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NANOENERGY AND AMPT DEPLOY "HYPER KASEKISAI" PV SYSTEMS IN JAPAN TO INCREASE REVENUE UP TO 70%

Ampt String Optimizers Enable Inverter DC/AC Loading Ratios of 2-to-1 or More

Tokyo, Japan and Yokohama, Japan. — July 5, 2017 — NanoEnergy Company, a leading a supplier of energy efficiency equipment in Japan, and Ampt LLC, a leader in solar power conversion technology, today announced that Ampt String Optimizers are being used in NanoEnergy's "Hyper Kasekisai" PV system solution to achieve inverter DC/AC loading ratios greater than 2-to-1 and increase system revenue up to 70%. The high DC ratio solution increases project ROI for both new and existing solar systems.

Solar photovoltaic (PV) systems with higher DC/AC loading produce more energy because the inverter is on at higher powers for longer periods of time. DC/AC loading refers to the system's ratio of DC photovoltaic power to the inverter's rated AC output power. The DC ratio of PV systems is typically greater than 1 to accommodate for the variability in sunshine and temperature for a given geography. However, the maximum DC ratio for many systems is limited to ~1.5 by either the inverter's input current limit, the inverter's MPP range, or by the cost of DC hardware. NanoEnergy is using Ampt String Optimizers to overcome these constraints to economically achieve DC ratios greater than 2 to unlock more value.

"NanoEnergy is specializing in the development of high DC ratio systems using Ampt String Optimizers to deliver higher ROI," said Koyo Iwasaki, CEO for NanoEnergy. "We are now using Ampt technology in 36 PV systems, and expect rapid growth due to the unmatched results for our customers."

NanoEnergy's most recent deployments of "Hyper Kasekisai" – or high DC ratio – PV systems are located in Katori, Narita, Chiba and Tochigi. The Katori and Narita systems each have 105kW DC power connected to a 49.9kW AC inverter. The PV system in Chiba has 400kW DC power on a 200kW AC inverter, while the power plant in Tochigi has 2245kW DC power on a 1000kW utility-scale AC inverter.

Ampt String Optimizers are DC-to-DC converters that lower the barriers to higher DC loading by putting patented voltage and current limits, as well as two maximum power point trackers (MPPTs) on each string of PV modules. This allows each string to deliver full available power at a voltage set by either a central or string inverter. The optimizer's current limits ensure the inverter's input current limit is not exceeded while the MPP trackers allow the inverter to operate in a constant or narrow range voltage. Ampt's patented String Stretch® technology allows system designers to double the number of modules per string which removes 50 percent of the electrical balance-of-system (BOS) components to lower the investment cost of increasing DC power capacity.

"With Ampt String Optimizers, PV systems with high DC ratios can be designed to produce up to 70% more energy," said Shigeki Kondo, Japan Country Manager for Ampt Japan, LLC. "This translates to an internal rate of return of 60% depending on component costs and FIT structures."

Market demand in Japan for high DC ratio systems is also growing due to the adoption of DC-coupled storage where excess DC power can be captured in batteries. In addition to economically addressing the technical barriers to higher DC loading, Ampt also optimizes the cost and efficiency of DC-coupled storage solutions.

About NanoEnergy
NanoEnergy is a supplier of energy efficiency equipment headquartered in Tokyo, Japan. The company provides Engineering, Procurement and Construction (EPC) and Operations and Maintenance (O&M) services, and distributes smart solar design systems to power producers and investors for light commercial (<50kW) and utility (<2MW) markets.

About Ampt
Ampt delivers innovative power conversion technology and communications capabilities that improve the way PV systems are designed. With installations and experience serving markets around the world, the company is headquartered in Fort Collins, Colorado and has sales and support locations in North America, Europe, Japan, and South Korea as well as representation in Asia, Australia, and the Middle East. Along with our strategic partners in the HDPV Alliance, Ampt is lowering the cost of solar energy, improving project ROI, and broadening the PV solar market.

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