

Meeting market demands

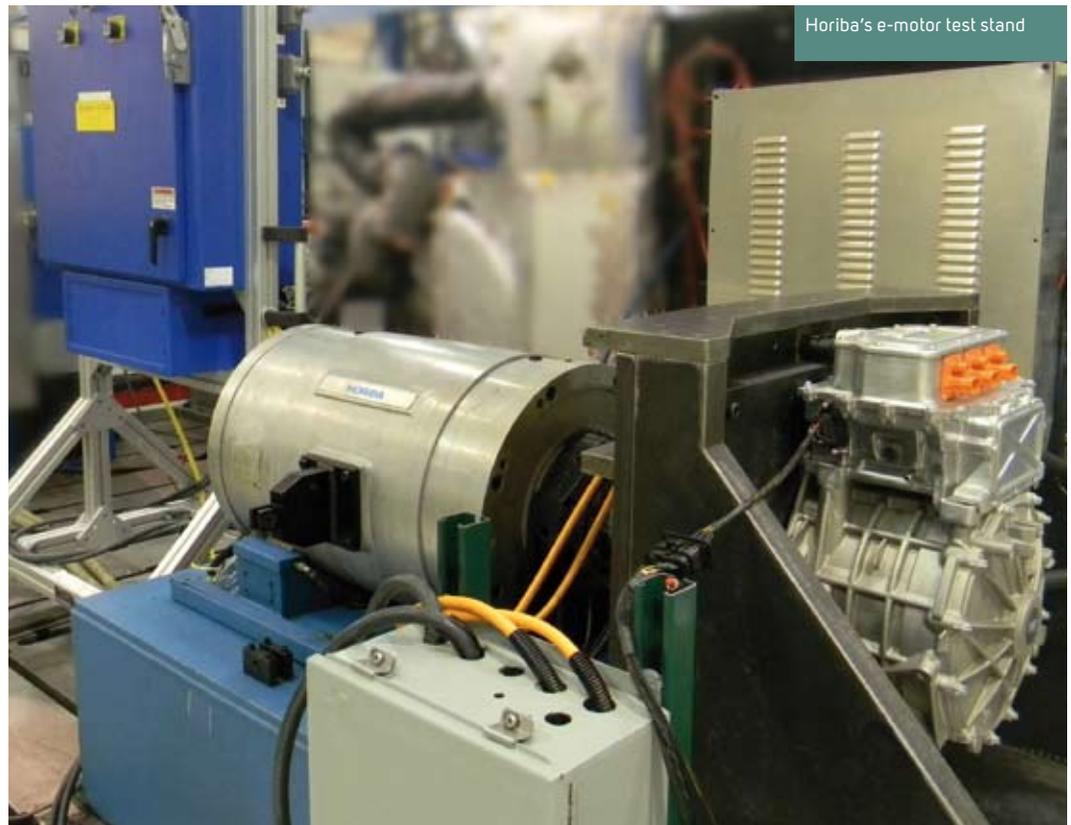
As the automotive industry is pushed for increased electric-motor power and performance, OEMs and Tier 1s require testing partners with proven experience

▶ In 2005, General Motors, Mercedes, Chrysler, and BMW joined forces to form The Global Hybrid Cooperation and develop a groundbreaking two-mode hybrid system. When the team needed a reliable powertrain-testing company for its award-winning design, it turned to Horiba. Ever since, Horiba engineers have continued to refine e-motor development testing for all major OEMs and Tier 1 suppliers worldwide, with cutting-edge test methods and ever-changing dynamometer torque-speed-power envelopes.

As demands accelerate for increased efficiency, highest possible safety standards, and fast system integration, the company has responded in its contract testing lab in Troy, Michigan, and its e-motor test-stand (EMTS) installations around the globe, including the GM One-Lab facility in Pontiac, Michigan.

Building on over six years of e-motor testing, Horiba continues to extend the product and services required for verification, validation, durability, and calibration of the electrified vehicle. Today, a number of Tier 1 and e-motor developers turn to Horiba's hybrid engineering team when they need to test their e-motors and electrified vehicle driveline systems on a contract basis. After first working with the company's contract test team, many of these suppliers come back to Horiba when they decide to purchase their own equipment as their business expands.

One innovative solution that has become a standard within the Horiba EMTS technology portfolio features innovative dual-ended dynamometers. These machines can achieve a top speed of up to 12,000rpm, rated torque of 1,200Nm, and up to 200%



overload. Peak torque of 2,400Nm and high-accuracy torque and speed measurement enables enough versatility to test all of today's e-motor product solutions, as well as e-motors that are developed well into the future. The dual-ended design increases throughput for durability testing by enabling the system to run two simultaneous devices under test (DUTs). To enhance system performance further, the DUT-support fixture, shaft connections, and dynamometer base have been engineered using FEA, and have been validated for speeds of up to 18,000rpm.

In addition, Horiba's labor saving e-motor testing fixtures and

accessories are currently in use in test cells around the world at major OEMs and Tier 1 suppliers. For example, an in-cell hybrid safety lock-out enclosure for high-voltage power connections – a device for locking the rotor integrated into the DUT support fixture – has distributed IOs directly at the DUT for fast conversion and data transfer via Ethernet communication, and comprehensive automation of tasks, workflows, and data management. In addition to this, a universal inverter with battery simulation enables users to configure the system as a programmable DC-voltage source to connect to potential power inverter modules; or as the test-stand inverter for

induction of permanent-magnet e-motors. Horiba also offers customized DUT cooling systems and DUT inverter cooling with or without real-world environmental condition simulation that can be added as part of the total system solution. ⚙️

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