



## **BorgWarner's P2 Module: a Comprehensive Hybrid Vehicle Solution**

- *Enables both hybrid and pure electric driving*
- *Compact designs for cost effective integration*
- *Variety of configurations meet customers' needs*

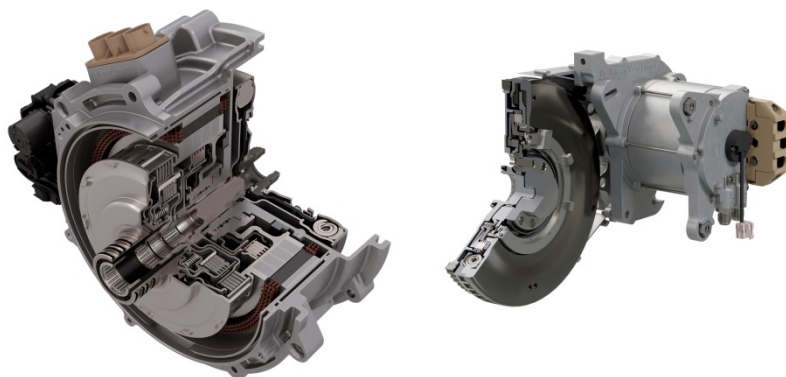
Auburn Hills, Michigan, January 16, 2018– In order to support the transition to cleaner and more efficient vehicles, BorgWarner offers its P2 module for hybrid electric vehicles (HEVs) to customers all over the world. Available as both on- and off-axis configurations, the company's highly flexible technology facilitates fast-to-market hybridization by enabling pure electric driving as well as hybrid functionalities such as stop/start, regenerative braking and supplemental electric propulsion. By uniting all required components in a compact package, BorgWarner's advanced solution can easily be implemented in existing drivetrains, enabling high degrees of existing capital utilization and hybrid volume flexibility for automakers. Furthermore, both configurations of the company's P2 module provide significant CO<sub>2</sub> emission reductions with low added costs compared to other hybrid architectures. Given the capability to design, develop and manufacture all required parts of this comprehensive hybrid propulsion solution, such as power electronics, electric motors, chain systems, clutching systems and controls in-house, BorgWarner is uniquely positioned on the market.

"With our innovative and highly adaptable P2 modules, we offer tailor-made solutions that meet our customers' specific requirements. In order to provide an optimal propulsion system solution, we regularly join forces with global OEMs – today we are pleased to announce a comprehensive development contract with a Chinese automaker for our on-axis design," said James R. Verrier, President and Chief Executive Officer, BorgWarner. "Trends like autonomous driving, connected cars, ride sharing and efficiency are driving change in the automotive industry, and P2 hybrids are receiving a great deal of attention. As a leading supplier for clean and efficient technologies for combustion, hybrid and electric vehicles, we are uniquely positioned to enable these trends and support automakers around the globe as they move toward a clean, energy-efficient future."

Placed between the internal combustion engine and the transmission, BorgWarner's P2 modules are capable of decoupling the engine for limited pure electric driving. They enable both mild hybrid architectures with 48V power supplies as well as conventional high-voltage applications. Moreover, BorgWarner's cutting-edge hybrid solutions combine an efficient electric traction motor, power electronics, an engine disconnect clutch and clutch control module as well as a dual mass flywheel in one compact module that needs minimal axial space. To address the highly varied application spectrum for hybridization, BorgWarner developed two design variants: on-axis and off-axis. In the former, the electric motor is located directly on the main axis enabling easy integration and a compact overall package. This configuration allows several clutch options, offers high power density and increases fuel efficiency as well as performance. The off-axis configuration places the electric motor parallel to the main axis for an even more compact axial package minimizing changes necessary to implement with existing engines and transmissions. Torque is transferred via a highly efficient and durable chain. This design offers compatibility with manual, automatic and dual-clutch transmissions and addresses the tight packaging of modern drivetrains. In addition, it allows the use of different gear ratios and the integration of further chain-driven components.

### **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 64 locations in 17 countries, the company employs approximately 27,000 worldwide. For more information, please visit [borgwarner.com](http://borgwarner.com).



BorgWarner's on- and off-axis P2 modules for HEV facilitate fast-to-market hybridization and enable pure electric driving for significant CO<sub>2</sub> emission reductions.

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