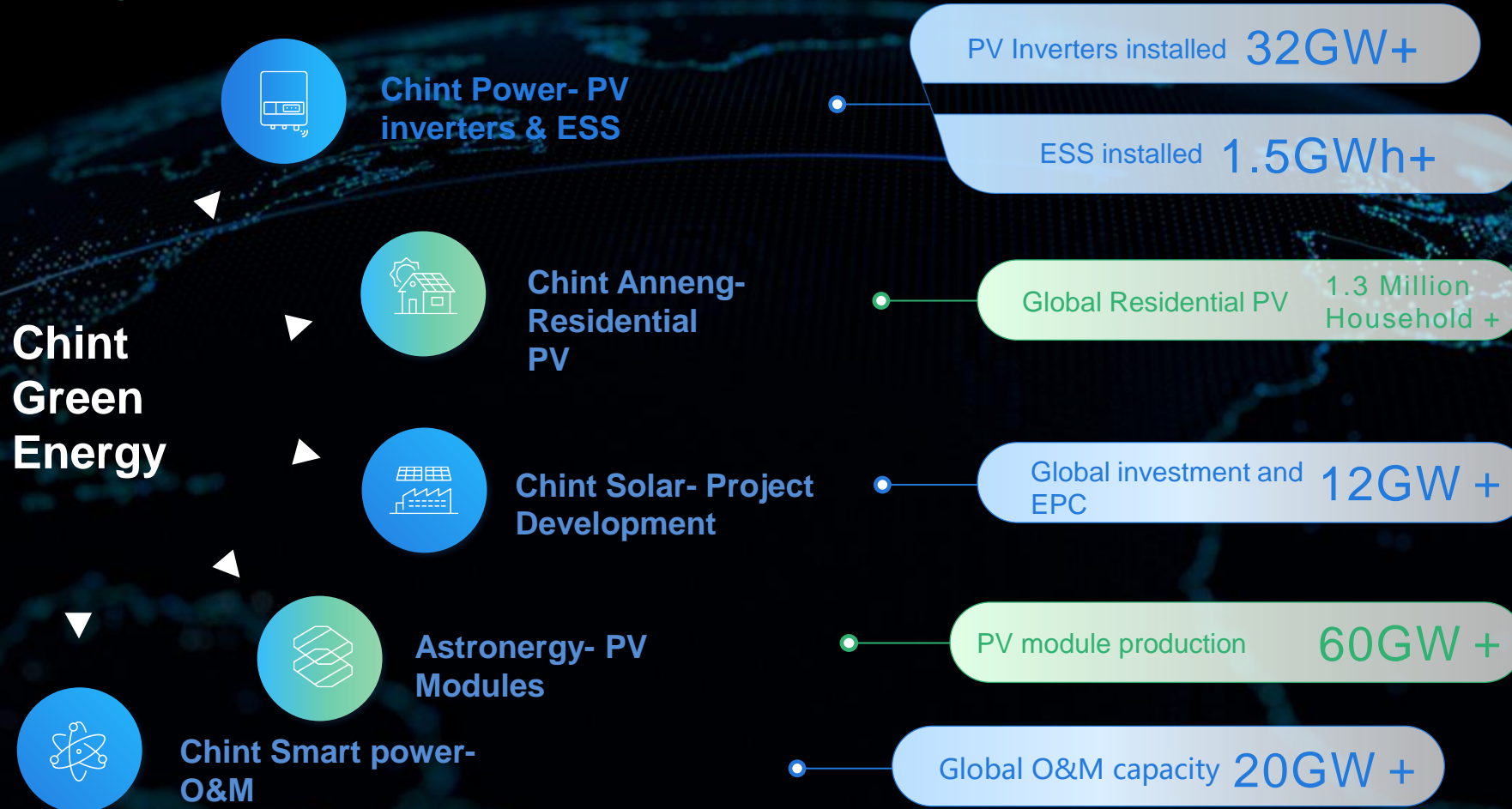
 \$22.1 B Annual Sales Revenue	 \$25 B Total Assets	 1.9 B+ Annual Profit
 50,000 Employees Globally	 Top 500 Listed Chinese Enterprises for 22 years	 140+ countries 66% localization



Chint Green Energy Enterprises



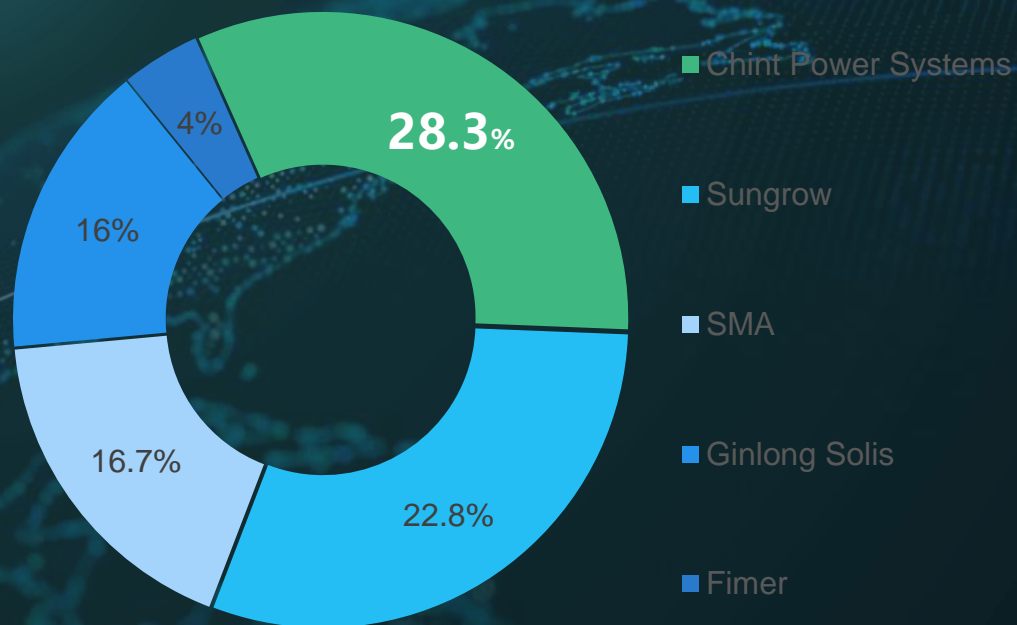
2022 Green Energy revenue \$ 5.25B



Global Performance - US and Korea #1



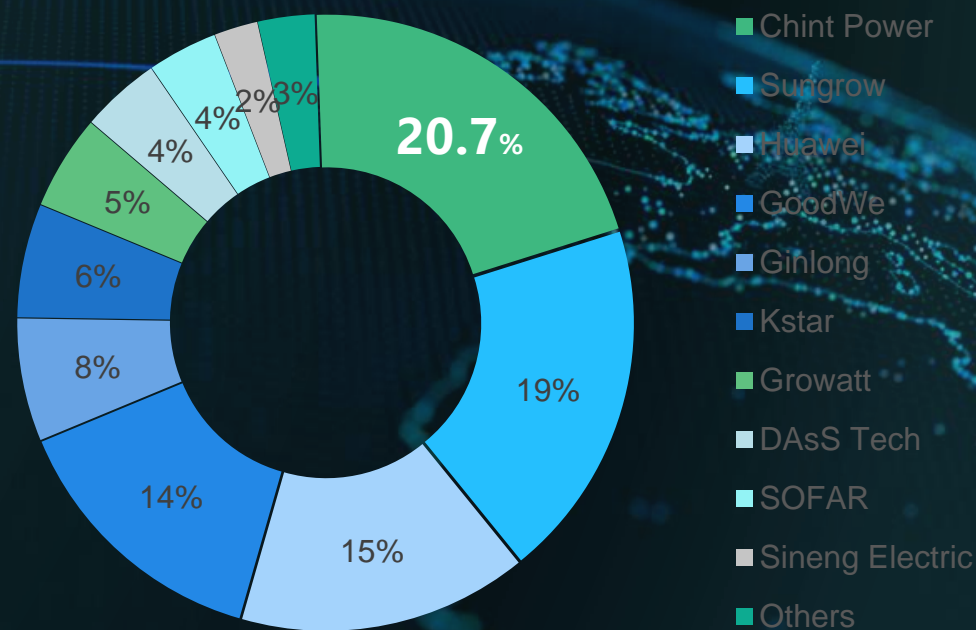
US Three-Phase inverter Market 2022 shipment ranking (MWac)



Source: Wood Mackenzie (GTM)

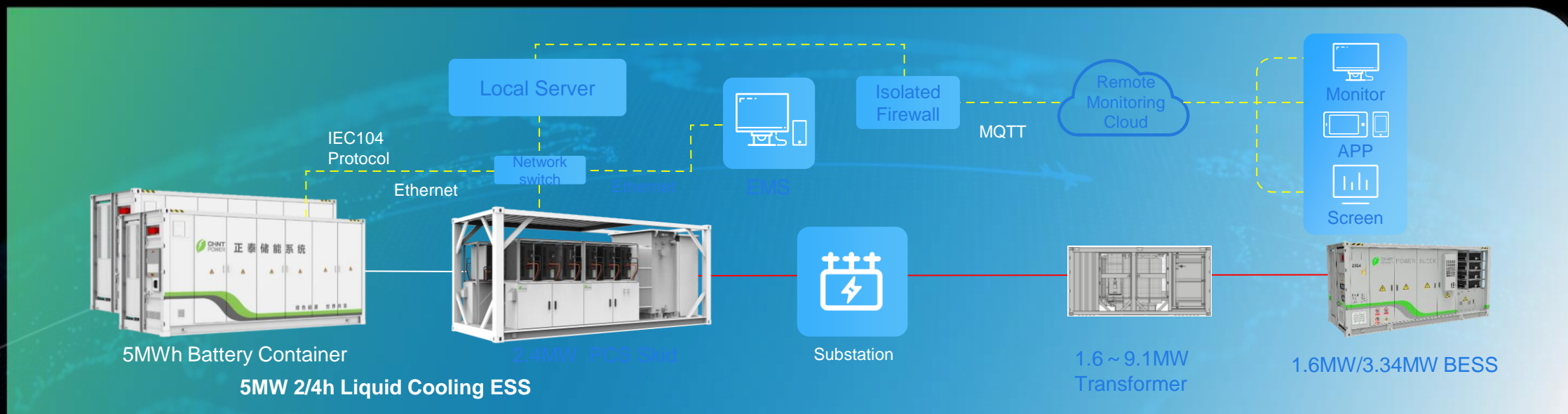
North America Three Phase Inverter #1 Market Share 8 Consecutive Years

Korea 2022 Inverter Shipment Ranking(MWac)



Korea PV Inverter Shipment #1 in two Consecutive Years

Promoted Utility BESS Solution



High Density

- ◆ 5MWh, 20ft container, 35% increased of specific energy
- ◆ Compatible with all major 280~320Ah cells
- ◆ Patented borderless liquid cooling plate design



High Performance

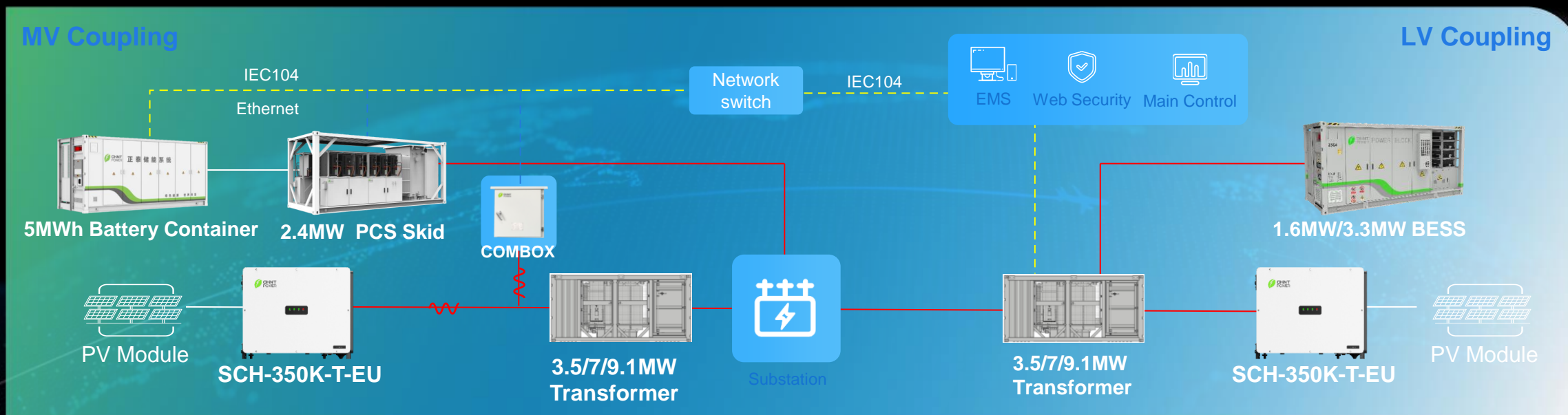
- ◆ Low flow resistance large flow narrow range, Cell temperature difference in Pack <math><1.5^{\circ}\text{C}</math>
- ◆ Pack level cooling capacity, Cell temperature difference in system <math><2^{\circ}\text{C}</math>
- ◆ New insulation and heat conduction design increases heat exchange efficiency by 10%



High Safety

- ◆ 5700V insulation , 12Segments Electrical protection
- ◆ Five category risk management strategies
- ◆ Zone4 Anti-seismic, 43T full load lifting strength
- ◆ Pack level fire protection

Utility PV+BESS Solution



Lower LCOE

- ◆ 16% higher inverter capacity, BOS cost decrease **3.8%**
- ◆ Anti-PID + PID recovery, reduce energy loss by **2.98%**
- ◆ 5MWh, 20ft BESS container, increase **35%** energy density



Versatile

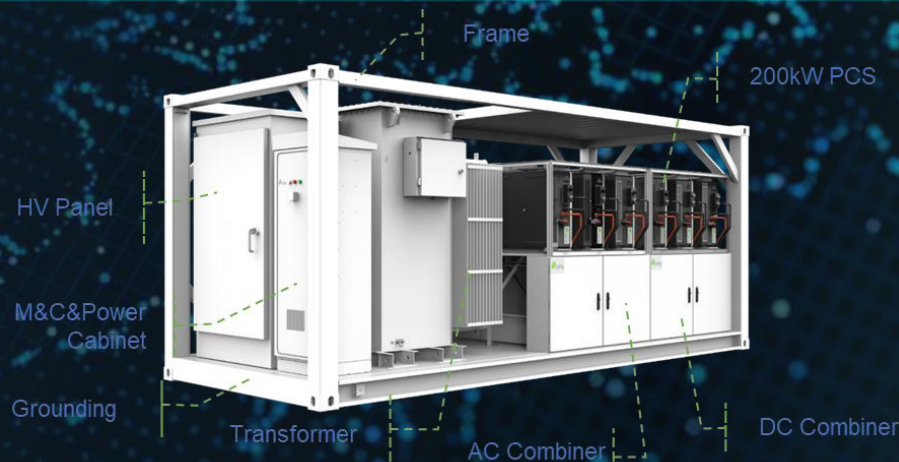
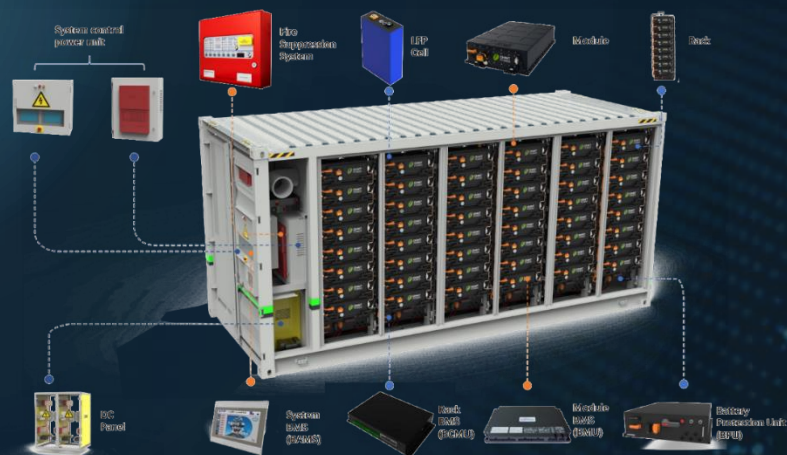
- ◆ Support max **190%** DC/AC ratio
- ◆ Extreme temperature control, no deration for solar inverter till **45°C**
- ◆ One-fits-all PV modules
- ◆ Extreme temperature control, temperature difference **<1.5°C** for cell and **<2°C** for pack



High Safety

- ◆ Integrated **DC tripping switch (<30ms)** and **DC temperature detection** for inverter
- ◆ 5700V insulation, **12 level** Electrical protections
- ◆ **Zone4** Anti-seismic, **43T** full load lifting strength
- ◆ Pack level fire fighting

POWER BLOCK 2.0 liquid cooling BESS

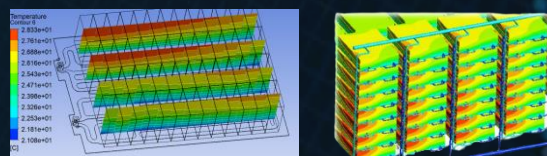


High Specific Energy



5.1MWh 20ft ISO HC, **35% higher** energy density
Efficient grouping technology, fully prefabricated

Better Performance



10% higher heat exchange efficiency
Cell temperature difference $<1.5^{\circ}\text{C}$
System temperature difference $<2^{\circ}\text{C}$

Enhanced Safety



key safety design

Electrical, Mechanical, O&M, FSS, EHS

High Safety

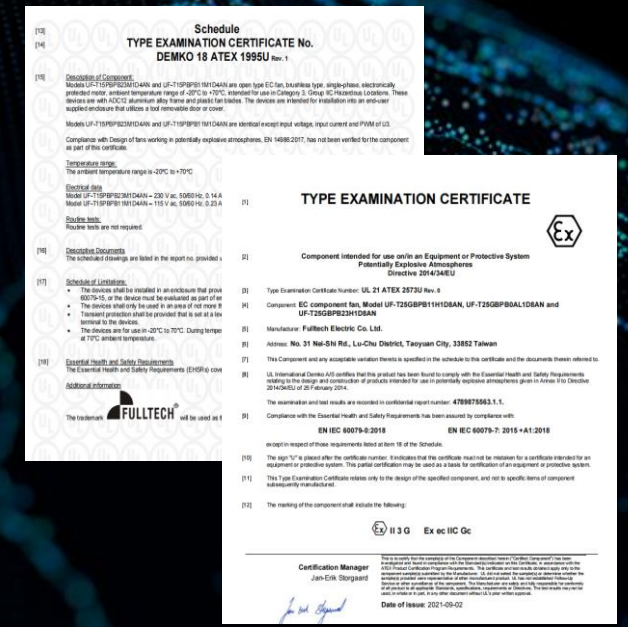
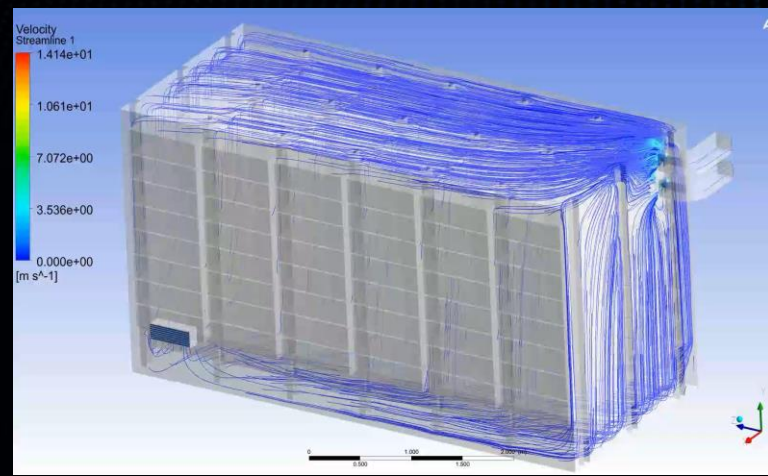


The Battery and electrical subdivision design make sure electrical equipment is **completely isolated** from the explosive environment.

Battery cabin level explosion suppression design to ensure **3times/min** ventilation rate and ventilation effect

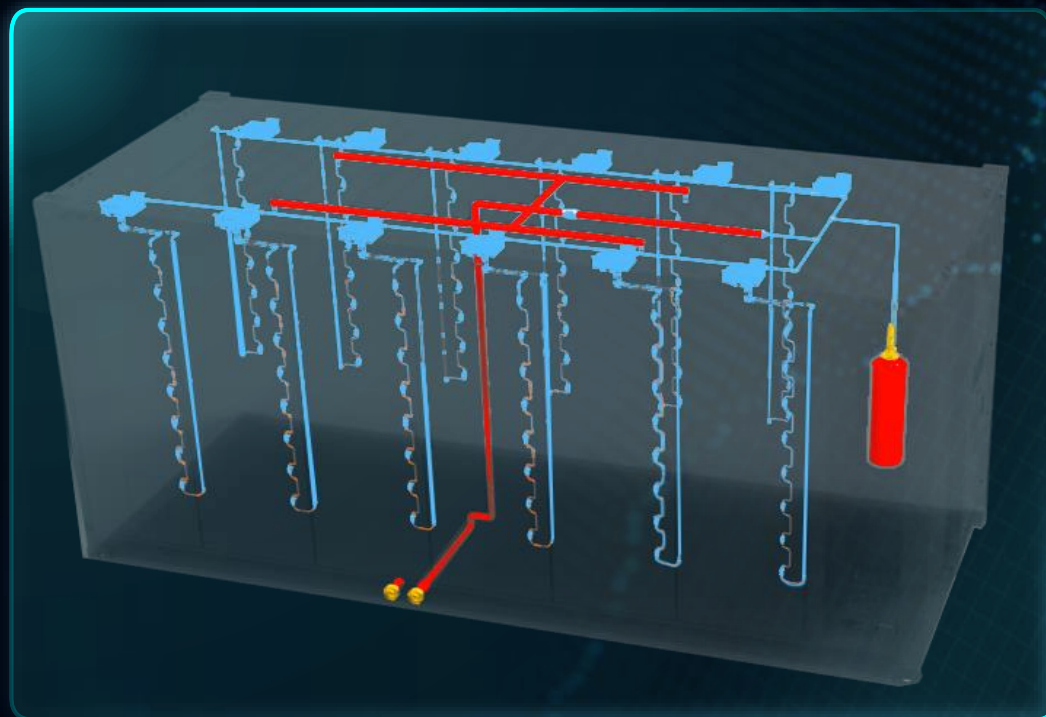
Comply **ATEX**, **NPFA855** standards with explosion-proof product.

Electrical cabin

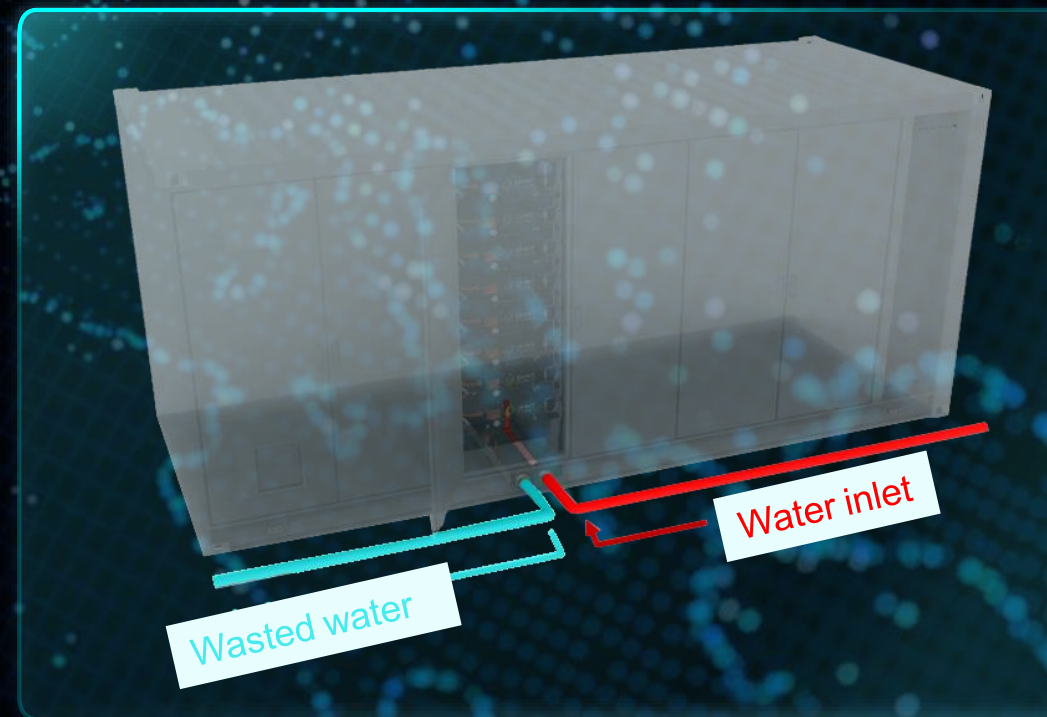


Fire Protection

Pack, Rack, Container Gas + Water dual FSS

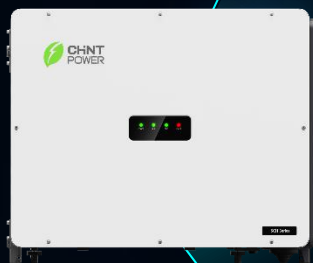


Cooling liquid & fire fighting Wasted water gather



Utility PV Solution

Next-Generation 1500V Smart String PV System



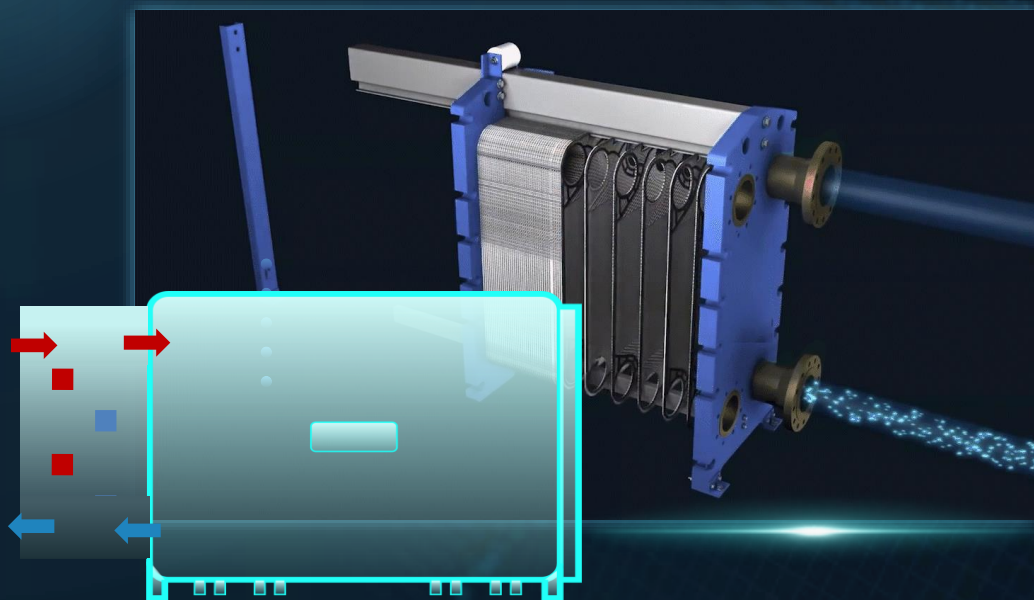
SCH-350K-T-EU

Higher Generation

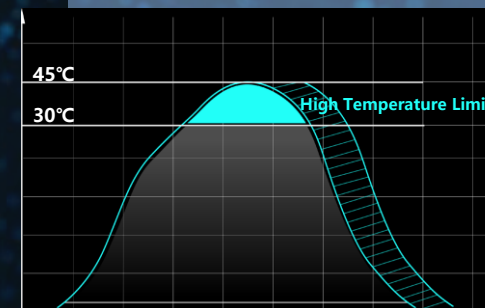
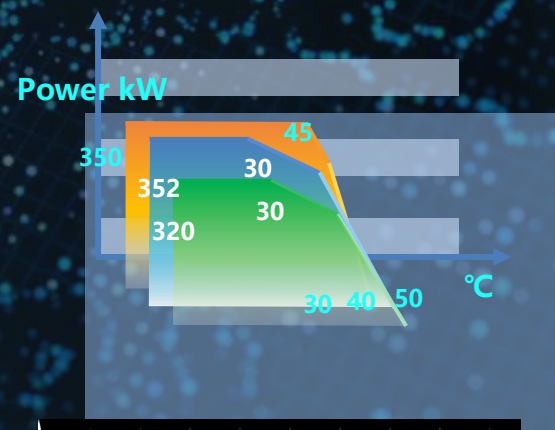
Better Performance

Enhanced Safety

Less Deration For 1.63% Higher Generation



Enhanced heat exchange technology
Extreme temperature control in small cubicle



350kW @45°C, 5°C better than industry



Wenzhou Taishun 550MW Floating Project

2021 Asia largest floating PV station

Model: CPS SCA250KTL-DO

Corrosion Protection: IP66 with C5M Protection
No fear for High Humidity and Salt Spray

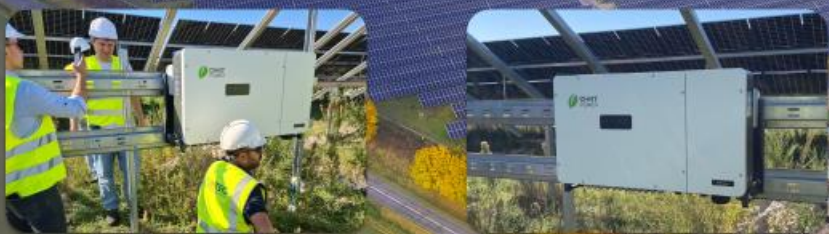


Poland Proszówek 46MW PV project

2023 Poland's Largest Utility PV Plant

Model: CPS SCA275KTL-DO

Lower CAPEX: Using PLC for communication
Plug and Play, Rip and Replace: 30mins quick installation



Brazil Fazenda 10MW PV project

Model: CPS SCA250KTL-DO + transformer

Strong Temperature Control: no deration till 45°C
(SCH-350K-T-EU can achieve max capacity till 45 °C)



Gansu 200MWh 0.5C BESS Application

PV+BESS for grid stability



Easier Installation: Integrated design, easier calibration
46% smaller area, reduce delivery and installation costs further





Chint Green Energy already support reducing 35 million tons CO₂

We will continuously light the world with green energy



Die Leitmesse für Solarprofis in Nordrhein-Westfalen

 27. & 28. November 2024
 Messe Düsseldorf
Halle 13 & 14, Eingang Ost

 Melden Sie sich für den Newsletter an!



27 & 28 November 2024
Messe Duesseldorf

Chint Power System Stand: T16



Technical Verification from TÜV



技术报告

技术报告编号: 5040924017333-00
日期: 2024-06-12

客户: 上海正泰电源系统有限公司
地址: 上海市松江区思贤路 3255 号

制造商: 上海正泰电源系统有限公司
地址: 上海市松江区广富林路 5999 号

工厂: 上海正泰电源系统有限公司
地址: 上海市松江区思贤路 3555 号

测试对象: 产品: 大容量组串式光伏逆变器
型号: SCH333K-T-EU, SCH350K-T-EU, CPS SCH320KTL-DO

测试规范: IEC 62109-1:2010 (EN 62109-1:2010) / 4.3 章节 热测试
IEC 62109-1:2010 (EN 62109-1:2010) / 4.7 章节 电气参数测试
IEC 62894-1:2014 / 4.5.4 章节 功率-温度降额特征
根据 TÜV SÜD 和正泰电源的技术约定, 进行 PVSyst 软件仿真模型参数输入以及结果确认 (详见报告中 3 章节测试结果)

检查的目的: 依据测试规范进行测试和评估

测试结果: 测试结果显示当前的产品符合上述测试规范要求

Doc No.: TTC-TY0002.00E - Rev. 15

报告编号: 5040924017333-00
版本: Rev.00
日期: 2024-06-12
Page 1 of 54

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TÜV®

南德认证检测(中国)有限公司上海分公司
中国上海市静安区恒通路161号·3-13楼

The technical verification report, jointly conducted by Chint Power and TÜV China, fully verify the high temperature Adaptability and real performance of Chint Power 320/333/350 series products.

According to simulation and calculation, **the total generation in 25 years (India Bhadla Solar Park area) is 1.63% higher than the other model who derated at 30°C.**

Witnessed by TÜV 's senior project engineer, the test model is fully compliant with testing requirements