

News Release



BorgWarner Expands High Voltage Hairpin Electric Motor Series, Introduces HVH 146

- *Compact package delivers 35 kW peak power and 65 Nm of torque*
- *Features precision-formed wiring method to enable higher efficiency and power density*
- *Start of production planned for early 2020*

Auburn Hills, Michigan, December 5, 2019 – BorgWarner is expanding its electric motor offerings with the introduction of its new High Voltage Hairpin (HVH) 146 motor, which is expected to go into production on a light-duty hybrid passenger car with a major OEM in early 2020. This electric motor joins BorgWarner’s family of patented and versatile HVH Series motors, available as fully-housed motors or rotor/stator assemblies. Flexible by design, HVH Series motors come in a variety of configurations and offer scalable output and torque.

The HVH 146, an interior permanent magnet electric motor, is best suited for belt-drive integration at P0 in hybrid electric vehicle (HEV) applications, where a traditional alternator would be placed. It’s mounted to the front of the engine through a high-tension belt system which allows it to operate at high power levels and speeds up to 16,500 rpm. Beyond being used as a stop/start device, it also can be used for regeneratively charging the battery pack when the vehicle is braking or coasting. The HVH 146 electric motor also provides a peak torque of 65 Nm as well as 95 percent peak efficiency delivering clean auxiliary power for increased driving range. Capable of delivering 35 kW peak power and 65 N•m (47.9 lb.-ft.) of peak torque while weighing only 14 kg (30.9 pounds), it achieves more than double the power-to-weight ratio of a traditional alternator.

“As a leader of clean and efficient propulsion systems, we continue to build up our already comprehensive portfolio of powerful electric motors that deliver industry-leading power and torque

densities,” said Dr. Stefan Demmerle, President and General Manager, BorgWarner PowerDrive Systems. “The introduction of BorgWarner’s HVH 146 motor further enables us to help our customers simultaneously meet consumer needs and government regulations, including the need for advanced, highly efficient and environmentally-friendly technologies.”

Developed as a highly functional solution for OEMs, the motor was designed for easy integration. It features a compact package with high- and low-voltage connectors as well as the required coolant connections. The HVH Series utilizes a precision-formed rectangular wire and multiple layers of interlocking “hairpins” in place of the traditional round wire windings. This proprietary wiring method, along with the size of the wire, enables the motor to achieve higher power density and efficiency. Its water-cooled properties add to its impressive power density capability.

Initially launching on a light-duty hybrid passenger vehicle, BorgWarner’s HVH 146 also can be applied to the commercial vehicle market. In addition, it can be tailor-made to fit specific requirements and be utilized in various positions, in addition to P0, throughout a hybrid vehicle.

About BorgWarner

BorgWarner Inc. (NYSE: BWA) is a global product leader in clean and efficient technology solutions for combustion, hybrid and electric vehicles. With manufacturing and technical facilities in 67 locations in 19 countries, the company employs approximately 30,000 worldwide. For more information, please visit borgwarner.com.



BorgWarner’s new High Voltage Hairpin (HVH) 146 motor

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