

August 22, 2016

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**TMEIC Receives Order of Its Outdoor PV Inverters with a Salt Damage Prevention Specification for a Utility Scale PV Plant in Hawaii, United States**  
– Delivering 17 Units of SOLAR WARE™ 1667 (1667kW Model) –

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Toshiba Mitsubishi-Electric Industrial Systems Corporation (hereinafter, “TMEIC”; President & CEO Masahiko Yamawaki) received an order of 17 units of its SOLAR WARE™ 1667 outdoor PV inverters with a salt damage prevention specification for a utility scale solar power plant currently under construction on Oahu island of Hawaii. The plant is being built by Eurus Energy America Corporation (San Diego, California), a U.S. subsidiary of Eurus Energy Holdings Corporation (based in Minato-ku, Tokyo), which is the world’s foremost company engaged in renewable energy electric utility business such as wind and solar power generation.

While the U.S. state of Hawaii is actively promoting the introduction of renewable energy, there are many cases in which utility scale solar facilities are installed near coastal areas, and up until now, PV inverters were generally installed inside an enclosure with air-conditioning to prevent salt damage. TMEIC has developed a PV inverter with improved environmental durability for places such as islands and coastal areas where salt damage prevention measures are required. In addition to high conversion efficiency and reliability characteristic of TMEIC’s existing products, the new PV inverter developed at this time realizes a reduction in initial costs and running costs by eliminating the need for air-conditioning, and in turn, contributes to maximizing revenue. TMEIC’s 17 units of PV inverters with a total capacity of 27.6MW were selected at this time in recognition of these performance benefits. Operation of the PV inverter units is scheduled to start from around autumn 2016.

The introduction of utility scale solar facilities is anticipated in areas such as on islands where electricity is expensive because grid parity\* is easy to achieve. However, equipment for such areas requires salt damage prevention measures. At the same time, it is anticipated that TMEIC’s PV inverter can be utilized not only for coastal areas but also inland areas where salt damage may occur depending on the direction of the wind.

TMEIC continues to strengthen its capabilities to respond to various installation conditions progressively being introduced throughout the world.

**1. Characteristics of SOLAR WARE™ 1667**

- a) Feasible outdoor specification also responds to areas where salt damage may occur in such places as islands or coastal areas.
- b) World’s highest level of power conversion efficiency of 99.0%.
- c) Hybrid cooling system employed with both heat pipe and cooling fan requires no air-conditioning.
- d) Compliant with UL certification and IEC standards.

**2. Customer Benefits**

- a) Can be installed in such areas as islands or coastal areas.
- b) Reduction of operation costs and improvement of maintainability because PV inverter does not require air-conditioning, which in turn reduces power generation costs.
- c) High conversion efficiency and reduction of power consumption contributes to maximizing revenue.

\* Grid parity refers to a state in which power generation costs via renewable energy become the same level or lower versus existing power costs (electricity costs, etc.).

Exterior of SOLAR WARE™ 1833/1667



Specifications of SOLAR WARE™ 1833/1667/833

Product Name		SOLAR WARE™ 1833	SOLAR WARE™ 1667	SOLAR WARE™ 833
Type		PVL-L1833GRM (AS)	PVL-L1833GRQ (AS)	PVL-L0833GR (AS)
Output Side (AC)	Rated Power	1,833kW / 2,000kVA	1,667kW / 1,833kVA	833kW / 916kVA
	Rated Voltage	418V (+10% -12%) / 3Φ3W		
	Rated Frequency	60Hz (+0.5Hz, -0.7Hz)		
	Rated Power Factor	Over 0.99		
	Rated Current	2,762Arms	2,533Arms	1,151Arms
Input Side (DC)	Maximum Power	1,870kWp @98.0% Efficiency	1,701kWp @98.0% Efficiency	850kWp @98.0% Efficiency
	Maximum Voltage	1,000Vdc		
	MPPT Operation Range	605Vdc ~ 950Vdc		
Efficiency	Maximum Efficiency	99.0% @ PF=1		
General	Weight	6,000kg	6,000kg	4,000kg
	Inverter Dimensions (H x W x D)	2,283 x 5,000 x 1,150 mm	2,283 x 5,000 x 1,150 mm	2,283 x 3,000 x 1,150 mm
	Floor Space (W x D)	5.75m <sup>2</sup>	5.75m <sup>2</sup>	3.45m <sup>2</sup>
	Enclosure Protection Ratings	IP45 / IP55 (Electronic circuit) / NEMA3R		
	Installation	Outdoor		
	Ambient Temp. Range	-20 ~ 50°C		
	Communication	Modbus / TCP		
	Standard Compliance	IEC standard / UL standard		
	Standard Number of Input	1		
	Standard Control Power Supply	Control Power Supply from Inverter Output and Capacitor backup circuit (3 sec. compensation)		
	Cooling System	Advanced Hybrid Cooling		

“SOLAR WARE” is a trade mark of TMEIC in Japan.

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In order to respond to the needs of manufacturing sites that serve as a foundation for supporting society, TMEIC always sets its eyes on the future of industry, society and the environment as an industrial systems integrator striking a balance between the development of society and a beautiful global environment. TMEIC will contribute to manufacturing and environmental management through leading-edge technologies based on its core technologies of rotating machinery, power electronics and engineering.