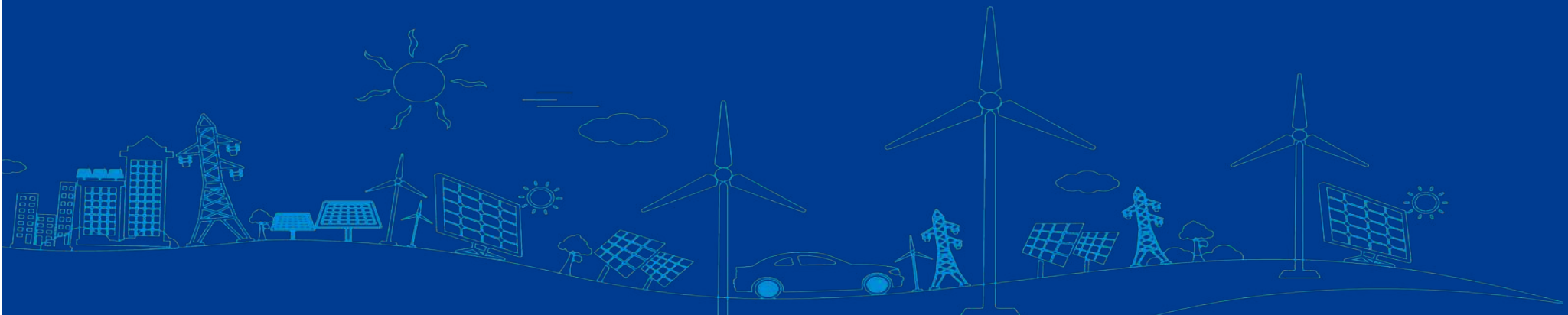


# ***TBEA***

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**TBEA SUNOASIS - LATAM**  
**2025**



# Contents

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**6****LATAM presence & Service**

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1

# Global Vision

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# TBEA - Global Vision through Four Major Industries

**TBEA**

Since 2000, TBEA has specialized in **Photovoltaic Inverters, high-voltage SVG and ESS**. Leveraging power electronics, it drives **Clean Energy Generation**, smart distribution, and microgrid management, leading sector innovation.



Transmission and Transformation



New Energy



New Material



Energy Industry



More than 60  
countries  
and regions

60+



Ranke National  
Laboratories

4



Industrial  
Parks

18



Organizations  
overseas

76



Staff

+27k

## TBEA Sunoasis— Core Business

**TBEA**

Generation  
-  
PV Plants



Solar string and  
Central inverter

Transmission  
-  
Power quality  
solution and  
Flexible DC  
transmission



SVG/STATCOM  
HVDC up to  
800KV

Distribution  
-  
Smart Microgrids  
and ESS



Power router and  
BESS

Intelligent  
management  
-  
e-Cloud energy  
platform



e-cloud energy management  
platform

Installed base - Solar  
Inverters

64

GW

Global TSVG deliveries

35

GVar

Installed Transformer  
Stations

5000<sup>+</sup>

TB-eCloud - Capacity in  
operation

12<sup>+</sup>

GW

## TBEA – Strong points

**TBEA**



**No.1**

No.1 in Power  
Transformers in the  
World



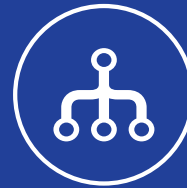
**No.80**

Top 250  
international  
contractors



**No.327**

Top 500  
Chinese  
Companies



**No.6**

Top 100  
Machinery  
Manufacturers



**15 BUSD**

15.5BUSD  
turnover in 2024

## Factory and Test platform



R&D



Assembly line



Aging platform



Environment adaptive platform



Workshop



Performance test platform



# Industrial Parks in China and Internationally

**TBEA**



北京总部基地  
Beijing Headquarters Base



东北输变电科技产业园  
Northeast Power Transmission and Distribution Science and Technology Industrial Park



南方输变电科技产业园  
Southern Power Transmission and Distribution Science and Technology Industrial Park



湖南云集5G科技产业园  
Yunji Technology Industrial Park



南京智能电气产业园  
Nanjing Intelligent Electrical Industrial Park



西北输变电科技产业园  
West Power Transmission and Distribution Science and Technology Industrial Park



新疆智能电气产业园  
Xinjiang Intelligent Electrical Industrial Park



华北输变电科技产业园  
North China Power Transmission and Distribution Science and Technology Industrial Park



京津冀智能科技产业园  
Beijing-Tianjin-Hebei Intelligent Science and Technology Industrial Park



华东输变电科技产业园  
East China Power Transmission and Distribution Science and Technology Industrial Park



西南输变电科技产业园  
West Power Transmission and Distribution Science and Technology Industrial Park



新疆智能电缆产业园  
Xinjiang Intelligent Cable Industrial Park



新特硅基新材料产业园  
Xint Silicon-Based New Materials Industrial Park



新能源产业园  
New Energy Industrial Park



西安电气科技产业园  
Xi'an Electric Technology Industrial Park



甘泉堡新材料产业园  
Ganquanpu New Materials Industrial Park



准东煤电能源基地  
Zhundong Coal Power Energy Park



几内亚一体化资源转化基地  
Guinea Integrated Resource Conversion Park



印度特高压生产基地  
India UHV Manufacturing Park



塔吉克斯坦杜尚别矿业公司  
Dushanbe Mining Company of Tajikistan



## Introduction - TBEA SUNOASIS

**TBEA**

**Mission: To be the world leader in intelligent green energy solutions and services**

- Founded: 2000
- Core business: solar, wind and intelligent energy systems
- Service excellence: development, design and engineering, commissioning and technical support



**Green energy for a better life!**

## TBEA Xi'an - Renewable Energy Industrial Park

**TBEA**



**ANNUAL  
CAPACITY >  
40GWAC**



TBEA Xi'an renewable energy industrial park, the total investment is 4.3billion RMB. (500 mill EUR)

# Portfolio for Utility Scale

**TBEA**

## Central Inverters



More than  
1,3GWac  
sold

TC3125/3400/3600KF



First orders in  
execution

TC4400KF & TC5000KF  
(NEW)

## String Inverters



More than  
1.0 GWac  
sold

TS228KTL/TS220KTL



More than  
550 MWac  
sold

TS360KTL-HV

## ITS / PCS



More than  
1.1 GWac  
sold

TC3450 / 6850KFT (C)



TC4400 / 5000KFT (C)  
TC8800 / 10000KFT



More than  
1.3 GWac  
sold

TS3400 / 6850KT (S)  
TS3300/6600/9240KT

## SVG / BESS



35GVar order  
in progress

TSVG (STATCOM)



ESS

## OTHERS



Installed in  
more than 60  
plants

Comm. Box  
Smart string boxes

# 2

## String Inverter

---





## New Generation String Inverter

**TBEA**

Excellent temperature-derating characteristic  
Better than the competitors

Fast active & reactive power  
response, LVRT, HVRT

I-V Curve Diagnosis,

Suitable for 182&210PV module  
One model for max. 24(210mm) or  
30(182mm) inputs

Comply with IEC, RETIE

Support Weak grid  $SCR \geq 1.0$



330kW string inverter (TS330KTL-HV-C1)



Economic  
& Efficient  
power  
generation



Friendly  
grid  
connection



Safety and  
Reliability



Intelligent  
O&M



## Safety & Reliability

**TBEA**

Intelligent  
string  
disconnect



Intelligent heat  
dissipation



Ingress  
protection  
IP66, Anti-  
corrosion C5



DC insulation  
detection  
Residual current  
monitoring

## Product parameter

**TBEA**

	TS330KTL-HV-C1	SUNXXX-330
DC input	24 / 30	28
No. of MPPT	6	6
MPPT current	75	65
Max. MPPT short-circuit current	125	115
Max. efficiency/Euro. efficiency	99.02%/98.8%	99.01%/98.8%
Full load MPPT voltage range	940~1300V	930~1300V
Max. apparent power	363kVA	330kVA
Output power	363kVA@30°C 330kVA@40°C 300kVA@50°C 200kVA@60°C	330kVA@30°C 300kVA@40°C 275kVA@50°C 150kVA@60°C
Output voltage	800Vac, 3W+PE	
Protection degree	IP66	
Operation altitude	5000m (> 4000m derating)	
Display	LED indicator, WLAN + APP	
Dimension (W*H*D)	1120mm*820mm*365mm	1048mm*732mm*395 mm
Operating temperature	-25°C ~ 60°C	-25°C ~ 60°C
Weight	110kg	112kg

# Transformer Stations TS3000/6000/9000

**TBEA**

## High Integration & Lower Capex

- ✓ Prefabricated and pre-tested, simple installation
- ✓ Standard 20ft. HC container design for easy transportation
- ✓ High capacity, reduce quantity of MV equipment,

## Efficient and Smart

- ✓ LV panel, transformer and RMU real-time monitored
- ✓ LV panel and RMU remote controlled
- ✓ Low power consumption, Tier 1/2 PEI efficiency



## Stable and Reliable

- ✓ IP54 protection for LV and MV room, IP68 for transformer body
- ✓ C4/C5 anti-corrosion, adaptable to harsh environments

## Grid Support

- ✓ IComply with standard IEC60076, IEC62271-200/202, IEC61439, EN50588-1
- ✓ MV voltage 10kv to 36kV
- ✓ RETIE product certification

## Main Parameters

**TBEA**

Model	TS3000KT-EL	TS6000KT-EL	TS9000KT-EL
Input			
Available inverters	TS300KTL-HV-C1, TS330KTL-HV-C1, TS360KTL-HV-C1		
Max. LV inputs	10	20	28
AC power	3630kVA@30°C, 3300kVA@40°C 3000kVA@50°C	7260kVA@30°C, 6600kVA@40°C 6000kVA@50°C	10164kVA@30°C, 9240kVA@40°C 8400kVA@50°C
Rated input voltage	800V		
LV switches	MCCB (400A / 800Vac / 3P, 10pcs)	MCCB (400A / 800Vac / 3P, 20pcs)	MCCB (400A / 800Vac / 3P, 28pcs)
	ACB (3200A / 800Vac / 3P, 1pc)	ACB (3200A / 800Vac / 3P, 2pcs)	ACB (4000A / 800Vac / 3P, 2pcs)
Output			
Rated output voltage	10kV ~ 36kV		20kV ~ 36kV
Rated frequency	50Hz / 60Hz		
Transformer type	Oil-immersed, fully sealed, Dy11	Oil-immersed, fully sealed, Dy11y11	
Transformer tappings	±2 × 2.5%		
Transformer oil type	Mineral oil (PCB free)		
Transformer cooling type	ONAN		
Transformer efficiency	Tier1 (standard) / Tier2 (optional)		
RMU type	SF6 gas insulated		
Auxiliary transformer	Dry type, 5kVA, 800V / 400V, Dyn11, level H		
UPS	1kVA, 30min		
Protection			
Transformer monitoring and protection	Oil level, temperature and pressure		
Rated short-circuit breaking current	20kA / 3s		
MV relay protection	50 / 51, 50N / 51N		
LV surge protection	Type I+II		
Protection degree	IP54 for LV / MV room		
	IP68 for transformer body		
Anti-corrosion degree	C4 / C5 (optional)		

# 3

## Central Inverter

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# New Generation Modular Central Inverter

**TBEA**



## High Power Integration

- Over 9.9MVA one skid
- Highest efficiency
- Excellent derating characteristic

## Convenient O&M

- Multi inverter unit combination,
- Modular design inverter
- Reduce the O&M cost
- Improve system reliability

## Inverter Characteristics

**TBEA**



**TC4400KF/TC4400KF-B1**

- **Modular design**, easy for maintenance
- **18(21/24 optional) PV inputs, 3MPPTs**
- **1.8 DC/AC ratio**, catering to optimal DC overload ratio
- **99.06% (660V) / 99.04% (630V)** maximum efficiency
- **Q at night function**, save investment
- **Anti-PID and PID repair**, improve attenuation of PV module
- **Extreme weak grid network adaptability** (SCR~1.2)
- **Protection IP55/IP65**, adapting to complex environment
- **Quick dynamic reactive power response** reduce the SVG equipment investment

## CENTRAL INVERTER TC4400KF/ TC4400KF-B1

**TBEA**



**TC4400KF/TC4400KF-B1**

### 4.4MW Inverter Main Parameters

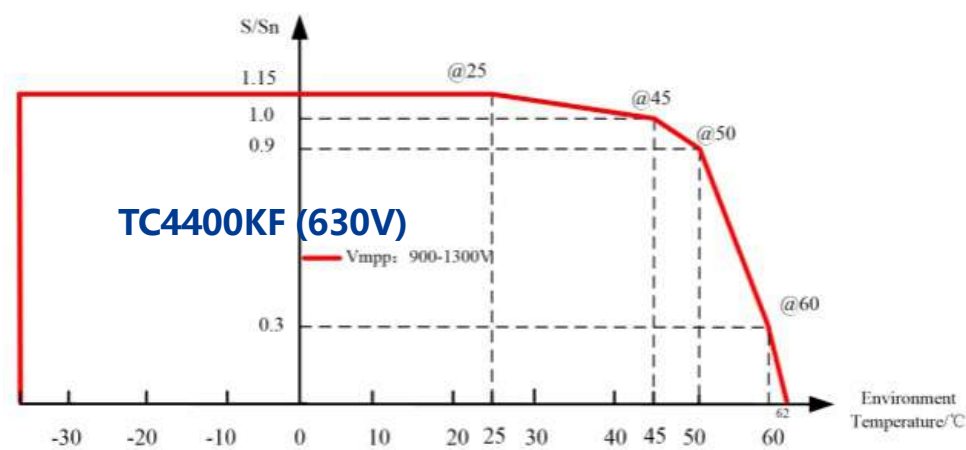
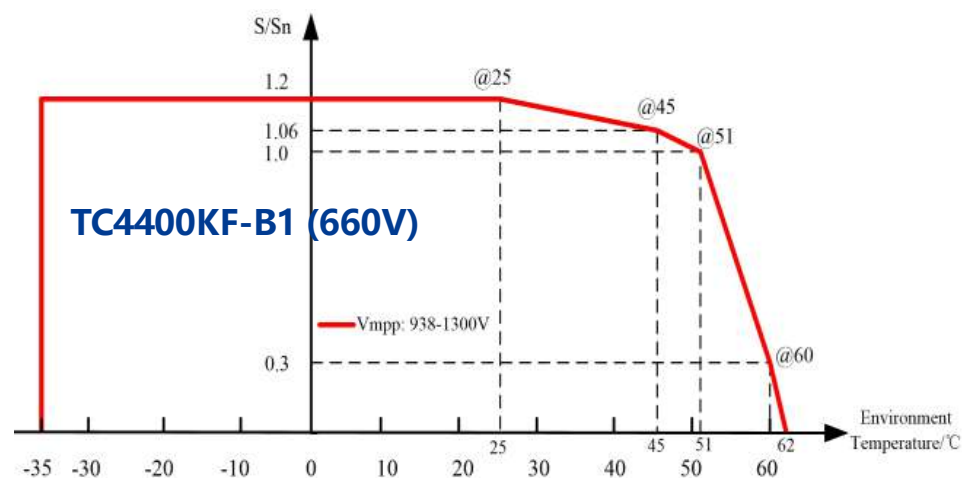
Model	TC4400KF	TC4400KF-B1
Region	China/APAC/Europe/America	South Asia/Middle East/Africa
Min. Input Voltage/Startup Voltage	900V/905V	938V/950V
MPPT Voltage Range at Nominal Power	900V~1300V	938V~1300V
Number of MPP Trackers	3	
Number of DC Inputs	18(21or24)	
Nominal Output Power	<b>4400kW@45°C</b>	<b>4400kW@51°C</b>
Max. Output Apparent Power	5060kVA@25°C(115%Pn)	5280kVA@25°C(120%Pn)
Nominal Output Voltage	<b>630V/3W+PE</b>	<b>660V/3W+PE</b>
Max. Efficiency	99.04%	99.06%
European Efficiency	98.7%	
Operating Temperature Range	-35°C~60°C( > 40°C derating)	-35°C~60°C( > 50°C derating)
Protection Degree	IP55/IP65	
Max. Operating Altitude	5000m ( > 4000m derating )	
Display	Indicators, WLAN+WebHMI/APP	
Communication	RS485/Ethernet	
Dimensions ( W*H*D )	2714mm*2262mm*1955mm	
Weight	3600kg	

# Temperature Derating Curve

**TBEA**



**TC4400KF/TC4400KF-B1**



# Performance Comparison

**TBEA**



Main Parameters	TC4400KF-B1	SG4400UD-20
MPPT Voltage Range at Nominal Power	938V~1300V	
Number of MPP Trackers	3	4
Number of DC Inputs	18 (21 or 24)	20 (24)
Output Power	1.2Pn@25°C 1.0Pn@51°C 0.3Pn@60°C(1320kW)	1.2Pn@23°C 1.0Pn@51°C 80kW@60°C
Max. Output Apparent Power	5280kVA@25°C	
Max. Efficiency	99.06%	99.02%
Nominal Output Voltage	660V/3W+PE	
Operating Temperature Range	-35°C~60°C( > 50°C derating)	
IGBT Brand	INFINEON/SEMIKRON	INFINEON/FUJI/CRRC/StarPower
IGBT Margin	64.2%	72.1%
Max. Operating Altitude	5000m (> 4000m derating)	4000 m (> 3000m derating)
Display	Indicators, WLAN+WebHMI/APP	
Communication	RS485/Ethernet	





# 3 ESS

---



# TBEA

## Intelligent String Energy Storage System Solution

Magnitude controller

EMS

E-Cloud



### Grid-friendly

String grid forming support  
suitable for very weak grid  
Mass module synchronization  
 $\mu$ s-level power response

### Low LCOS

Energy cluster level control  
improve discharge income  
Increase discharge capacity by 8%  
reduce LCOS by 6.5%

### Safety and efficiency

Single-cluster breaking protection  
small current is safer  
String fine management  
improve system efficiency

### Intelligent Operation and Maintenance

AI big data early warning  
online fault diagnosis  
Modular and easy maintenance  
reduce operation and maintenance costs

# TBEA energy storage product series

**TBEA**

## Scenarios



**Power Side**



**Load Side**

## AC side



2500~5000kW



215kW

## DC side



4.073/5.644MWh@20ft

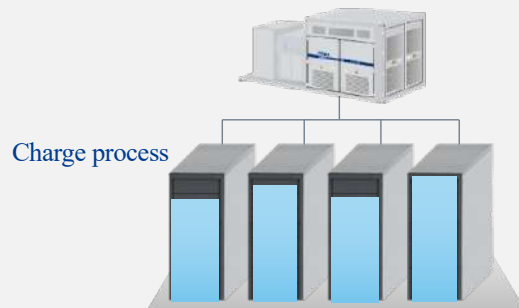
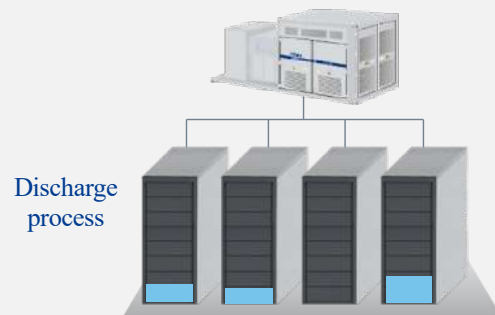


407.3kWh

# Optimal Investment-Single Rack Management

**TBEA**

## Centralized PCS



## String PCS

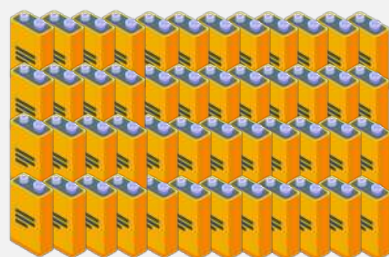
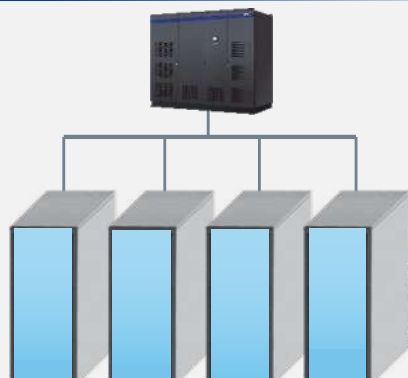


Each rack is charged separately to eliminate the bucket effect

# Optimal Investment-Enhancement of Discharge Capacity

**TBEA**

Centralized BESS

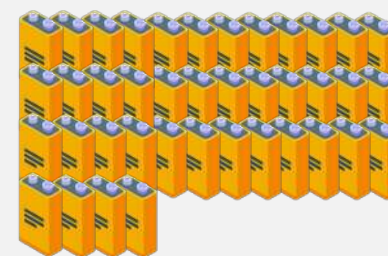


Containerized management,  
number of cells: 4992

Save cost  
Increase discharge capacity

Improve efficiency

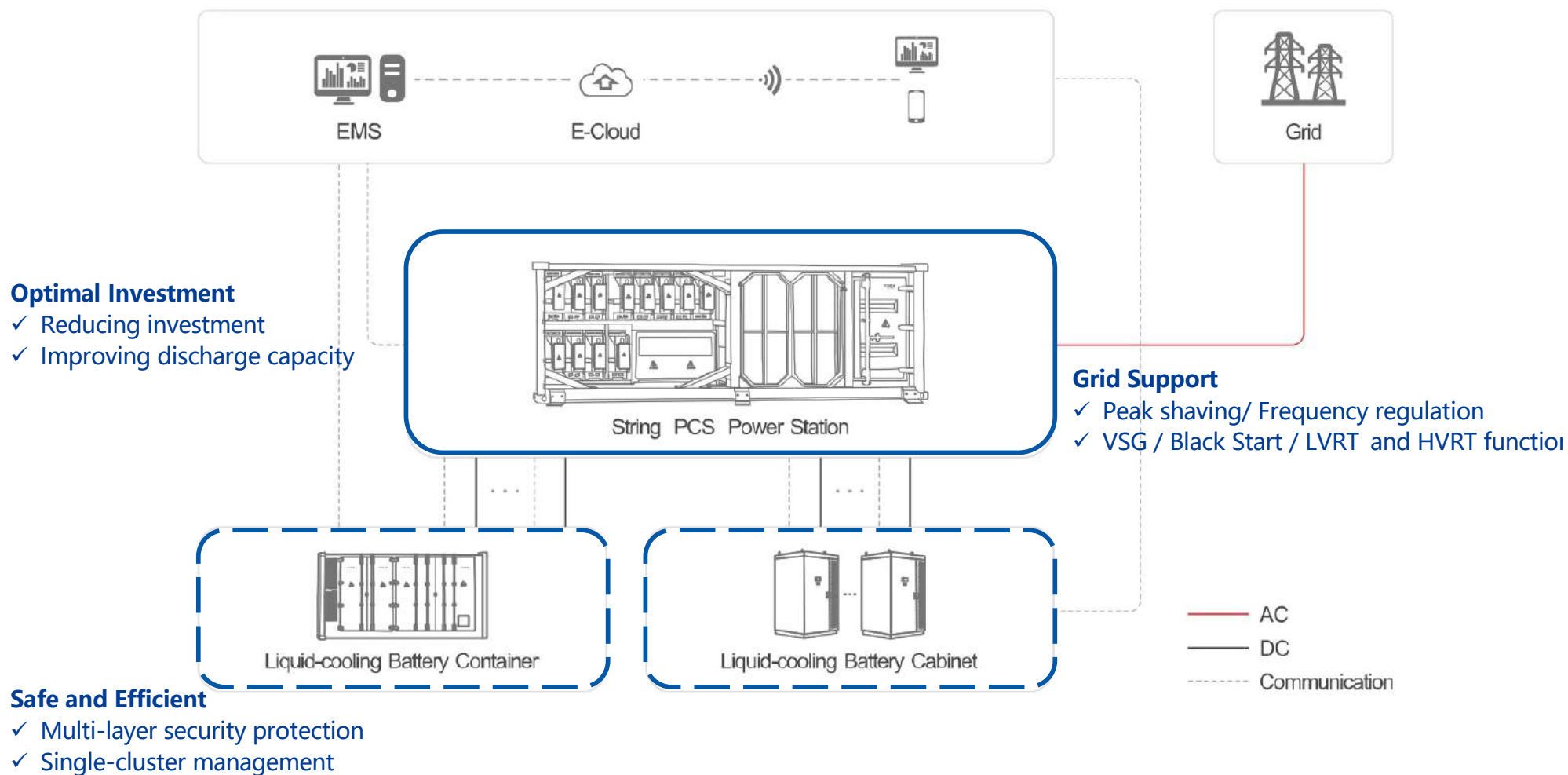
String BESS



Single rack management,  
number of cells : 416

# ESS Diagram

**TBEA**





## PCS TE5000KT

**TBEA**



### **Flexible and friendly**

Highly integrated with PCS, transformer and RMU in 20 ft container

Convenient transportation and installation

### **Safe and reliable**

Single rack management of battery

Up to 24/multi-machines coordinated control

### **Grid support**

LVRT/HVRT, weak grid support

Grid-forming, black start

# Liquid Cooling Battery Container

**TBEA**

## Safe

- ✓ Multiple stage protection design
- ✓ Advance lightning/fire protection design

## Flexible

- ✓ 4.073/5.644MWh with 20ft container design.
- ✓ Convenient transportation and installation

## Reliable

- ✓ Adaptive thermal management with integrated single-rack water pump
- ✓ Easy extension



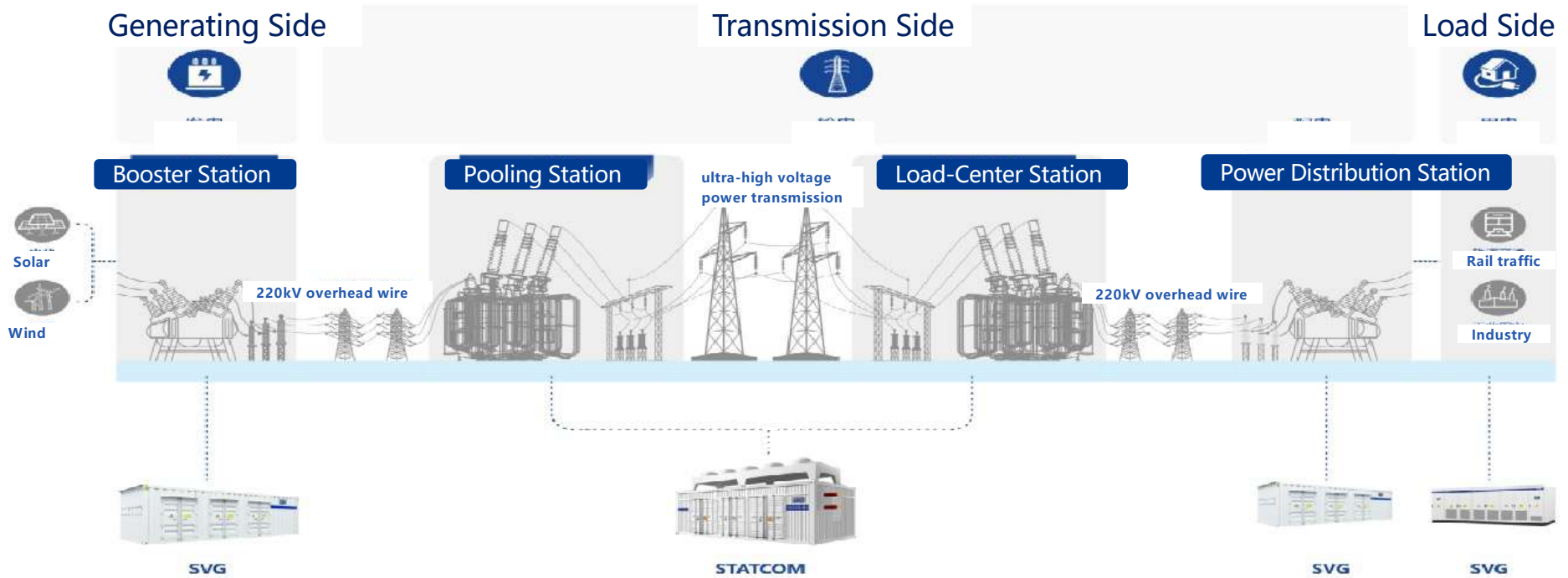
# 5 SVG

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# Portfolio Static VAR Generator

**TBEA**



Generation: enable new power station to access power grid better.

Transmission side: enhance ability of supporting failure mode and transmission, reduce power loss.

Load side: ensure power quality

## Application Cases for TSVG

**TBEA**



Adani 1.95GVar Solar Plant@Gujarat TSVG-50/33-W-C



Mahindra 240MVar Solar Plant@Maharashtra, TSVG-40/33-W-C



AMNS 200MVar Solar+Wind Plant@Andhra Pradesh TSVG-50/33-W-C



Serentica 320MVar PV Plant@Karnataka, TSVG-60/33-W-C



Renew 200MVar Wind Plant@Karnataka, TSVG-50/33-W-C



O2 Power 160MVar Solar Plant@Rajasthan, TSVG-30/33-W-C



# 6

## Presence in Latam

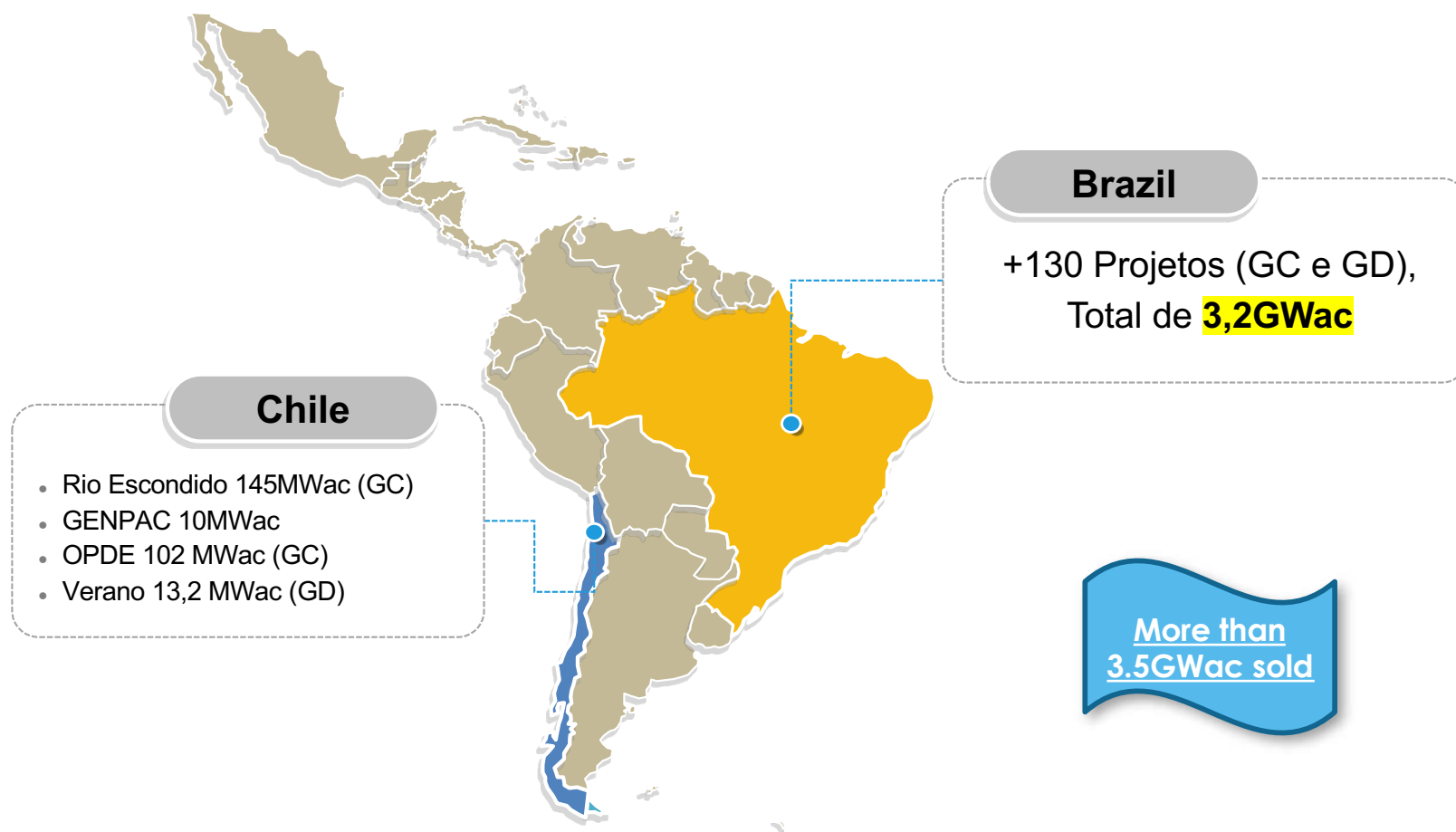
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## Projects – Latin America

**TBEA**



## Units in Latam

**TBEA**

### Santiago

- Legal entity and sales / after-sales team
- Commercial Office

### Bogotá

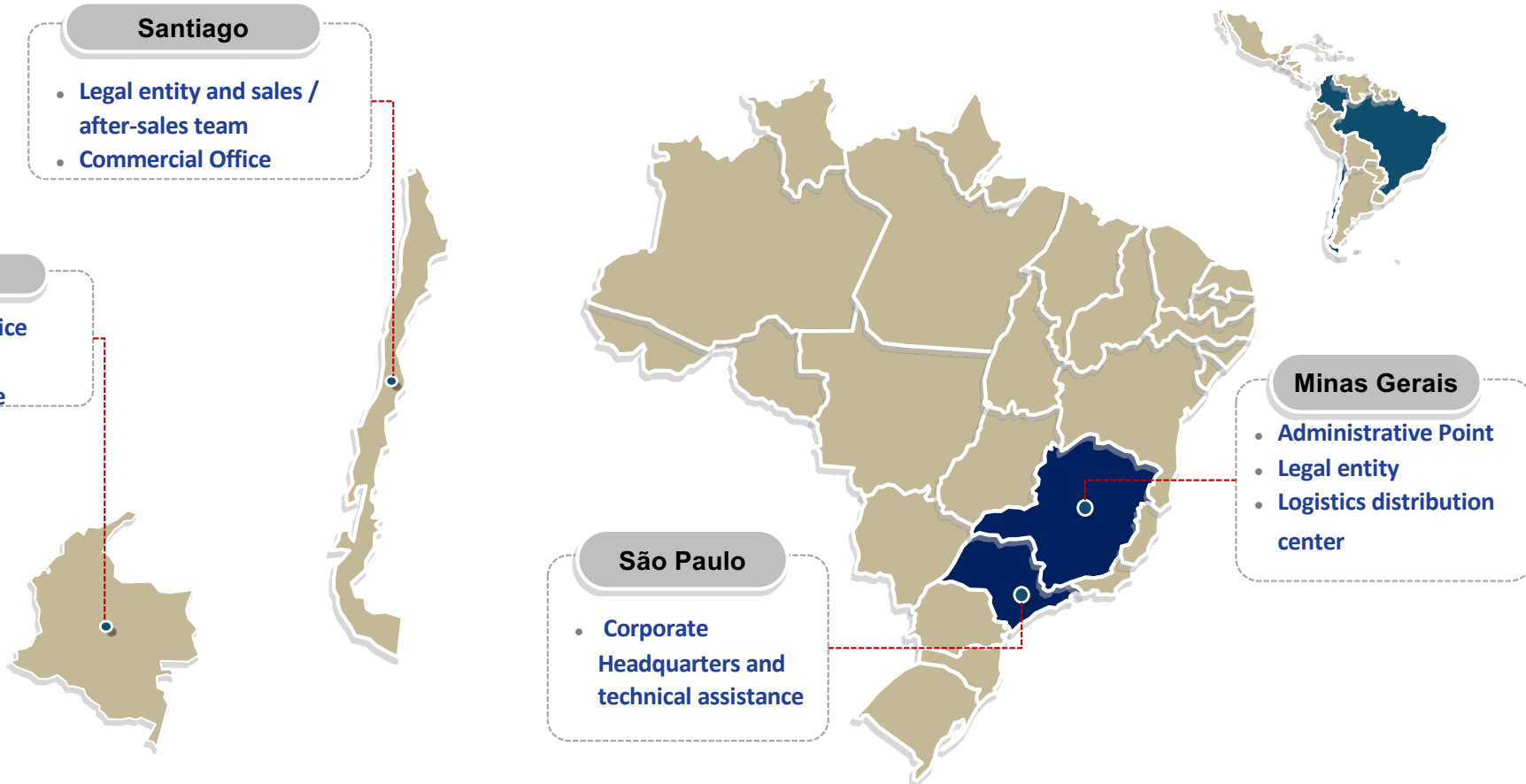
- Transformer service office
- Commercial Office

### São Paulo

- Corporate Headquarters and technical assistance

### Minas Gerais

- Administrative Point
- Legal entity
- Logistics distribution center



## After sales Process

**TBEA**

### Fast response by global platform

- ✓ 3 R&D bases and 18 permanent national institutions
- ✓ Response in hours and presence **on site in >48 hours**

### Commitment to warranty and support

- ✓ Photovoltaic generation guarantee
- ✓ After-sales service, including warranty and technical support (remote and face-to-face)
- ✓ Free technical exchange and training

### Wide array of technical resources

- ✓ Wide corps of service engineers
- ✓ 40% of R&D staff dedicated to foreign markets



# THANKS

Website: [www.tbeaenergy.com](http://www.tbeaenergy.com)



@ TBEA Sunoasis

