

GRID MODERNIZATION THROUGH RENEWABLE ENERGY INTEGRATION

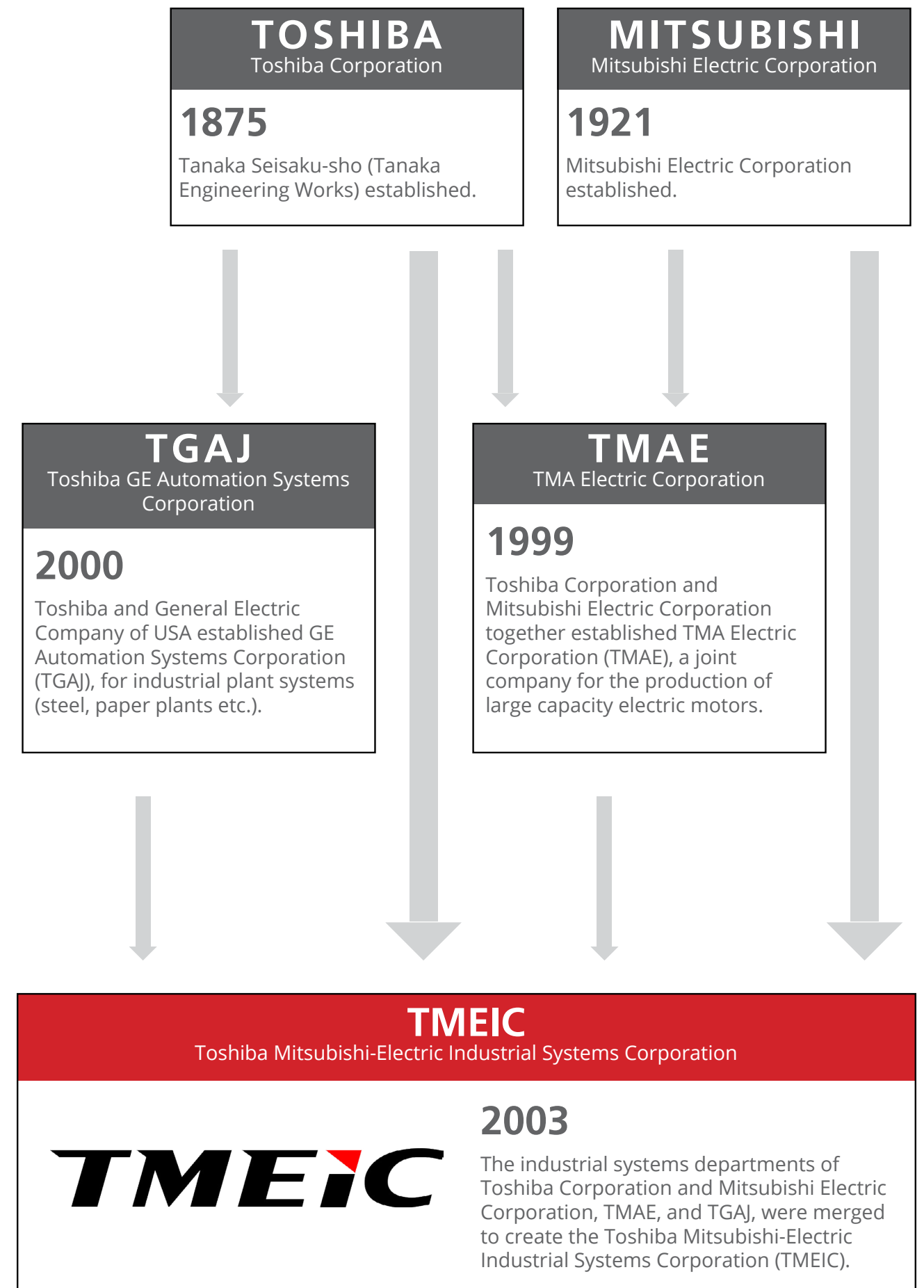
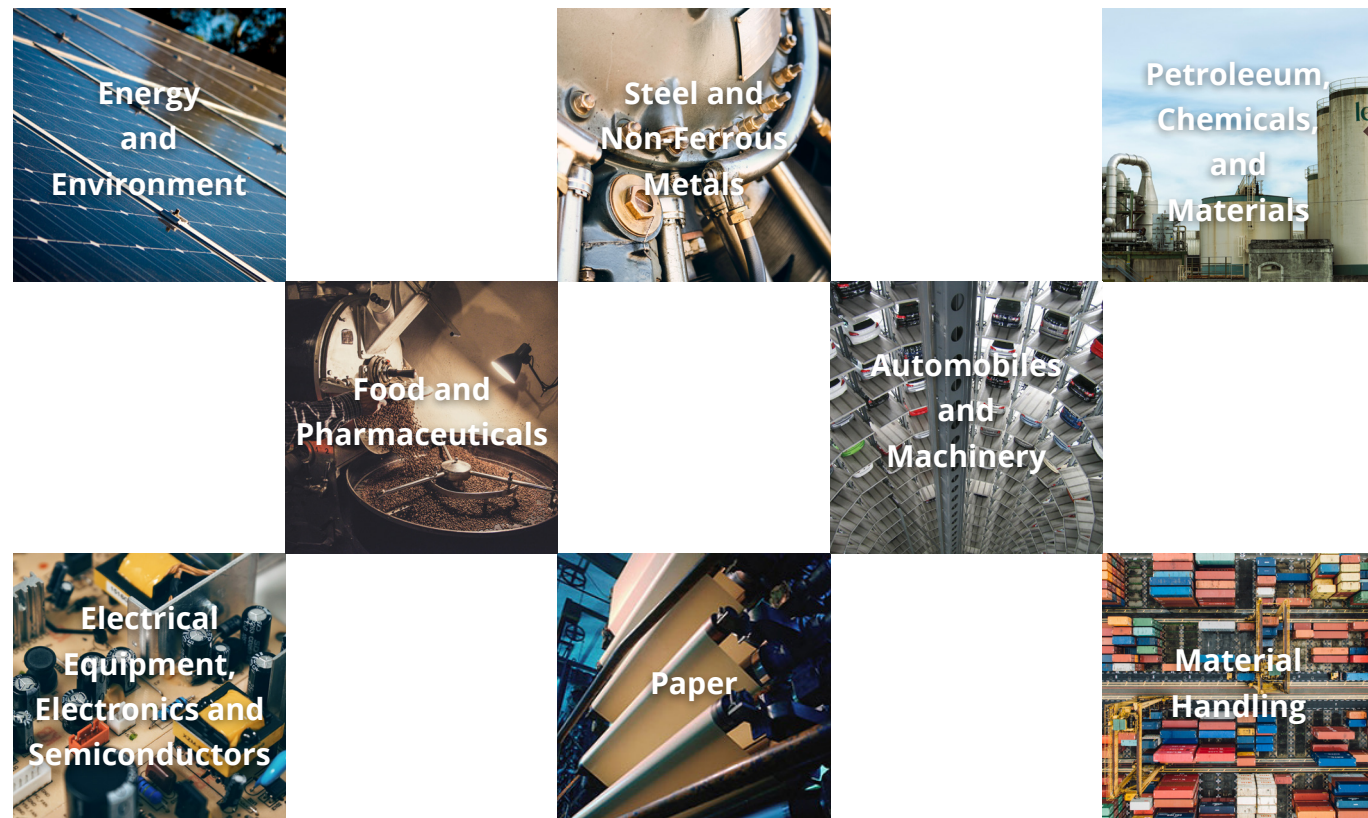
TMEiC
We drive industry

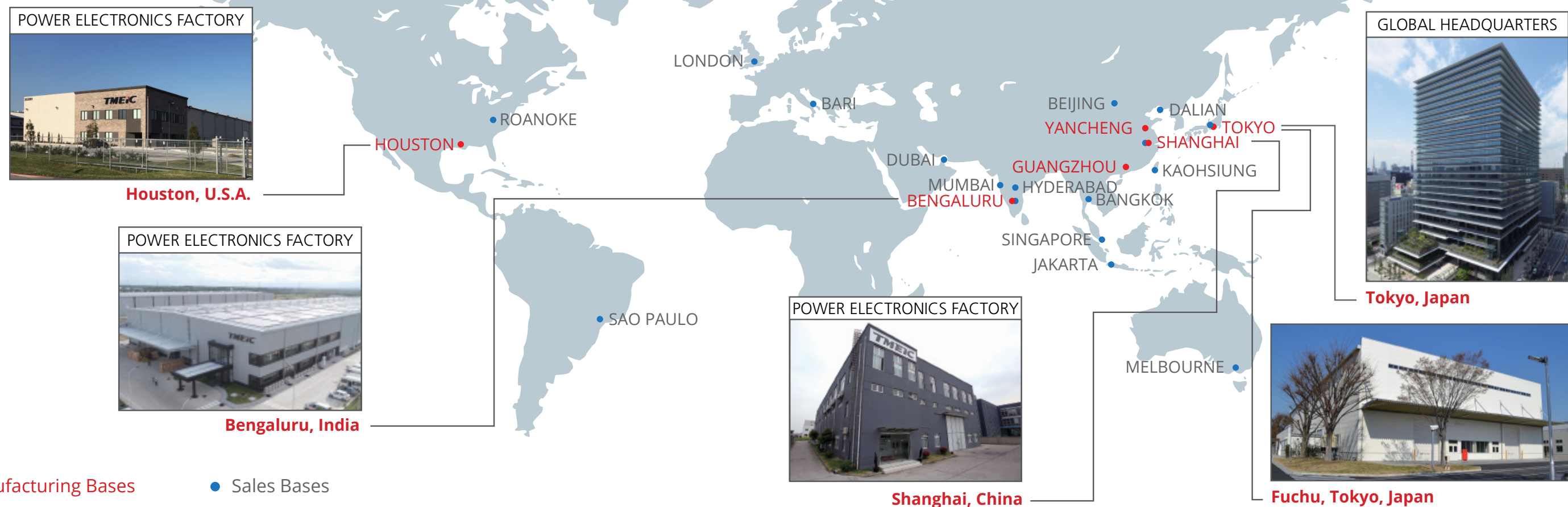


We drive industry

We use our capabilities and expertise in developing industrial systems that deliver sustainable performance toward the greater advancement of society. It is our mission to provide “high-quality and advanced products and systems” realizing “comprehensive solutions” for diversified industrial fields in global markets. As an industrial systems integrator, we focus on industrial markets, drive innovation and undertake continuous and concerted effort to meet the requirements of and move forward with our customers.

TMEIC's Capabilities and Expertise Span All Industries





Global Headquarters

Toshiba Mitsubishi-Electric Industrial Systems Corporation
Tokyo Square Garden, 3-1-1 Kyobashi,
Chuo-ku, Tokyo
Phone: +81-3-3277-4491
Fax: +81-3-3277-4565

North America

TMEIC Corporation
1325 Electric, RD Roanoke VA 24018 U.S.A.
2060 Coe Drive, Salem, VA 24153 U.S.A.
Phone: +1-540-283-2000
Fax: +1-540-283-2001

TMEIC Power Electronics Products Corporation
6102 N. Eldridge Parkway, Houston, TX 77041, U.S.A.

South America

TMEIC Sistemas Industriais da América do Sul Ltda.
Av. Paulista 1439, Sala 72, Bela Vista 01311-200 São Paulo SP, Brazil
Phone: +55-11-3266-6161
Fax: +66-11-3253-0697

Europe

TMEIC Europe Ltd.
6-9 The Square, Stockley Park, Uxbridge, Middlesex, UB11 1FW, U.K.
Phone: +44-870-950-7220
Fax: +44-870-950-7221

Italy Branch Office
Via Pappacena, 22-70124, Bari, Italy
Phone: +39-080-5046190
Fax: +39-080-5042876

Middle East

TMEIC Middle East Branch
5EB-533, Dubai Airport Freezone,
P.O.Box 54512, Dubai, United Arab Emirates
Phone: +971-4-6091-434
Fax: +971-4-6091-439

Australia

TMEIC Process Technology Application Centre Pty Limited
358 Main Street, Mornington, Victoria, 3931 Australia
Phone: +61-3-5977-072
Fax: +61-3-5977-0833

Asia

Toshiba Mitsubishi-Electric Industrial Systems (China) Corporation
21B, In. do Mansion, No. 48A Zhichun Road, Haidian District, Beijing 100098, P. R. China
Phone: +86-10-5873-2277
Fax: +86-21-5873-2208

Shanghai Branch Office
Rm 2603, Shanghaimeart, 2299 Yan'An Rd (W), Changning District, Shanghai 200336, P. R. China
Phone: +86-10-62360588
Fax: +86-21-62360599

Shanghai Works
No.2161 Huiwang Road, Jiading District, Shanghai 201800, P. R. China
Phone:+86-21-3129-6828
Fax:+86-21-3129-6824

No. 2.66 Lijiang Rd. Yancheng Economic & Technological Development Zone, Jiangsu, P.R China

TMEIC Asia Pte. Ltd.
152 Beach Road #13-07/08 Gateway East 189721, Singapore
Phone: +65-6292-7226
Fax: +65-6292-0817

PT. TMEIC Asia Indonesia
Gd. Alamanda Tower 23rd Floor #Suite E
JL. TB Simatupang Kav.23-24, Cilandak Barat Jakarta Selatan 12430, Indonesia
Phone: +62-21-2966-1699
Fax: +62-21-2966-1689

TMEIC Asia (Thailand) Co., Ltd
Unit 12A03, 12A Floor, AIA Capital Center,
89 Ratchadapisek Road, Dindaeng, Bangkok 10400, Thailand
Phone: +66-2045-0512
Fax: +66-2045-0517

Taiwan Office
18F-5, 55 Chung-Cheng 3rd Road, Kaohsiung 800, Taiwan
Phone: +886-7-2239425
Fax: +886-7-2239122

TMEIC Industrial Systems India Private Limited
The Millenia, Tower eAF, 10th Floor, # 1&2
Murphy Road, Halasuru, Bangalore – 560 008, India
Phone: +91-80-6751-5599
Fax: +91-80-6751-5550

Mumbai Branch
901/D, Filix L,B,S, Road, Opp Asian Paints, Bhandup, West Mumbai, Maharashtra India 400 078
Phone: +91-22-6155-5444
Fax: +91-22-6155-5423

Hyderabad Branch
Unit # 03-01, Third Floor, Block 2, Cyber Pearl, HITEC City, Madhapur, Hyderabad – 500 081, India
Tel: +91-40-4434-0000
Fax: +91-40-4434-0034

ELECTRIC DRIVES



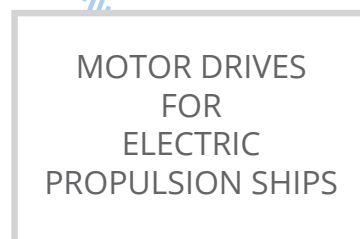
ELECTRIC DOUBLE
LAYER CAPACITOR



MOTOR DRIVES FOR MW-RATED
PUMPS AND FANS



ACCELERATORS
OF SCIENTIFIC
RESEARCH



MOTOR DRIVES
FOR
ELECTRIC
PROPULSION SHIPS

POWER CONVERSION AND STABILIZATION

POWER SUPPLY
& DRIVE FOR
INDUSTRIES

HIGH-PRECISION
POWER SUPPLY

ADVANCED
MEDICAL
TECHNOLOGIES

UPS FOR DATA CENTERS

POWER SUPPLY FOR
INFORMATION /
COMMUNICATION

CONVERTER
FOR RAILWAY
SUBSTATIONS

POWER SUPPLY

50Hz - 60Hz
FREQUENCY
CONVERSION



LARGE-SCALE WIND
POWER



LARGE-SCALE ENERGY
STORAGE

RENEWABLE ENERGY

INVERTER FOR
RENEWABLES
AND ESS



INVERTER FOR SOLAR
PV

CONVERTER
FOR POWER
TRANSMISSION

HVDC
TRANSMISSION

TMEIC POWER ELECTRONICS

TMEIC is a global leader in power electronics technology development and manufacturing. In addition to the renewable energy sector, TMEIC's expertise spans such broad segments as utility, general industry, transportation, and environment with decades of R&D and manufacturing history. Having diverse area of expertise is why customers prefer TMEIC solution over competitors for stable and reliable project execution.

ENERGY STORAGE SYSTEMS



TMEIC PHILOSOPHY

TMEIC is a leading technology & solution provider for stationary Energy Storage System(ESS) including the Battery System(BS), Power Plant Controller(PPC) and the Bidirectional Inverter(PCS).

TMEIC has well over 10 years of experience with global deployment of over 650MWhs. With ground-breaking innovations in power conversion and power plant controller technology, TMEIC brings cutting edge technology to the energy storage market.

With enhanced speed and advanced control logic, the TMEIC energy storage solution can optimize revenue and enhance design and operational flexibility.

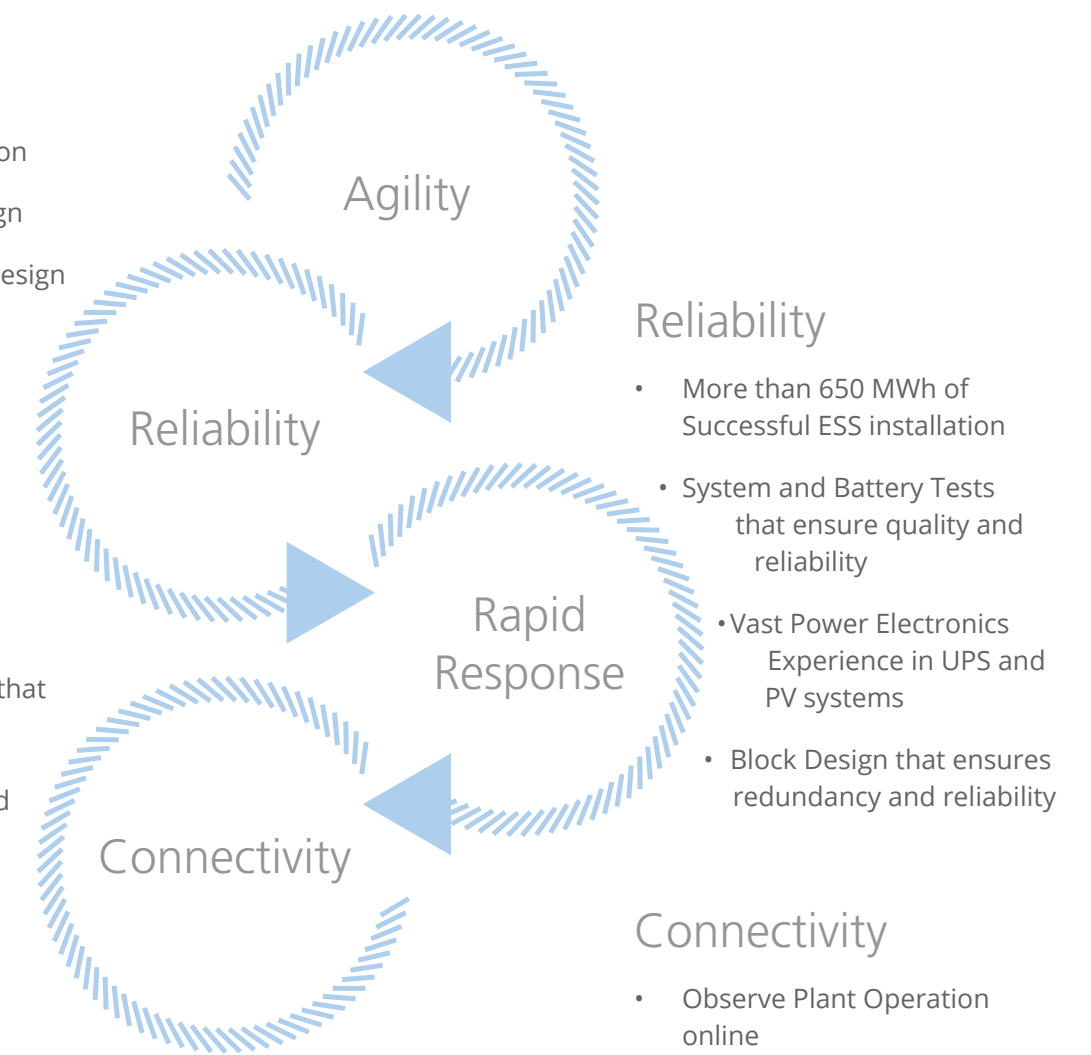
Inclusive of power plant controller offering, along with global partnerships, TMEIC energy storage solution can optimize the system design reducing battery oversizing. Additionally, TMEIC's innovative guarantee offering enhances the bankability of the project.

Agility

- Agile Asset Maximization
- Agile PCS System Design
- Agile Battery System Design
- Agile Solution/Tailor

Rapid Response

- High Speed Response that enables immediate reaction to change in frequency and respond timely to requirement
- High Speed Power Plant Controller
- Ability to reduce the overall power capacity



Reliability

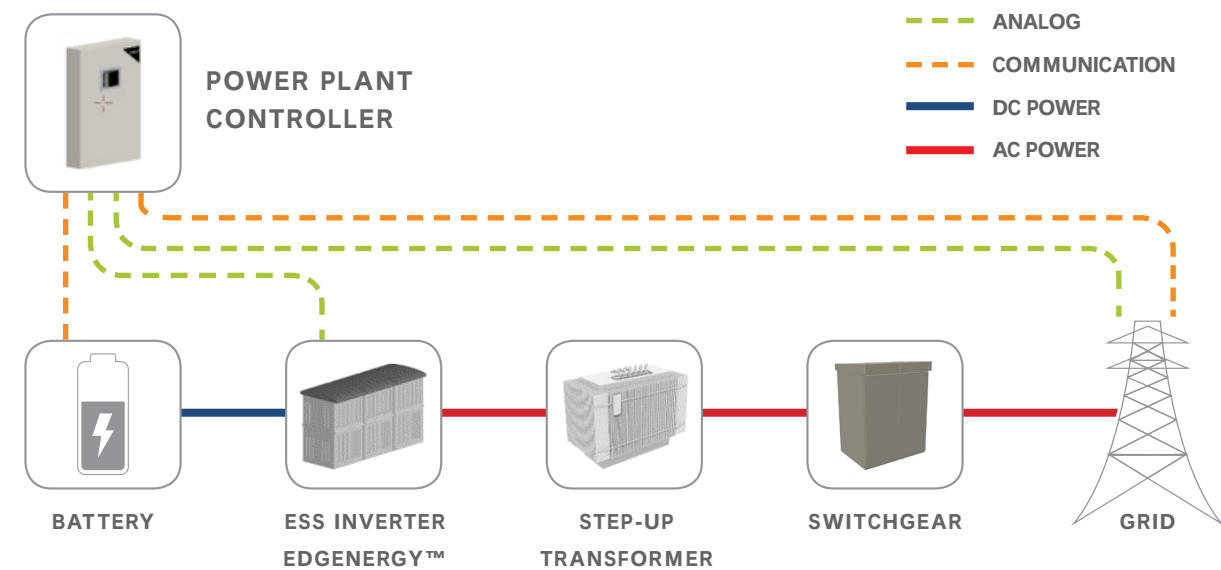
- More than 650 MWh of Successful ESS installation
- System and Battery Tests that ensure quality and reliability
- Vast Power Electronics Experience in UPS and PV systems
- Block Design that ensures redundancy and reliability

Connectivity

- Observe Plant Operation online
- Remote Operation and Maintenance of Plant

TMEIC ESS Philosophy

ENERGY STORAGE SYSTEM



Specifications

ITEM	SPECIFICATION			
Power	From 570kW per PCS Max. 3.825MW per PCS Line UP			
System Voltage	DC 710 to 1300VDC AC 480 to 630VAC			
Reactive Power	PF 0.80 lagging to 0.80 leading			
Ramp Capability	Maximum Capacity within 500 ms			
Duration and Efficiency	30 min > 85%	1 hr > 88%	2 hrs > 89%	4 hrs > 90%
Operating Temperature	-20° ~ 50°C			
Altitude	<2000m Up to 3,500m with de-rating			
Seismic Rating	Available ratings up to Zone 4			
Voltage Ride Through	As per National Grid Code and IEC 61727			
Standards Compliance	Meets or exceeds industry standards, including IEEE519, NEC, UL1741, UL1642, UL1973			
Control and Monitoring	ESS control is done by the PPC which includes GUI, HMI, Trace Data, Wireless communication with Inverter, Remote access to site			
External Control Interface	Communication via DNP3, Modbus TCP/IP			
Battery	Lithium Ion NMC			
Equivalent Availability Factor	> 98%			

ENERGY STORAGE SYSTEM SOLUTIONS

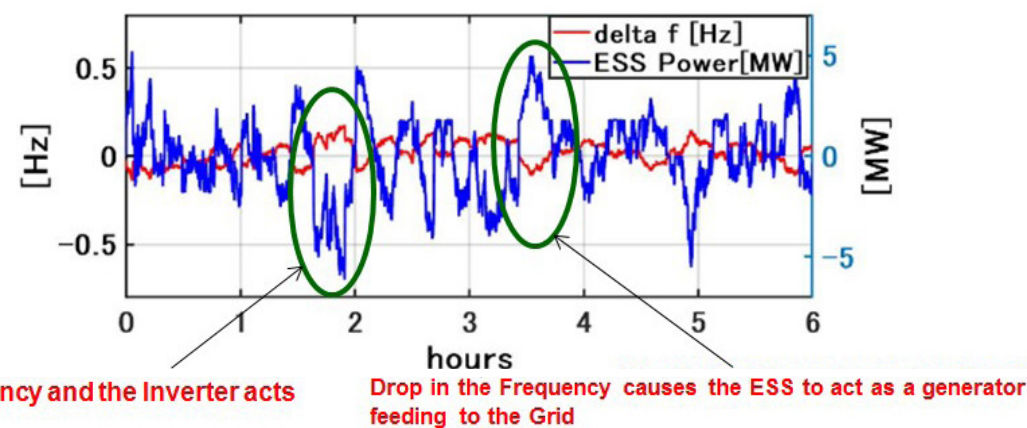


Japan Solar FUKUSHIMA Factory

ENERGY STORAGE SYSTEM

Frequency Response

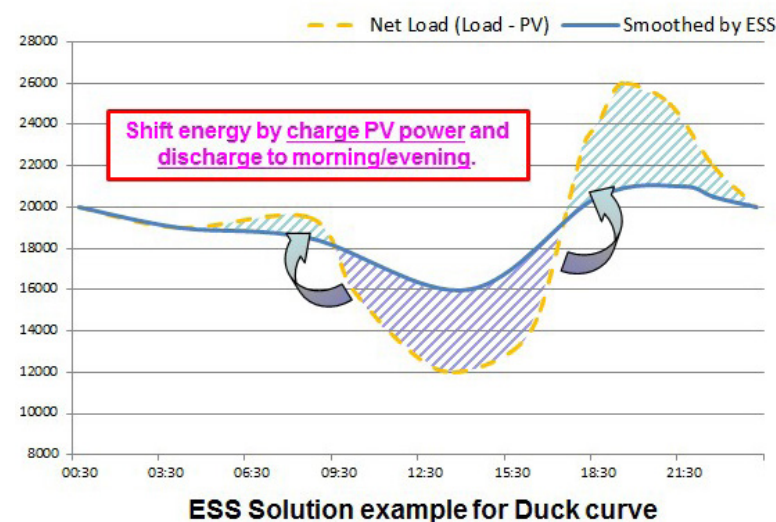
TMEIC's ESS system is a dynamic frequency response system that automatically acts as a source or sink to the grid depending on the changes and fluctuations in the grid. When the system frequency is high, the ESS acts as a sink, absorbing electricity from the grid and charging its battery system. When the Grid Frequency is below the system frequency, the system acts as a current source, supplying power to the grid. As a result, balance in the system is automatically maintained.



Depending on variation in the Frequency, TMEIC's system supplies active power to the grid as per utility requirement.

Energy Arbitrage

The ESS also acts as a long-term storage of electric energy for supplying power to the grid at a later stage. This allows the energy that is generated now to be enjoyed at a later time depending on the need as well as the commercial pricing of the system.

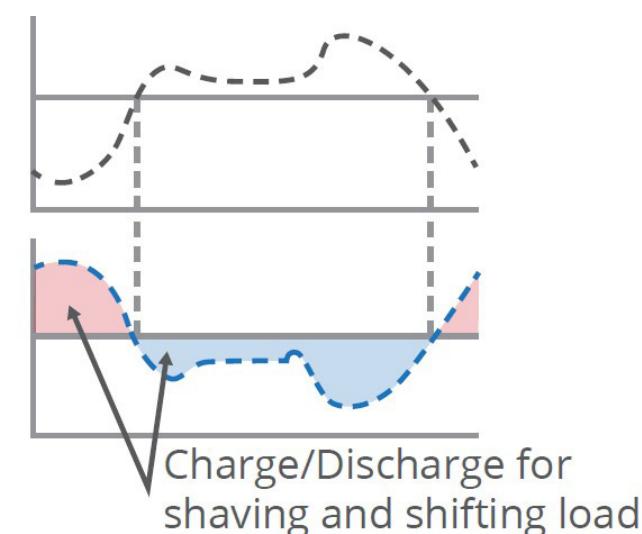


The duration and the amount of power to be stored and released will depend on the requirement of the system. TMEIC can program the system as per the system needs. Application can be designed in order to meet the Triad requirements, allowing higher rates from the grid to be enjoyed during the peak hours in the evening.

Peak Shaving

The ESS has the capability to provide peak shaving by acting as an instantaneous current source when there is a sudden or scheduled peak in demand. This capability is provided by the power plant controller either automatically or by request from the System operator.

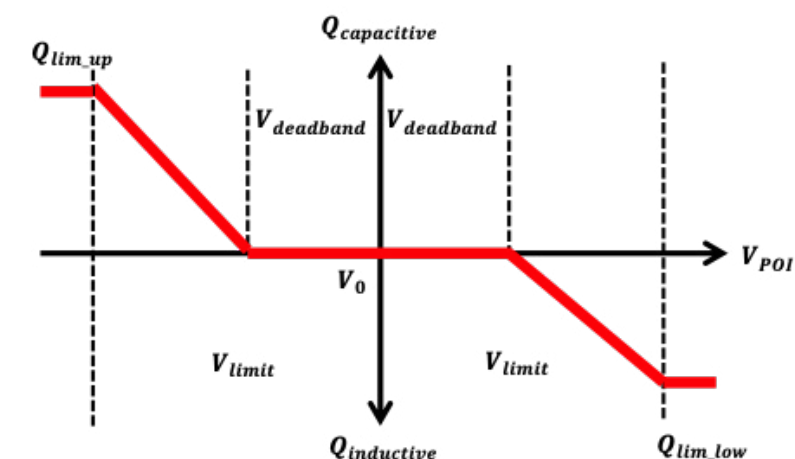
The duration and time of the power output depends on the battery system and the priority of the system. TMEIC can design and integrate the solution depending on the requirements of the system.



Voltage/Reactive Power Control

In addition to being a current source, the ESS can act as a voltage compensator. This is done by modifying the phase of the voltage and the current. The voltage and reactive power compensation brings stability to the grid.

TMEIC's ESS inverter can provide adequate VAR compensation as required by the National Grid, Grid Code and the Enhanced Reactive Power System. TMEIC's ESS can provide reactive power to the grid within 150ms from receipt of the signal from the Service operator or as required by the system operator.

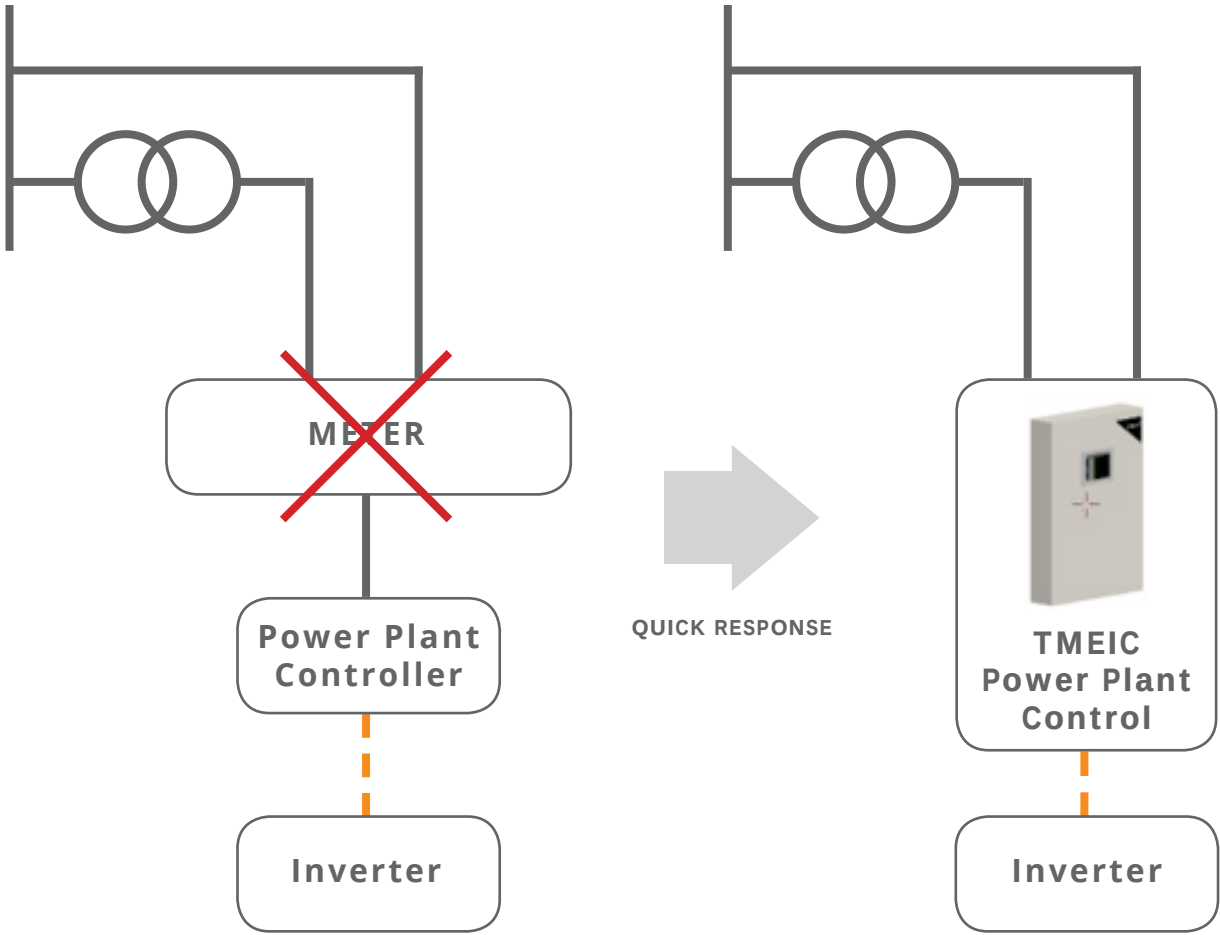


FEATURE OF TMEIC ESS

Fast Control Response within 100ms

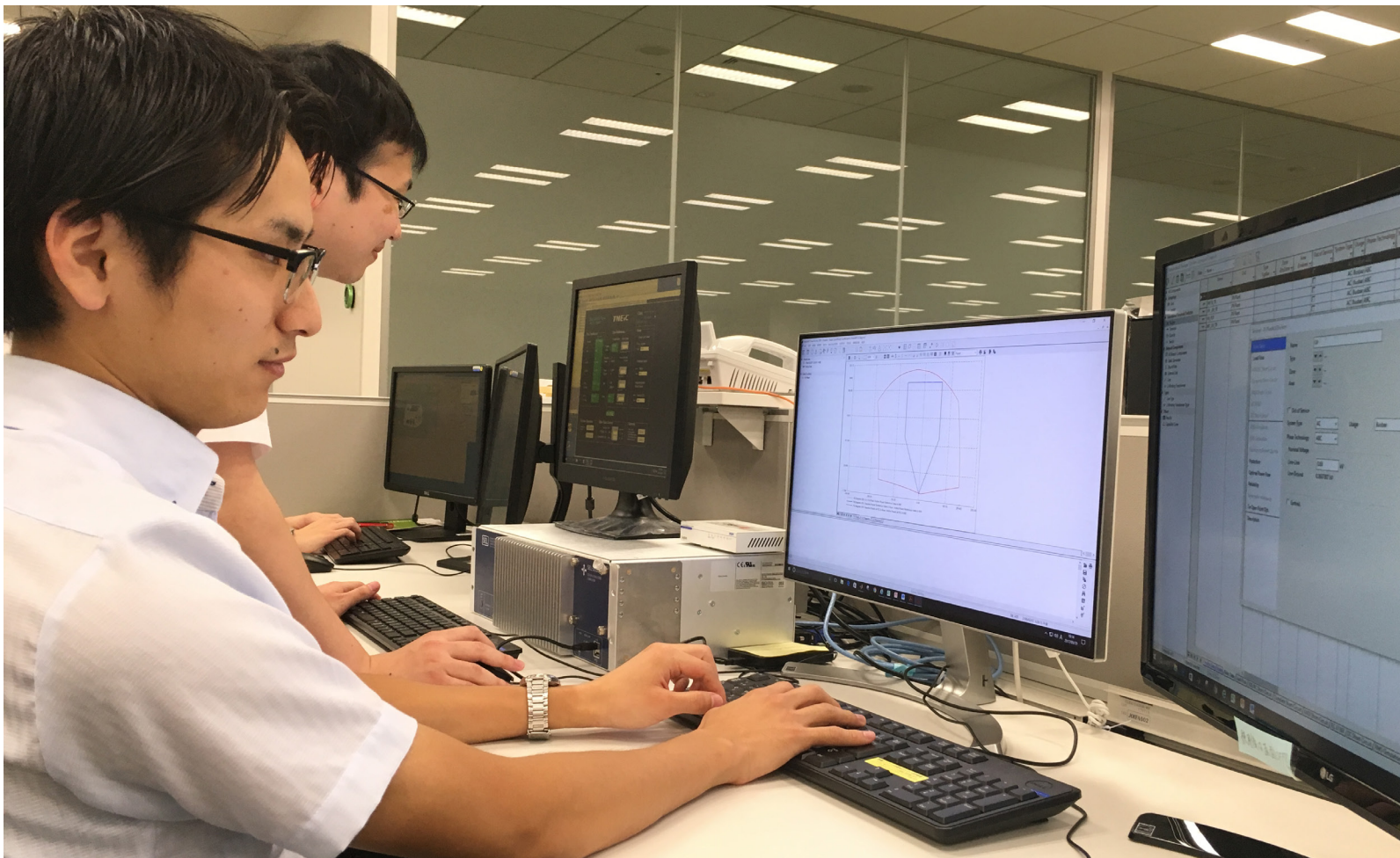
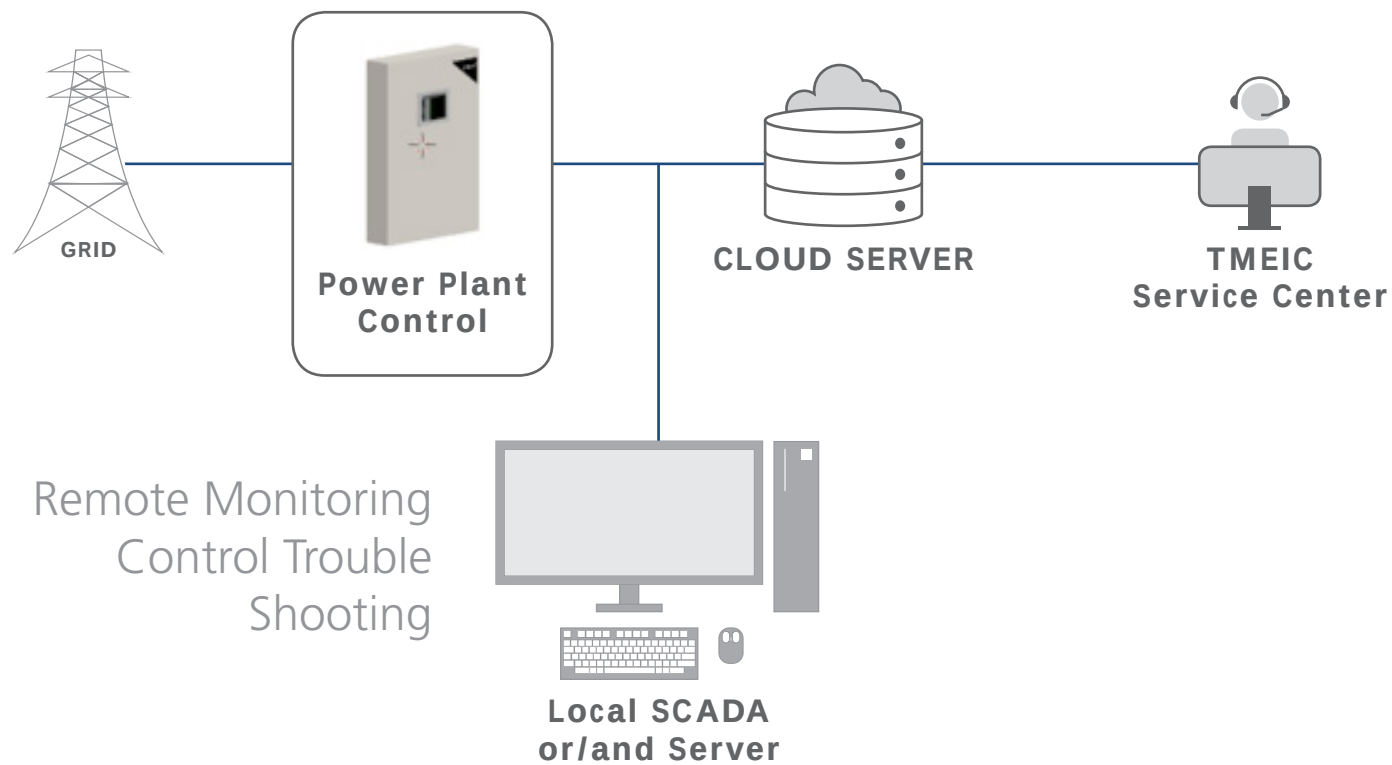
TMEIC believes that response from the point of change observed at the point of interconnection the Inverter would be able to respond within 100ms. This is largely dependent on the meter that is chosen for obtaining the Voltage and current values at the point of interconnection. TMEIC may, based on the application chose to obtain the signals directly from the PT or CT in order to reduce the response time. The details of the design and application shall be discussed and mutually agreed during the detailed design based on the application and purpose of the system.

IGNITION POINT

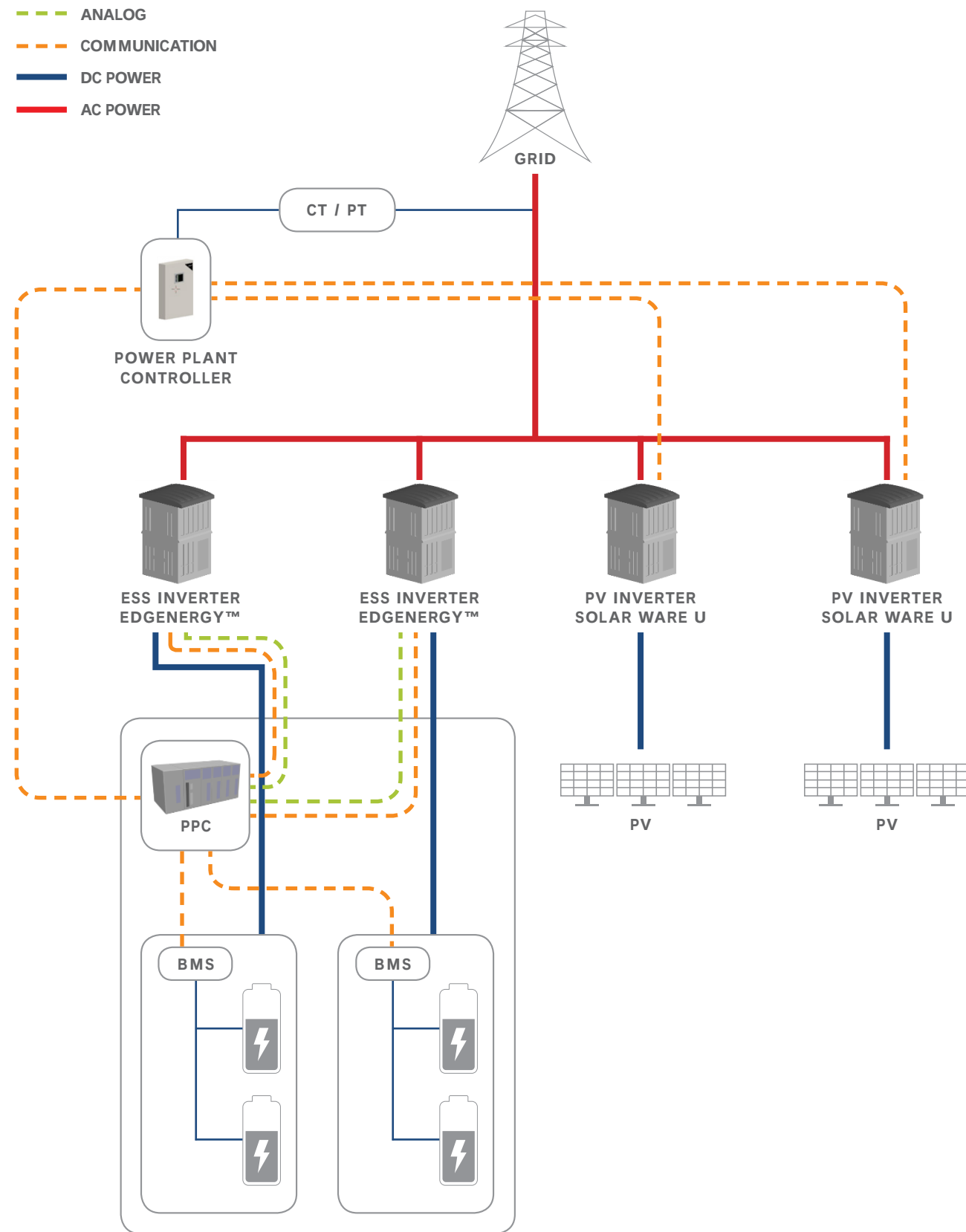


Remote Control and Monitoring

The collected field Information by TMEIC's Power Plant Controller can be monitored, controlled and troubleshooting locally & remotely. Optimization + Fault Prevention by collecting and analyzing data is being developed using TMIEC Could Server with Power Plant Controller.



PV + ESS HYBRID SYSTEM SOLUTION

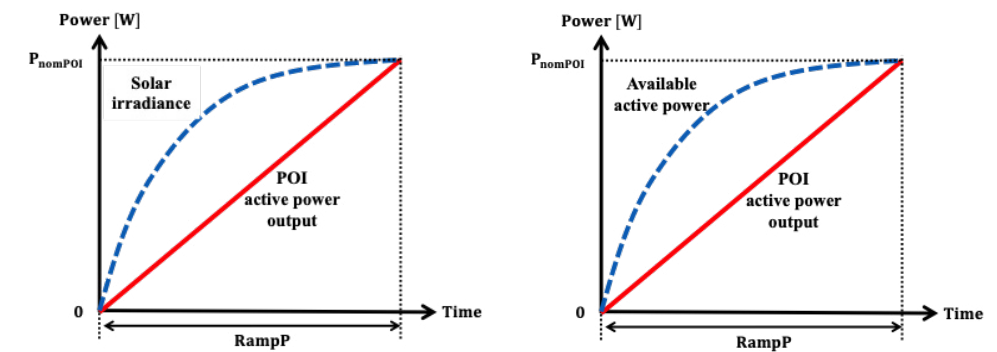


PV + ESS HYBRID SYSTEM SOLUTION

The proposed ESS system can provide Renewable integration support as required for PV Plants. The ESS can provide adequate control on the Ramp rate, frequency regulation, PV output smoothening, power limiting, and VAR Compensation. Ramp Rate Control, when enabled, allows the energy storage system to maintain ramp rates in the case of rapid reduction in plant output power regardless of the cause. To perform this function, the PPC computes a minimum SOC needed for ramp rate control. If necessary, the PPC will direct power to the ESS to bring it to the required SOC. The required SOC for performing this function depends on the current plant power output, the programmed site power ramp rate and the total capacity of all the ESS assets.

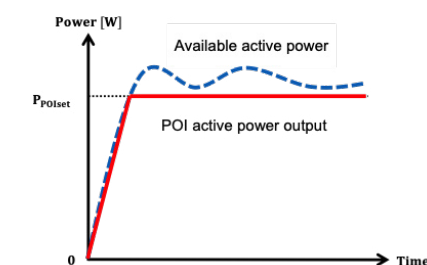
Ramp Rate Control

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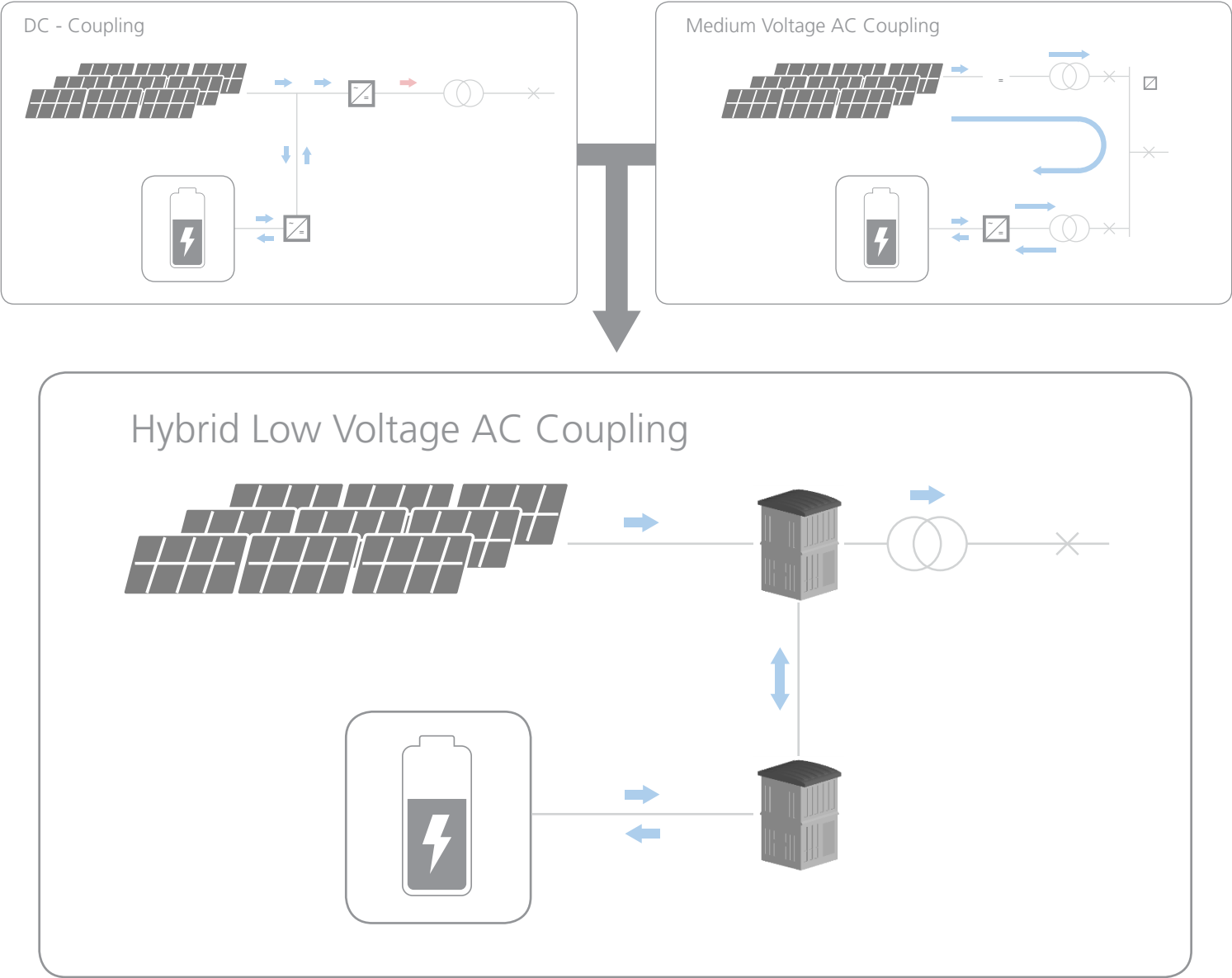
Site Power Limit Control

When Site Power Limit Control is enabled and the PV plant is subject to power limits, the PPC will use the ESS to maintain the plant at the power limit whenever irradiance reduces. This feature can also shift plant power production towards the end of each daily production period by extending the time the plant remains in power limit each day. As the PPC maintains the power limit the SOC of the ESS is reduced to the minimum SOC.



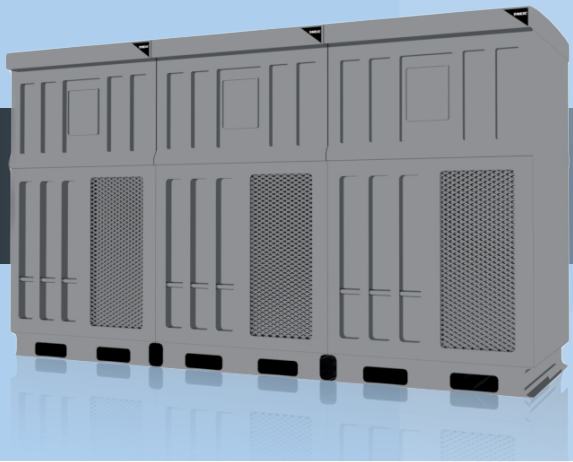
PV + ESS HYBRID SYSTEM'S CONCEPTS AND BENEFITS

TMEIC's PV+ESS System concept allows more flexible system design compared to conventional Medium Voltage AC Coupling DC-Coupling or MV-AC coupling system architecture. With decades of design, R&D, and global experience, TMEIC's next generation universal PCS design offers Hybrid Low Voltage AC Coupling.



- Wider reactive power capability range as a system
- Identical PCS for both ESS and PV allows for easier maintenance and spare parts inventory
- Reduce round trip power losses due to Transformer
- Reduced BOS Cost (Reduced V Switchgear, Transformer, no additional cables between modules and storage)
- Flexibility in design and application

EDGENERGY™



Common Platform

TMEIC's newest Inverter is designed with common platform to utilize both PV Inverter and ESS Inverter.

Feature

- Common platform design
- Highest efficiency (99.0%)*
- Global solution with UL or IEC rated
- Outdoor Compact size
- Various station size (up to 6 parallel inverters)

EDGENERGY™		BSU-L0630ER	BSU-L0800ER	BSU-L0840ER
		BSU-L0630GR	BSU-L0800GR	BSU-L0840GR
DC Input	Maximum Power	653kWp@98% Efficiency	816kWp@98% Efficiency	857kWp@98% Efficiency
	Maximum Voltage	710Vdc ~ 1300Vd	875Vdc ~ 1300Vdc	915Vdc ~ 1300Vdc
AC Output	Rated Power	640kW/640kVA	800kW/800kVA	840kW/840kVA
	Rated Voltage	480V (+10%, -12%)	600V (+10%, -12%)	630V (+10%, -12%)
	Maximum Current	702Arms @50°C		
	Rated Frequency	50Hz / 60Hz		
	Number of Phases	3 Phase / 3 Wire		
	Maximum Efficiency	99.0%		
General	Enclosure Rating	IP 55 / NEMA 3R		
	Installation	Outdoor		
	Temperature	-25 ~ 50°C		
	Maximum Altitude	2000m **		
	Communication Type	Modbus TCP		
	Certification Compliance	UL1741, UL174SA / IEEE1547 / NEC2017 IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068		
	Standard Number of Input	6 (Maximum 8 per Inverter) Each input rating is a maximum of 400A		

*without control power

** >2000m power derating (Max. 4000m)

TMEIC PRODUCTS

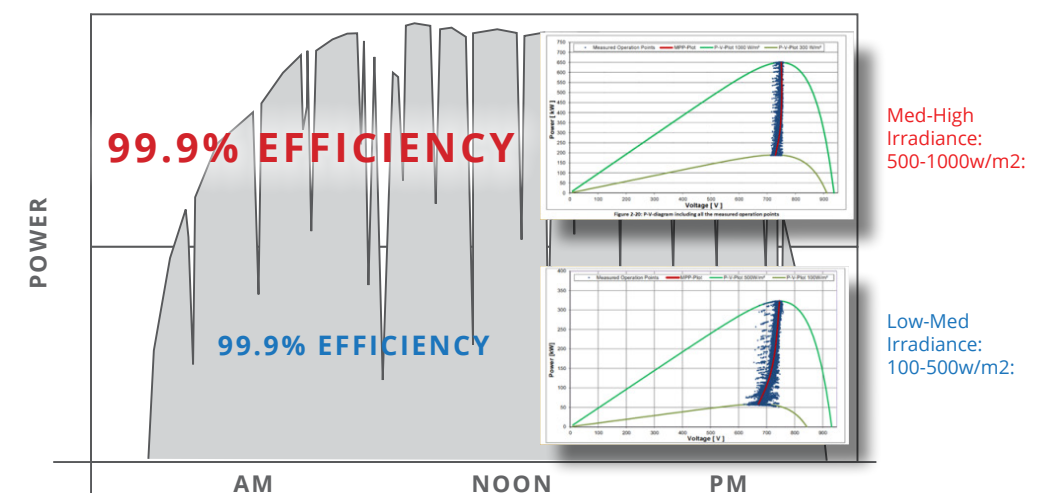


TECHNOLOGY FOR HIGH EFFICIENCY

MPPT TECHNOLOGY

MPPT (Maximum Power Point Tracking) is a technique used to track variation in irradiance in order to maximize energy harvest. MPPT algorithm samples module output power along the I-V curve to stay within the “knee” or the maximum point of the P-V curve. TMEIC has over 20 years of experience in developing and enhancing MPPT technology.

- Proven at Fraunhofer Lab, Germany
- Industry's leading 99.9% dynamic MPPT efficiency
- Validated by third party IE for excellence.



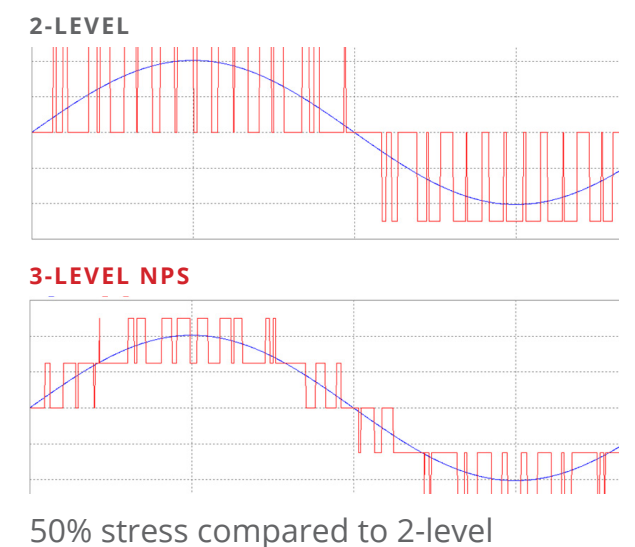
TMEIC 3-LEVEL NPS TECHNOLOGY

The 3-level NPS (Neutral Point Switch) topology adopted in TMEIC SOLAR WARE series is the most advanced power conversion technology used in the PV industry. The 3-level NPS technology enhances the performance and reliability of the inverter by evenly distributing the voltage stress levels of the individual switching devices, or IGBT (Insulated Gate Bipolar Transistor). TMEIC has been implementing this technology in the PV industry since 2009, and its effectiveness has been well proven in the solar industry.

Wider DC voltage range → Higher DC/AC ratio acceptable

Lower harmonic distortion → Small Filter Reactor → High Efficiency @low load

Lower Losses & Lower Stress → High Efficiency & High Reliability



We test for reliability under a variety of extreme conditions to ensure long term reliability of the PV inverters.

EXTREME TEMPERATURE

Whether the plant is installed in the Southwest desert of the USA or flat lands of Hokkaido, Japan, TMEICs' inverters can withstand extreme variations in temperature from hot to cold. TMEIC follows IEC-62093 standard and inverters are subjected to -25 to 75C temperature cycle pushing the limit.

I IEC-62093(2005)

- Balance-of system components for photovoltaic systems Design qualification natural environments

IEC-60068-2-30(2005)

- Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 + 12h)cycle

IEC-60068-2-78

- Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state



PV Inverter: High Temperature High Humidity Test



AC Station: Full Load Temperature Rise Test

WATER PROTECTION

TMEIC's outdoor rated PV inverters go through stringent water tightness testing to ensure long term performance in various rain and storm conditions. Tests are witnessed by NRTL and performed per UL-1741 standard.

UL-1741

- UL Standard for Safety Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources

RELIABILITY FOR LONG LIFE

TMEIC

TMEIC SERVICE & SUPPORT

TMEIC AFTER SERVICE

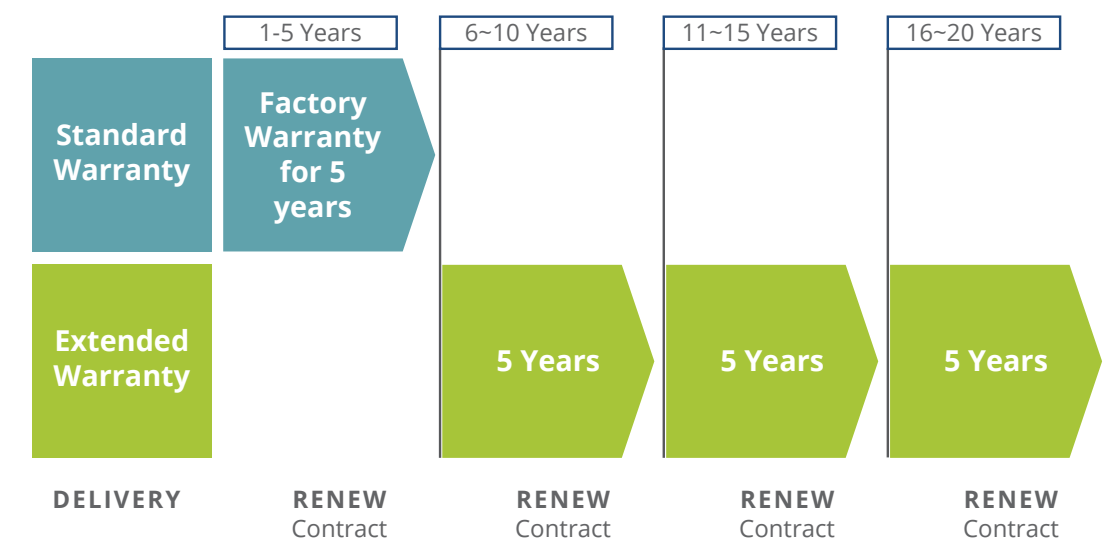
O&M Service

- Customer Support
- Troubleshooting
- Periodic Maintenance

Inverter's Warranty Menu

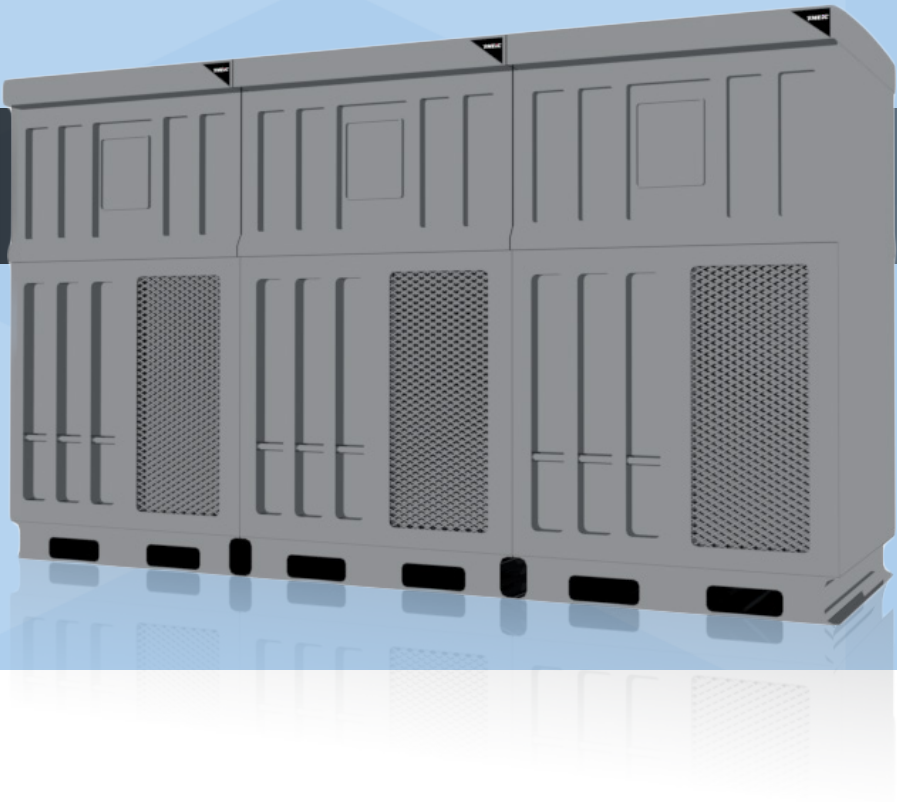
- Standard Warranty
5 Years factory warranty
- Extended Warranty
- We can propose optional plans according to customer needs

Re-order and Edit Content



Service menu and warranty program differs depending on the country / products, please contact us.

SOLAR WARE U



Specifications

SOLAR WARE U		PVU-L0800GR PVU-L0800ER	PVU-L0840GR PVU-L0840ER	PVU-L0880GR PVU-L0880ER	PVU-L0920GR PVU-L0920ER
DC Input	Maximum Power	816kWp@98% Efficiency	857kWp@98% Efficiency	898kWp@98% Efficiency	939kWp@98% Efficiency
	Maximum Voltage	1500Vdc			
	MPPT Operation Range	875Vdc ~ 1300Vdc (starting-up from 1450V)	915Vdc ~ 1300Vdc (starting-up from 1450V)	960Vdc ~ 1300Vdc (starting-up from 1450V)	1005Vdc ~ 1300Vdc (starting-up from 1450V)
AC Output	Rated Power	800kW/800kVA	840kW/840kVA	880kW/880kVA	920kW / 920kVA
	Rated Voltage	600V (+10%, -12%)	630V (+10%, -12%)	660V (+10%, -12%)	690V (+10%, -12%)
	Rated Current	702Arms @50°C			
	Rated Frequency	50Hz / 60Hz			
	Number of Phases	3 Phase / 3 Wire			
	Maximum Efficiency *	99.0%			
General	Enclosure Rating	IP 55 / NEMA 3R			
	Installation	Outdoor			
	Temperature	-25 ~ 50°C			
	Maximum Altitude	2000m **			
	Communication Type	Modbus TCP			
	Certification Compliance	UL1741, UL174SA / IEEE1547 / NEC2017 IEC62109-1,2 / IEC61000-6-2,4 / IEC61727, IEC62116 / IEC61400, BDEW / IEC61683 / IEC60068			
	Standard Number of Input	6 (Maximum 8 per Inverter) Each input rating is a maximum of 400A			

* Without Control Power
**>2000m power derating (Max. 4000m)

Hybrid Plant Design

It can be used as both PV Inverter and ESS Inverter, and being outdoor modular type enables flexible plant design.

Reducing BOS Cost

Transformer losses and BOS cost can be reduced with LV AC Coupling by using SOLAR WARE U.

Features

- Highest efficiency (99.0%)*
- Independent management with Multi-MPPT
- Wide MPPT range and choice of output voltage
- Global solution with UL or IEC rated
- Outdoor Compact size
- Various station size (up to 6 parallel inverters)
- Night Var
- String monitoring with Wi-Fi (LCD less)

SOLAR WARE
2220, 2550



1500V PV Inverter

Specifications

		PVH-L2220E	PVH-L2550E
DC Input	Maximum Power	2267kW	2602kW
	Maximum Voltage	1500V	1500V
	MPPT Operation Range	800V~1300V	915V~1300V
	Rated Voltage	900V	990V
	Maximum Current	2844A	2844A
	Short-circuit Breaking Capacity	4800A	4800A
AC Output	Rated Power	2222kW/2222kVA	2550kW/2550kVA
	Rated Voltage	550V(± 10%)	630V(± 10%)
	Rated Current	2332A	2337A
	Rated Frequency	50/60Hz(+0.5Hz,-0.7Hz)	50/60Hz(+0.5Hz,-0.7Hz)
	Number of Phases	3 Phase / 3 Wire	3 Phase / 3 Wire
	Rated Power Factor	Over 0.99	Over 0.99
	Power Factor Operating Range	± 0.85	± 0.9
	Total Harmonic Distortion	5%	5%
	Maximum Efficiency	98.7% (915V DC Input, PF 1)	98.8% (915V DV Input, PF 1)
	Estimated CEC Efficiency	98.5% (915V DC Input, PF 1)	98.6% (915V DV Input, PF 1)
	Short-Circuit Breaking Capacity	50kA	50kA
	Enclosure Rating	IP21	IP21
General	Installation	Indoor	Indoor
	Temperature	-20℃~50℃	-20℃~50℃
	Humidity	5%~95%	5%~95%
	Maximum Altitude	2000m	2000m
	Communication Type	Modbus	Modbus
	Certification Compliance	GB/T 1994, NB/T 32004	IEC62109-1/-2 IEC61000-6-2/-4

SOLAR WARE 2220, 2550 is the most optimal 1500Vdc PV inverter designed for Utility Scale PV Plant. SOLAR WARE 2220 features Wide MPPT range, allowing flexible DC PV system design. SOLAR WARE 2550 is one of the largest single PV inverters in the market featuring most compact and high efficiency design, whose high quality and high reliability is ensured by TMEIC.

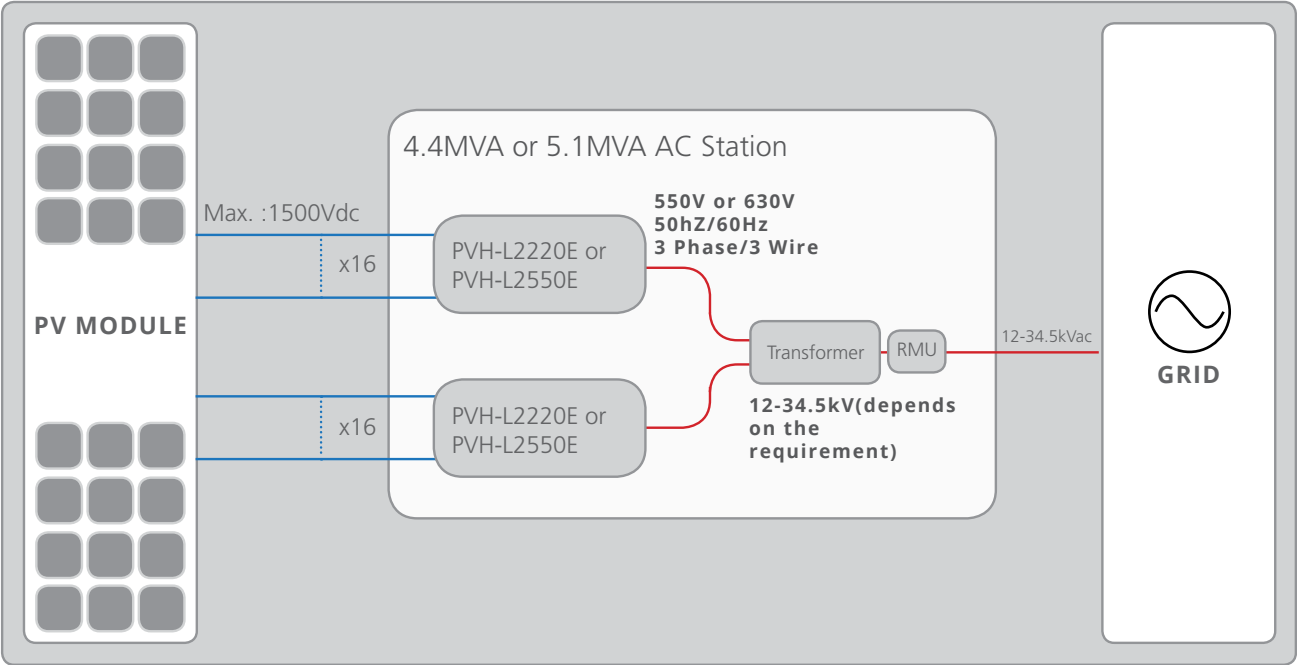
Wide MPPT model(2.22MW/2.22MVA)

SOLAR WARE 2220 features Wide MPPT range, allowing flexible DC PV system design.

Best-in-class and compact size (1.4MVA/M2) SOLAR WARE 2550 is one of the largest single PV Inverters in the market featuring most compact and high efficiency design, whose high quality and high reliability is ensured by TMEIC.

Features

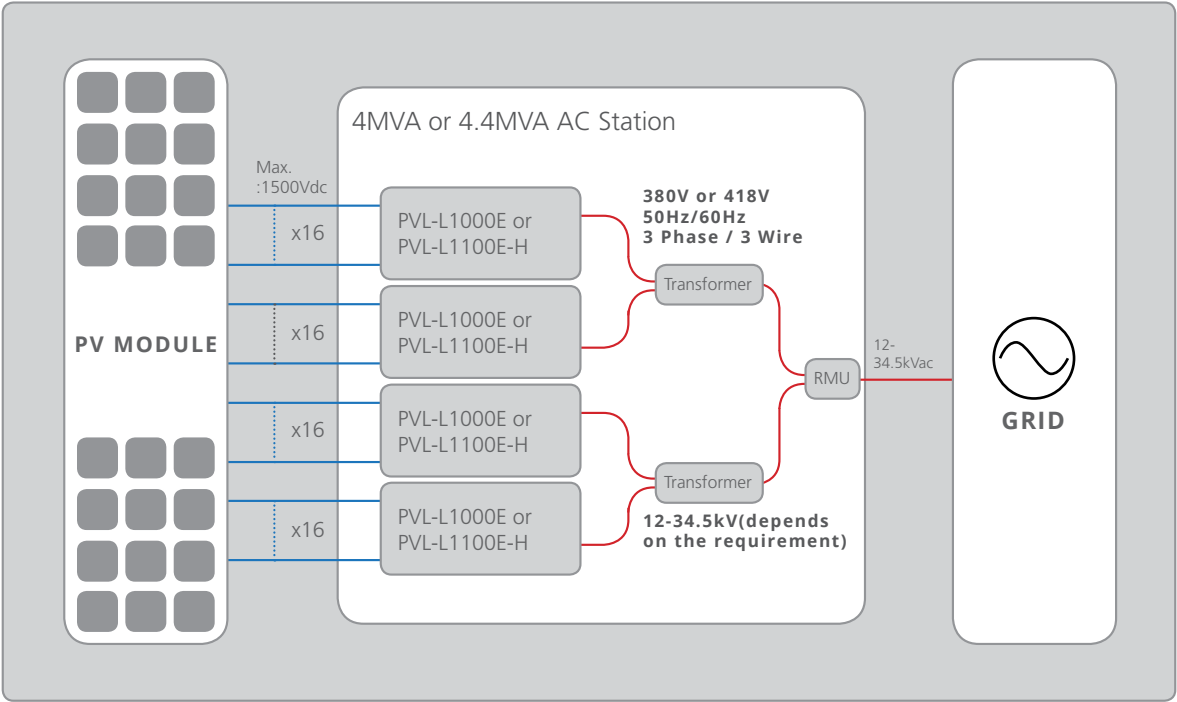
- High efficiency (98.7%)
- Wide MPPT model (2.22MW/2.22MVA)
- Best-in-class and compact size (1.4MVA/M2)
- No derating up to 50℃
- VAR mode for night operation
- Negative grounding (optional)
- DC Box integrated
- Safety function of DC input circuit system



SOLAR WARE
1000, 1100



1000V PV Inverter



Specifications

		PVL-L1000E	PVL-L1000E-H	PVL-L1100E-H
DC Input	Maximum Power	1020kW	1020kW	1120kW
	Maximum Voltage	1000V	1000V	1000Vdc
	MPPT Operation Range	550V~950V	605V~950V	605~950Vdc
	Rated Voltage	655V	655V	655V
	Maximum Current	1855A	1687A	1855A
	Short-circuit Breaking Capacity	50kA	50kA	50kA
AC Output	Rated Power	1000kW/1000kVA	1000kW/1100kVA	1100kW/1100kVA
	Rated Voltage	380V(± 10%)	418V (± 10%)	418V (± 10%)
	Rated Current	1519A	1519A	1519A
	Rated Frequency	50/60Hz (± 1%)	50/60Hz(+1%)	50/60Hz (± 1%)
	Number of Phases	3 Phase / 3 Wire	3 Phase / 3 Wire	3 Phase /3 Wire
	Rated Power Factor	Over 0.99	Over 0.99	Over 0.99
	Power Factor Operating Range	± 0.9	± 0.9	± 0.9
	Total Harmonic Distortion	5%	5%	5%
	Maximum Efficiency	98.7% (550V DC Input, PF 1)	98.7% (650V DC Input, PF 1)	98.7%
	Estimated European Efficiency	98.3% (550V DC Input, PF 1)	98.3% (650V DC Input, PF 1)	98.3% (650V DC Input, PF 1)
General	Short-Circuit Breaking Capacity	65kA	65kA	65kA
	Enclosure Rating	IP20	IP20	IP20
	Installation	Indoor	Indoor	Indoor
	Temperature	-20°C~50°C	-20°C~50°C	-20°C~50°C
	Humidity	5%~95%	5%~95%	5%~95%
	Maximum Altitude	2000m	2000m	2000m
	Communication Type	Modbus	Modbus	Modbus
	Certification Compliance	IEC62109-1/-2 IEC62109-6-2/-4	IEC62109-1/-2 IEC62109-6-2/-4	IEC62109-1/-2 IEC62109-6-2/-4
	Grid Code			

In terms of reliability, efficiency and productivity, SOLAR WARE 1000 redefines the PV utility scale solar inverter solution. TMEIC sets the standard for utility scale installation with its own proprietary and the 3-level NPS (Neutral-Point-Switched) inverter system, a solution that brings flat efficiency characteristics providing differentiated benefit for high DC/AC ratio projects.

The SOLAR WARE 1000 is a highly engineered 1000V PV inverter suitable for mega-solar power plant deployment. TMEIC’s proprietary 3-level topology maximizes utility scale PV system performance and design practice with its industry’s leading efficiency level and smallest footprint.

New technology innovation

- Proprietary 3-level NPS (Neutral-Point-Switched) IGBT architecture reduces switching loss and enhances performance through filter reactor size optimization
- Industry’s leading 98.7% efficiency
- Wide DC MPP window allowing string sizing flexibility

Optimization of operational expenditure

- All detailed fault waveform data are stored in SD memory card

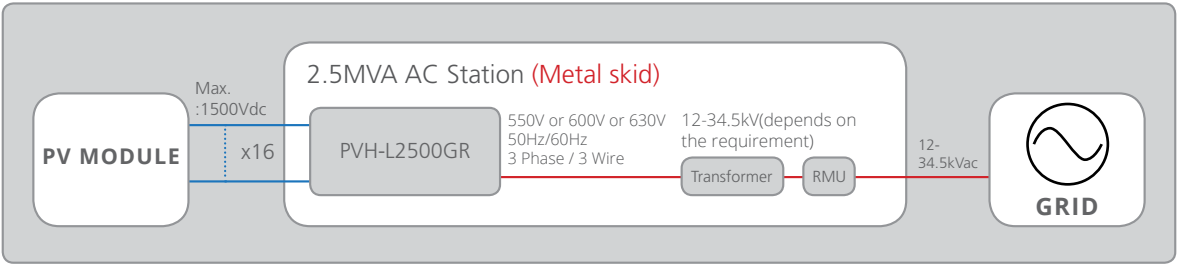


1500V PV Inverter

SOLAR WARE 2500, 2700, 3200, and 3360 are among the largest central PV inverters in the 1500V power class. They feature the first heat-pipe based hybrid cooling technology implemented in utility-scale PV inverter solution, providing optimal opex model.

Specifications

		PVH-L2500GR	PVH-L2700GR	PVH-L3200GR	PVH-L3360GR
DC Input	Maximum Power	2551kW	2755kW	3265kW	3429kW
	Maximum Voltage	1500V	1500V	1500V	1500Vdc
	MPPT Operation Range	800V~1300V	875V~1300V	875V~1300V	915V~1300V
	Rated Voltage	900V	960V	960V	990V
	Maximum Current	3107A	3107A	3545A	3545A
	Short-circuit Breaking Capacity	4800A	4800A	8000A (4 Switch)	8000A (4 Switch)
AC Output	Rated Power	2500kW/2500kVA	2700kW/2700kVA	3200kW/3200kVA	3360kW/3360kVA
	Rated Voltage	550V (± 10%, -12%)	600V (+10%, -12%)	600V (10%, -12%)	630V (+10%, -12%)
	Rated Current	2624A	2598A	3079A	3079A
	Rated Frequency	50/60Hz (+ 0.5Hz, -0.7Hz)	50/60Hz (+0.5Hz, 0.7Hz)	50/60Hz (+0.5Hz, 0.7Hz)	50/60Hz (+0.5Hz, 0.7Hz)
	Number of Phases	3 Phase / 3 Wire	3 Phase / 3 Wire	3 Phase / 3 Wire	3 Phase / 3 Wire
	Rated Power Factor	Over 0.99	Over 0.99	Over 0.99	Over 0.99
	Power Factor Operating Range	± 0.92	± 0.92	± 0.9	± 0.9
	Total Harmonic Distortion	5%	5%	5%	5%
	Maximum Efficiency	98.8% (800V DC Input, PF 1)	98.8% (875V DC Input, PF 1)	98.8% (875V DC Input, PF 1)	98.9% (915V DC Input, PF 1)
	Estimated CEC Efficiency	98.5% (800V DC Input, PF 1)	98.5% (875V DC Input, PF 1)	98.5% (875V DC Input, PF 1)	98.5% (915V DC Input, PF 1)
General	Short-Circuit Breaking Capacity	65kA	65kA	65kA	65kA
	Enclosure Rating	NEMA3R	NEMA3R	NEMA3R	NEMA3R
	Installation	Outdoor	Outdoor	Outdoor	Outdoor
	Temperature	-20°C~50°C	-20°C~50°C	-25°C~50°C	-25°C~50°C
	Humidity	5%~95%	5%~95%	5%~95%	5%~95%
	Maximum Altitude	2000m	2000m	2000m	2000m
	Communication Type	Modbus	Modbus	Modbus	Modbus
	Certification Compliance	UL1741	UL1741	UL1741, CSA C22.2 No. 107.1-01	UL1741
Grid Code		IEEE1547	IEEE1547	IEEE1547	IEEE1547



New technology innovation

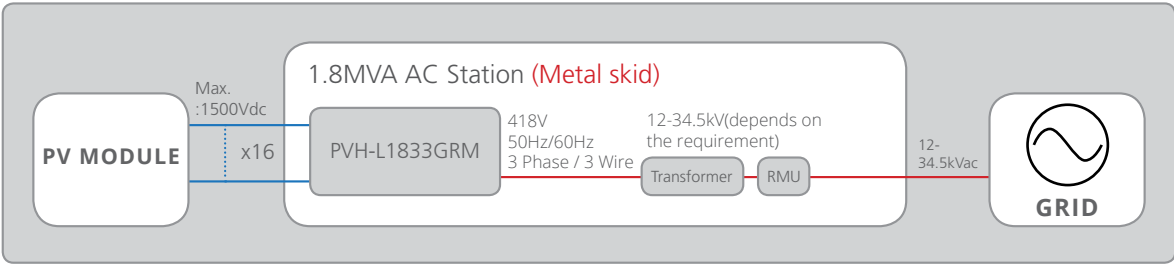
- Proprietary 3-level NPS IGBT architecture provides reduction on switching loss and performance enhancement through filter reactor size optimization
- Industry leading 98.8% efficiency

World’s first heatpipe technology in utility-scale PV inverter

- Utilizing TMEIC heat-pipe technology, the inverter runs without fan operation up to 50% load
- Heat-pipe cooling significantly simplifies thermal management, because it uses fewer parts and only a slow-speed fan with a heat-pipe heat sink

Easy System Integration

- Full direct bus connection both on DC and AC side provides easy installation on-site



SOLAR WARE 1833 is one of the largest central PV inverters in the 1000V power class. It features the first heat-pipe based hybrid cooling technology implemented in utility-scale PV inverter solution, providing optimal opex model.

Specifications

		PVL-L1833GRQ	PVL-L1833GRM	PVL-L1833ERM
DC INPUT	Maximum Power	1710kW	1870kW	1870kW
	Maximum Voltage	1000V	1000V	1000Vdc
	MPPT Operation Range	605V~950V	605V~950V	605~950Vdc
	Rated Voltage	655V	655V	655V
	Maximum Current	2826A	3091A	3091A
	Short-circuit Breaking Capacity	10kA	10kA	10kA
AC OUTPUT	Rated Power	1667kW/1833kVA	1833kW/2000kVA	1833kW/2000kVA
	Rated Voltage	418V (+10%/-12%)	418V (+10%/-12%)	418V (+10%/-10%)
	Rated Current	2532A	2532A	2532A
	Rated Frequency	60Hz (+0.5Hz,-0.7Hz)	60Hz (+0.5Hz, -0.7Hz))	50/60Hz (± 1Hz)
	Number of Phases	3 Phase / 3 Wire	3 Phase / 3 Wire	3 Phase / 3 Wire
	Rated Power Factor	Over 0.99	Over 0.99	Over 0.99
	Power Factor Operating Range	± 0.9	± 0.9	± 0.92
	Total Harmonic Distortion	5%	5%	5%
	Maximum Efficiency	98.8% (605V DC Input, PF 1)	98.8% (605V DC Input, PF 1)	98.8% (605V DC Input, PF 1)
	Estimated ECE Efficiency	98.5% (605V DC Input, PF 1)	98.5% (605V DC Input, PF 1)	98.5% (605V DC Input, PF 1)
GENERAL	Short-Circuit Breaking Capacity	65kA	65kA	65kA
	Enclosure Rating	NEMA3R	NEMA3R	IP44/IP54 (Electronic Circuit)
	Installation	Outdoor	Outdoor	Outdoor
	Temperature	-20°C~50°C	-20°C~50°C	-20°C~50°C
	Humidity	5%~95%	5%~95%	5%~95%
	Maximum Altitude	2000m	2000m	2000m
	Communication Type	Modbus	Modbus	Modbus
	Certification Compliance	UL1741	UL1741	IEC62109-1/-2 IEC62109-6-2/-4
	Grid Code	IEEE1547	IEEE1547	

New technology innovation

- Proprietary 3-level NPS IGBT architecture reduces switching loss and enhances performance through filter reactor size optimization
- Industry’s leading 98.8% efficiency
- Wide DC MPP window allowing string sizing flexibility

World’s first heatpipe technology in utility-scale PV inverter

- Utilizing TMEIC heat-pipe technology, the inverter runs without fan operation up to 50% load
- Heat-pipe cooling technology significantly simplifies thermal management, because it uses fewer parts and only requires a slow-speed fan with a heat-pipe heat sink

Easy System Integration

- Full direct bus connections on both DC and AC sides provide easy installation on-site

SOLAR WARE
STATION

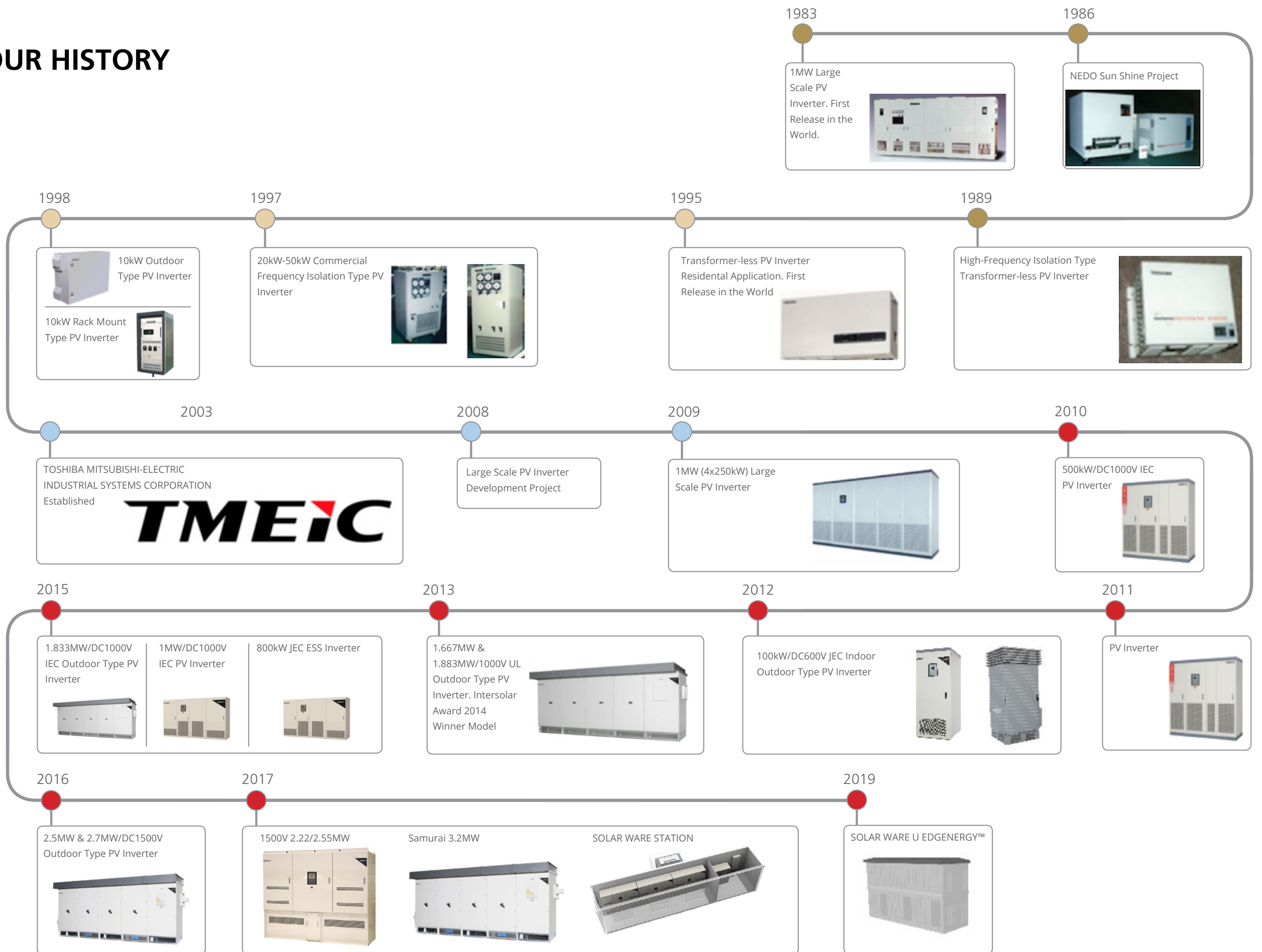


Specifications

		1000V SOLUTION		1500V SOLUTION			
		2MW	4MW	2.22MW	2.55MW	4.44MW	5.10MW
Container	Type	30'HC	ISO Standard size 40'HC	ISO Standard size 20'		ISO Standard size 40'HC	
	Outline Dimensions (L×W×H, m)	9.1 X 2.4 X 2.9	12.0 X 2.4 X 2.9	6.1 X 2.4 X 2.6		12.0 X 2.4 X 2.9	
Inverter	Type	PVL-L1000E-H	PVL-L1000E-H	PVH-L2220E	PVH-L2550E	PVH-L2220E	PVH-L2550E
	Quantity (pc)	2	4	1	1	2	2
DC Box		Integrated in Inverter					
MV Transformer	Grid Voltage	11 / 22 / 34.5kV ± 2.5%					
	Rated Frequency	50 / 60Hz					
	Number of Phase	Three - phase					
	Standard Compliance	IEC 60076					
	Rated Compliance	12 / 24 / 36kV					
MV Switchgear	Rated Frequency	50 / 60Hz					
	Number of Phase	Three - phase					
	Model	Breaker protection as standard					
	Rated Current	630A as standard					
	Standard Compliance	IEC 62271-1, -100, -102, -105, -200					
LV Panels		Low voltage distribution panels, outlets (Type depends on the requirements)					
Connection		Connection / cabling between LV panels, Inverter, MV transformer, MV switchgear is included					
Cooling Method		Force cooling with louvres and fans					
Auxiliary	Transformer	Three-phase, 50/60Hz, less than 10kVA as standard					
	Lighting	Lamps					
	Safety Equipments	Gloves, insulation mat					
	UPS	UPS can be supplied as an option					
Environmental Condition	Maximum Altitude	Inverter : Up to 2,000m as standard transformer and RMU : 1,000m as standard (Up to 2,000m)					
	Ambient Temperature	Inverter : -20~40°C as standard (Up to 50°C as option)* 2 Transformer and RMU : -20~40°C as standard (Up to 50°C as option)					
	Relative Humidity	Less than 95% (Not condensating)					

*2> SOLAR WARE 2220/2550 operates without derating up to 50°C.

OUR HISTORY



www.tmeic.co.jp (JP)



www.tmeic.com (EN)



TOSHIBA MITSUBISHI-ELECTRIC INDUSTRIAL SYSTEMS CORPORATION
New Energy & Environmental Business Division Marketing Team 5
TOKYO SQUARE GARDEN, 3-1-1 Kyobashi, Chuo-ku, Tokyo 104-0031, Japan

TMEiC

Email: info-pv@tmeic.co.jp

Tel: +81-3-3277-4491 Fax: +81-3-3277-4565 URL: www.tmeic.co.jp/global/

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Specifications subject to change without notice