December 23, 2022

Company: Nidec-Read Corporation
Representative: Hidekazu Yamazaki
Address: Nidec Park Bldg. C, 1-1, Higashinokuchi, Morimoto-cho, Muko-shi, Kyoto, 617-0003, Japan

Nidec-Read Launches High-speed Semiconductor Inspection Device NATS-1000

- 6-in-1 IGBT – Inspection Equipment with Top-class Speed in the World -

Nidec-Read Corporation ("Nidec-Read" or the "Company") announced today that it has launched **NATS-1000**, fully automatic inline semiconductor inspection equipment to test the functions of automotive IGBT (insulated gate bipolar transistor) /SiC (silicon carbide) modules.

NATS-1000

1. NATS-1000: How it was developed and its features

The demand for automotive power devices (semiconductor devices) has been growing rapidly in recent years. Nidec-Read's NATS-1000 was initially developed for a Nidec Group company owned by Nidec Corporation ("Nidec"), the Company's parent, to internally create NATS-1000's inspection process, and optimize cost, quality, and inspection speed based on the viewpoints of its traceability-focused automobile manufacturers. Now, NATS-1000 is used to inspect semiconductors supplied to Nidec, including those for its traction motor system, "E-Axle," supporting the production of the Nidec Group's products. NATS-1000's features include its fast inspection speed, which is required for high/low temperature tests and inline inspections. In fact, the speed is one of the fastest among the inspection equipment of similar types in the world.

As vehicles are used under harsh, scorching conditions, automotive IGBT/SiC modules are usually inspected under a similar high-temperature environment, and temperature control and management are required as important functions. NATS-1000, which operates statically in a hot environment at 150ºC - 175ºC, and equipped with a heating-up bath and a normal-temperature cooling bath to perform a dynamic performance test, maintains its inspection speed based on thermal capacity, which differs among module models.

NATS-1000 divides inspections into four stages of normal-temperature insulation, high-temperature static characteristics, high-temperature dynamic characteristics, and normal-temperature static characteristics, to spread and parallelize inspections to constantly perform them fast, and contribute to improving productivity. In addition, a single NATS-1000 unit can inspect 800,000 units (6in1[*1] IGBT modules) per year, making the equipment highly cost-efficient and flexible enough to accommodate inspection capacity expansion based on the demand for automotive power semiconductors.

2. Going forward

At present, NATS-1000 chiefly inspects semiconductors, covering up to automotive 6in1[*1] IGBT units. However, as EVs are customized, and as demand increases for a wider variety of semiconductors, the Company will make

available kits that enable short-term model changes. Thus, Nidec-Read is poised to flexibly provide support for automotive semiconductors, especially SiC-MOSFET (silicon carbide metal-oxide-semiconductor field-effect transistor) and other small modules. Such flexibility will enable NATS-1000 to handle various applications, ranging from motor to EV inverter to high-speed EV battery recharger to air conditioner to uninterruptible power source (UPS), contributing to efficient use and therefore reduced cost of equipment.

The Nidec Group stays committed to producing related products in-house, improving motors' energy efficiency to save electricity consumption, and proposing revolutionary solutions that contribute to reducing burden on the global environment.

*1. 6 in1: A unit that contains six IGBT and six FWD (free wheel diode) units

For inquiries on the above product, please contact:
Planning Department, A&T Business Division, Nidec-Read Corporation
Tel.: +81-75-280-8100 (main)
Fax: +81-75-280-8105
Email: READ-WEB@nidec.com

On April 1, 2023, Nidec-Read Corporation will be renamed Nidec Advance Technology Corporation.

-###-