TOSHIBA MITSUBISHI-ELECTRIC INDUSTRIAL SYSTEMS CORPORATION

June 6, 2016

TMEIC Received First Order of 1500V PV Inverter for Next-Generation PV System in the United States

- SOLAR WARE™ 2700 (2700kW Model) -

Toshiba Mitsubishi-Electric Industrial Systems Corporation (hereinafter, "TMEIC"; President & CEO Kiyotaka Machida) has received an order of its SOLAR WARE™ 2700, 1500V outdoor PV inverters in the United States. SOLAR WARE™ 2700 realizes the world's largest-class single-unit capacity and the world's highest level of power conversion efficiency.

1500V PV system is globally capturing attention as a next-generation system because not only it achieves high efficiency of overall facilities versus 1000V system but also highly economical PV system by consolidating equipment and reducing the labor cost.

In the United States, where consideration regarding 1500V systems has made the most progress, installations have accelerated since 2016 and will be employed in the majority of utility-scale PV systems by the end of 2017. Additionally, the 1500V system is also being considered in Japan, India and China.

TMEIC currently has received an order of SOLAR WARE™ 2700 from juwi Inc., which is a U.S. subsidiary of juwi AG (headquartered in Germany) that is recognized as a world-leading company in development and construction in the area of renewable energy. This project is located in the northern area of the U.S. state of Colorado, and at the end of June 2016 TMEIC plans to deliver 12 units of its SOLAR WARE™ 2700 with a generating capacity of 30MW.

TMEIC is the first Japanese company[*1] to receive an order for 1500V system PV inverters in the U.S. market, which can be attributed to its growing reputation from customers as evidenced by TMEIC's proven track record of sales in the global market as well as in terms of performance, quality and reliability.

Note: TMEIC research as of April 2016.

1. **Features of SOLAR WARE™ 2700/2500**
   1) Maximum 1500V DC voltage (input side) and the world's largest-class capacity of 2700kW/2500kW
   2) Outdoor PV inverter responding to harsh environments (ambient temperature of -20～50℃)
   3) Fan-less technology (natural cooling up to 50% of rated power) applied for electricity saving and increased reliability
   4) World-class power conversion efficiency of 98.8%
   5) Responding to plant control for Smart Grid (remote control of output, power factor, etc.)
   6) Compliant with UL and IEC standards

2. **Customer Benefits**
   1) Approximately 30% reduction of the number of inverters installed compared with 1000V inverters.
   2) The number of peripheral equipment such as a set-up transformer, switchgear and cables as well as installation and wiring work can be reduced, thereby contributing to a reduction of construction costs.
   3) The highest level of power conversion efficiency contributes to maximizing revenue.
   4) Significant reduction of maintenance costs by long life fan.

Exterior of SOLAR WARE™ 2700

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Specifications of SOLAR WARE™ 2700/2500

Type		SOLAR WARE™ 2700	SOLAR WARE™ 2500
Output Side (AC)	Rated Power	2,700kW / 2,700kVA	2,500kW / 2,500kVA
	Rated Voltage	600V +10%, -12% (3Φ3W)	550V +10%, -12% (3Φ3W)
	Rated Frequency	60Hz / 50Hz	60Hz / 50Hz
	Rated Power Factor	Over 0.99	Over 0.99
	Rated Current	2,598Arms	2,624Arms
Input Side (DC)	Maximum Power	2,755kWp @98% Efficiency	2,551kWp @98% Efficiency
	Maximum Voltage	1,500Vdc	1,500Vdc
	MPPT Operation Range	875Vdc ～ 1,300Vdc	800Vdc ～ 1,300Vdc
Efficiency	Maximum Efficiency	98.8%	98.8%
General	Weight	6,000kg	6,000kg
	Inverter Dimensions (H x W x D)	2,286 x 5,000 x 1,150 mm	
	Floor Space (W x D)	5.75m^2	
	Enclosure Protection Ratings	IP44 /IP54 (Electronic circuit) / NEMA3R	IP44/IP54 (Electronic circuit) / NEMA3R
	Installation	Outdoor	
	Ambient Temp. Range	-20 ～ 50℃	
	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	
	Cooling System	Advanced Hybrid Cooling	

Media inquiries:

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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.