Delta Renewable Product Introduction



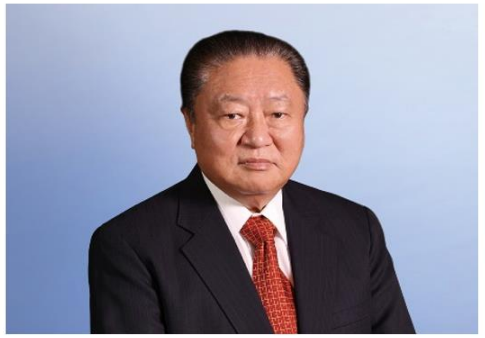
Overview

Founded: 1971

World Leader in Switching Power Supplies and DC Brushless Fans

Dedicated to Providing:

- Telecom Power Systems
- Industrial Automation
- Passive and Magnetic Components
- Networking Products
- Visual Displays
- Datacenter Infrastructure
- Renewable Energy and Energy Storage
- EV Charging Infrastructure

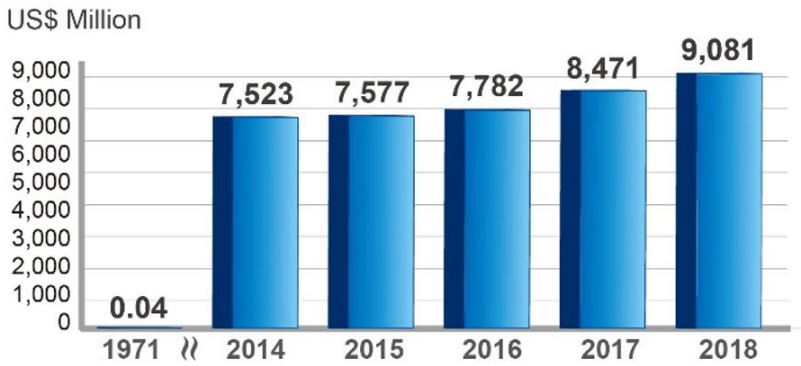


Bruce Cheng
Founder and Honorary Chairman



Yancey Hai
Chairman

Worldwide Revenues



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Delta Power Supplies



R&D AND MANUFACTURING

With more than 40 years of Asian manufacturing expertise, Delta power supplies provide class leading reliability and quality at competitive costs level.

Delta standard power supplies leverage the state-of-the-art global R&D centers so as to provide our customers with the same world class design and technology that our OEM customers have been familiar with.

Delta Taiwan



Chungli Plant 1

- Power Management Systems and Solutions, Display Solutions
- 434,800 sq. ft. (40,410 m²)



Tainan Plant (Diamond-rated Green Building)

- UPS, Photovoltaic Inverters, Industrial Automation Design
- 225,170 sq. ft. (20,927 m²)



Chungli Plant 2

- Power Management Systems and Solutions
- 240,200 sq. ft. (22,325 m²)

Delta China



Wujiang Plants 1-3, Jiangsu

- Telecom Power Systems, Power Management Products, UPS, Industrial Automation Systems
- 1,314,086 sq. ft. (122,127m²)



Wujiang Plants 4-5, Jiangsu

- Display Solutions, DC Brushless Fans, Magnetic Components
- 1,039,750 sq. ft. (96,631 m²)

Delta China



Delta Electronics (Shanghai) Co., Ltd

- Headquarters / Sales & Services Center
- Delta Power Electronic Technology Center
- Delta GreenTech
- Power Management, Display Solutions and Industrial Automation Systems
- 591,800 sq. ft. (55,000 m²)

Advanced Reliability Test Location



Advanced Technology Center, Jiangsu

- China National Accreditation Board for Laboratories (CNAL) approved for RoHS
- Environment-Related Substances Analysis and Quality Engineering Laboratories
- 250,568 sq. ft. (23,287 m²)

Delta Thailand



Automotive Electronics Plant, Bangpoo Industrial Zone

- Automotive Electronic Parts
- 272,550 sq. ft. (25,320 m²)



Switching Power Supply Plant, Bangpoo Industrial Zone

- DC-DC Converters, Telecom Power Systems, Power Supplies for ICT & Networking
- 778,250 sq. ft. (72,300 m²)



Wellgrow Plant

- Cooling Fans, EMI Filters and Solenoids
- 303,550 sq. ft. (28,200 m²)

Delta Power Supplies



SALES TEAM

Regional Delta offices provide same time zone support to our customers.

FAE and SERVICE TEAM

Comprehensive homepage
http://www.delta-americas.com/Products/CategoryListT1.aspx?CID=05&hl=en-US

Direct sales support for major projects.
4 local FAE, 2 HQ FAE, and local service team in LA

Delta Value Proposition

For Direct Customers

- Financial strength
- Advanced R&D research and product developments (Macro)
- R&D engineering engagement (Micro)
- Industry leading OEM development lead-time
- In house manufacturing
- Sophisticated quality control and product traceability
  - Delta is preferred supplier for largest percentage of major tier 1 customers.

For Order Fulfillment

- Flexible lead-time
  - Most products are < 6 weeks LT
- Flexible logistic coverage includes
  - domestic trading
  - global delivery options in support of distributor partner requirements
- On site inventory at Delta Ontario, CA
  - Offer shipments within 24 hours
- Strong financial structure to support distribution partnership

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Delta Americas HQ

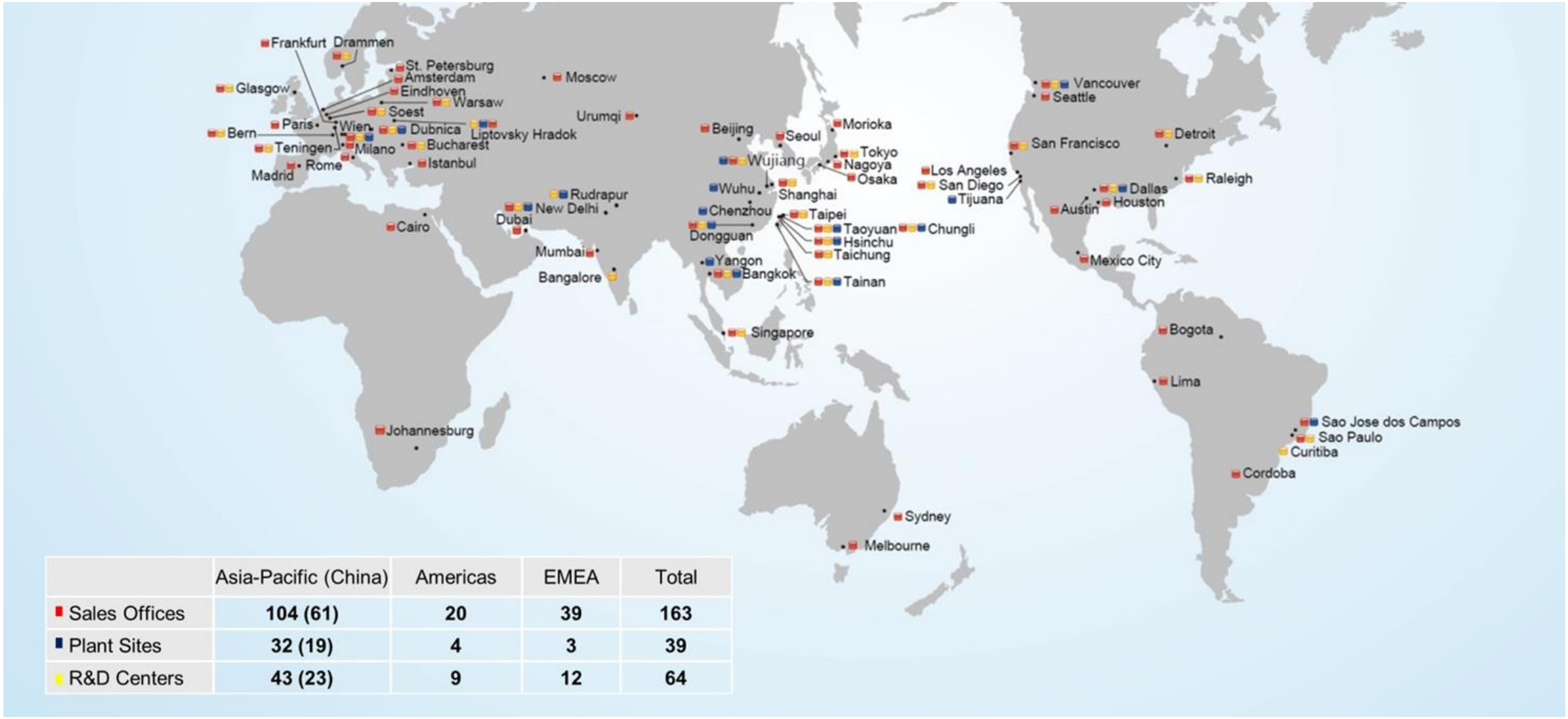


Fremont, CA
(San Francisco Bay Area)

- 180,000 sq. ft. LEED Platinum and net-zero energy building
- **616kW rooftop solar system incorporates *Delta's 3PH string inverters***
- **505kW carport solar system incorporates Delta's 3PH string inverters**
- Construction completed in 2015

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Global Operations



	Asia-Pacific (China)	Americas	EMEA	Total
Sales Offices	**104 (61)**	**20**	**39**	**163**
Plant Sites	**32 (19)**	**4**	**3**	**39**
R&D Centers	**43 (23)**	**9**	**12**	**64**

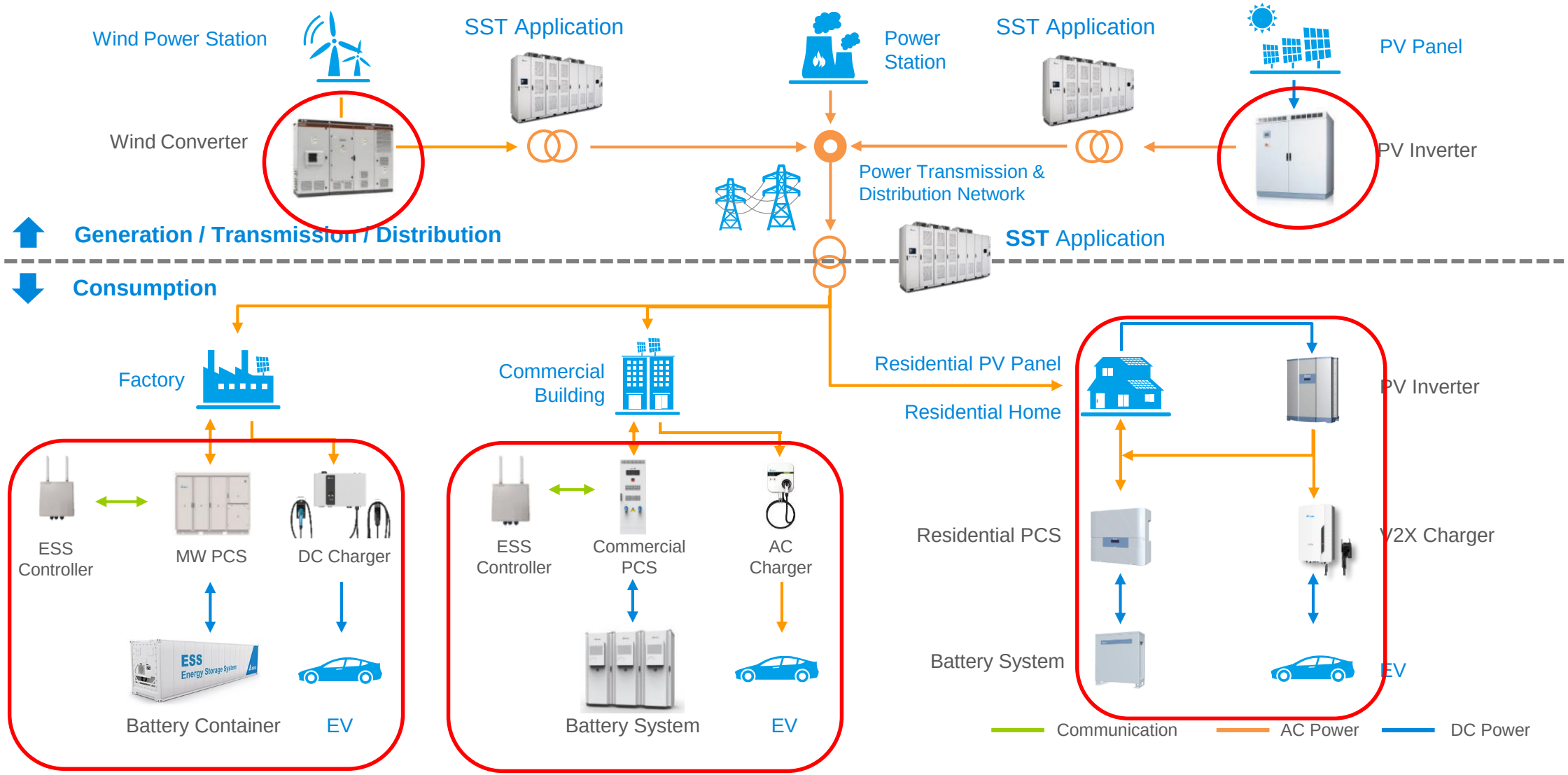
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Global PV Installation



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Delta Energy Infrastructure Solution



PV Inverter Product Line

Residential

Single Phase Inverter
4/5/6/8/10KW



M4/M5/M6/M8/M10

C&I Rooftop/Carport

1000V Three Phase Inverter
36/42/60/80KW



M36U



M42U



M60U



M80U

Utility

1500V Three Phase Inverter
125KW



M125HV

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PVEL INVERTER SCORE

No.1

Powered Thermal Cycling
Top Performers (in Alphabetical Order)
- Delta M80U
- Schneider Conext CL-60A
- SMA SB7.7-1SP-US-40

High Temperature Operation
Top Performer (in Alphabetical Order)
- Delta M8-TL-US
- Fronius Symo 24.0-3
- Huawei SUN2000-11.4KTL-US

Low Temperature Operation
Top Performers (in Alphabetical Order)
- Delta Solivia 3.8 TL
- Huawei SUN2000-11.4KTL-US

No.1

MPPT Efficiency
Top Performers (in Alphabetical Order)
- Delta M80U
- Huawei SUN2000-30KTL-US
- Schneider Context CL-60A

Conversion Efficiency
Top Performers (in Alphabetical Order)
- Huawei SUN2000-30KTL-US
- Huawei SUN2000-375W-USP0
- Schneider Context CL-60A

Energy Harvest
Top Performers (in Alphabetical Order)
- Huawei SUN2000-28KTL
- Huawei SUN2000-30KTL-US
- Schneider Conext CL-60A

No.1

AC Operational Envelope
Top Performer (in Alphabetical Order)
- Delta M80U

DC Operational Envelope
Top Performers (in Alphabetical Order)
- Delta M80U
- Schneider Conext CL 25000NA

Transient Response
Top Performer (in Alphabetical Order)
- Delta M8-TL-US
- Fronius Symo 24.0-3
- Huawei SUN2000-11.4KTL-US

About PV Evolution Labs

PV Evolution Labs (PVEL) is the leading reliability and performance testing lab for downstream solar project developers, financiers, and asset owners and operators around the world. With nearly ten years of experience and accumulated data, PVEL conducts testing that demonstrates solar technology bankability. Its trusted, independent reports replace assumptions about solar equipment performance with data-driven, quantifiable metrics that enable efficient solar project development and financing.

The PVEL network connects all major PV and storage manufacturers with 300+ global downstream partners representing 30+ gigawatts of buying power. PVEL's mission is to support the worldwide PV downstream buyer community by generating data that accelerates adoption of solar technology. Learn more online at pvel.com.

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75MW

Type: PV Power Plant
Inverters: 1508 pcs x RPI M50A
Location: Vandel, Denmark



100MW

Project : Utility
Location : Anhui, China
Model : M50A + M30A









12MW

Type: PV Power Plant
Inverters: 240 pcs x RPI M50A
Location: Eskisehir, Turkey



13MW

Type: Commercial Rooftop
Inverters: 164 x M80U
Location: Los Angeles, USA





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PVI Product Plan for North America

2019 2020 2021



36/42/60/80kW (121series) 1000V
- 480Vac, 3P3W
- Built-in AC switch

36/42/60/80kW (121series) 1000V
- 480Vac, 3P3W
- Built-in DC&AC switch
- Standard UL 1699B Ed.1
- TIGO transmitter built-in

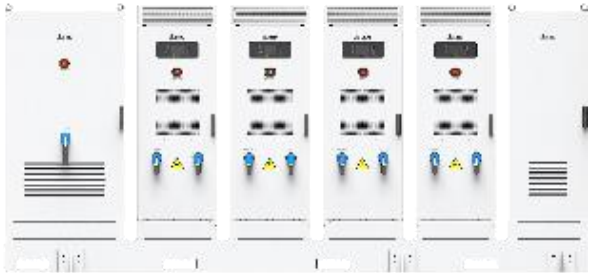


125kW (122 series) 1500V
- 600Vac, 3P3W
- Built-in DC&AC switch
- Standard UL 1699B Ed.1
- 99.2% efficiency
- Sub 1G wireless

C&I and Utility Solar Inverter

ESS Product roadmap – North America

2018 2019 2020



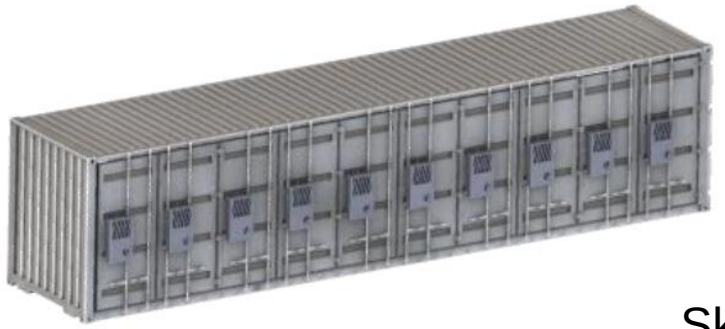
125kW based Skid Solution (US)
- 480Vac, 3P3W
- 700 ~ 1000Vdc
- 250kW/500kW
- IP55





Battery cabinet (1 cab/ 4 cab) (US) LFP & NMC
- 775~1005Vdc
- 83kWh/332kWh
- IP55

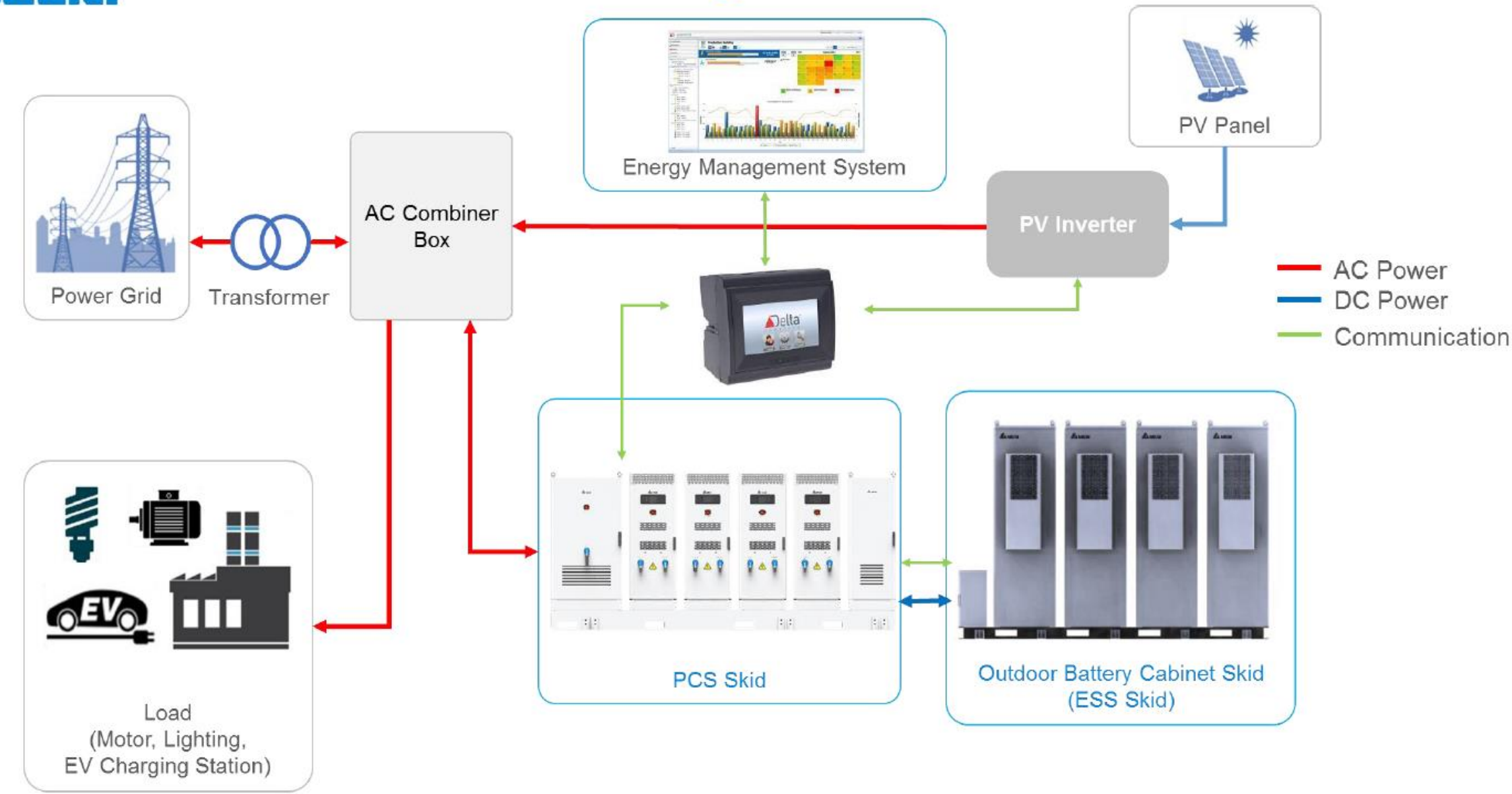




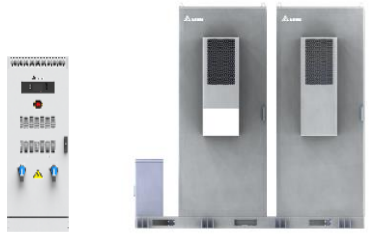
Battery container (20’ / 40’) (US) LFP & NMC
- 775~1005Vdc
- 1325 / 2650 kWh & 1335 / 3345kWh
- IP55

Skid Solution & Battery

System Architecture – C&I



PCS & Battery Solution – C&I (US)



125kW / 250kWh



125kW / 500kWh



250kW / 500kWh



250kW / 1MWh



500kW / 1MWh



500kW / 2MWh

MW PCS Product roadmap - NA

2019 2020 2021

PCS2000



PCS 2.3MW / 2.8MW (US) AC Coupling
- 700~1200Vdc
- 480Vac
- Liquid cooled
- IP55



PCS 3.6MW / 4.4MW (US) DC Coupling
- 1000~1500Vdc
- 800Vac
- Liquid cooled
- IP55

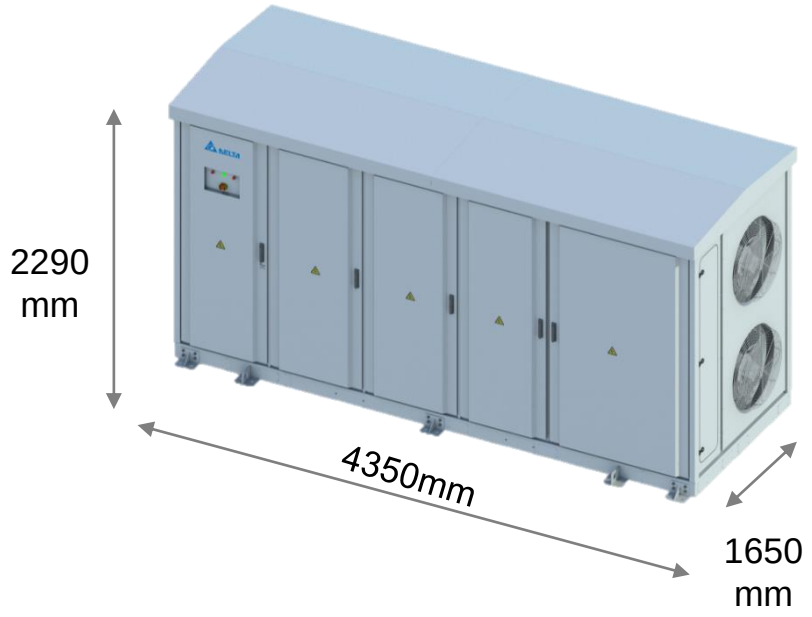
MW PCS Solution

Housing and Dimension

Outdoor: PCS2000
W4230 x H2290 x D1650 mm



Outdoor: PCS3000
W4350 x H2290 x D1650 mm



Installation Reference



250kW/1.16MWh
Taoyuan, Taiwan
Demand response, power backup



500kW/362kWh
Ako, Japan
PV Smoothing



30kW/110kWh
Fremont, CA, USA
Power back-up (micro-grid)



125kW/330kWh
San Jose, CA, USA
Peak shaving



125kW/123kWh
Fukushima, Japan
Peak shaving



250kW/400kWh
Shulin, Taiwan
Demand response, peak shaving, black start, PV smoothing



125kW/41kWh
Taipei, Taiwan
Demand response, peak shaving, black start



250kW
Nagoya, Japan
Power grid support w/ fuel cell

Installation Reference



500kW/331kWh
Sagamihara, Japan
Micro-grid w/ PV, gas turbine



1MW/1MWh
Kaohsiung, Taiwan
PV smoothing



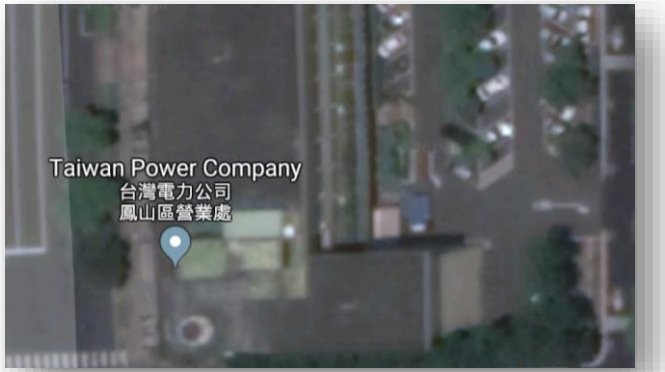
250kW/ 500kWh
Chiayi, Taiwan
Peak shaving, demand response
w/ e-scooter charging station



1MW/1MWh
Changhua, Taiwan
Peak shaving, power backup



2MW/1MWh
Kinmen, Taiwan
Demand response, power backup,
PV smoothing, frequency regulation



500kW/1MWh
Kaohsiung, Taiwan
Demand response, power backup,
standalone operation

Smarter. Greener. Together.

To learn more about Delta, please visit www.deltaww.com or scan the QR code

English

Traditional Chinese

Simplified Chinese