



BorgWarner Provides Clean Vehicle Solutions for Every Type of Propulsion System

- *Turbocharger and VCT applications in hybrid and combustion vehicles projected to grow for the next 10 years*
- *Stop/start use expected to reach 65 percent of combustion vehicles by 2027*
- *BorgWarner provides solutions to meet each market's needs*

São Paulo, Brazil, March 27 2019 – A global leader in clean and efficient technologies, BorgWarner provides solutions to improve the performance and efficiency of all propulsion systems, from combustion to hybrid and electric vehicles. Whatever the need, the company offers a broad product portfolio to help automakers meet the strictest global fuel economy and emissions standards.

Combustion Vehicles

As demand for internal combustion vehicles continues play an important role in mobility, BorgWarner tackles one of the greatest challenges facing the automotive industry: making them efficient and clean.

“In 10 years, we expect global turbocharger use in combustion vehicles to rise from 43 percent in 2017 to 59 percent in 2027, while adoption of variable cam timing (VCT) systems will increase from 65 to 72 percent. This underscores the importance of continuing to develop more efficient technologies, even for the internal combustion vehicle market,” said Scott Gallett, Vice President, Marketing, Public Relations, Communications and Government Affairs.

According to research by BorgWarner, exhaust gas recirculation (EGR) systems are forecast to grow to a 42% penetration rate by 2027, and stop/start systems are projected to be used in 65 percent of combustion vehicles by 2027, compared with 42 percent in 2017.

“With our deep expertise in developing and producing these products, we are ready to support Brazilian market demands. Our plant in Itatiba, for example, was responsible for delivering the first flex turbocharger for entry-level 3-cylinder vehicles in Brazil and debuting VCT

system production in the country for automakers here and in Mexico,” said Vitor Maiellaro, General Manager, BorgWarner Brazil. “Our PowerDrive Systems business, located in Brusque, Santa Catarina state, has also started the first project to produce a stop/start system made in Brazil.”

Hybrid Vehicles

Demand for hybridization is also growing stronger. BorgWarner's product portfolio covers virtually all areas of these propulsion systems, including electric drive motors, hybrid transmission modules, power electronics and thermal management, helping to significantly reduce emissions.

In Brazil, hybrid solutions are gaining momentum since they are an attractive solution when paired with an ethanol engine to improve overall efficiency. BorgWarner offers several hybrid propulsion systems, type P1 (where the electric machine is connected directly to the internal combustion engine) to type P4 hybrids (in which the combustion and electric engine act on different axles).

“BorgWarner’s P2 hybrid module solution enables automakers to offer hybrid vehicles using their current engine architecture with small changes,” said Gallett. “In the hybrid segment, we expect the application of turbochargers to leap from 20 percent in 2017 to 67 percent in 2027. VCT systems in hybrid vehicles are anticipated to grow from 63 to 70 percent, while we forecast dual-clutch technology in hybrid vehicles to increase 15 to 36 percent over the same period.”

Electric Vehicles

BorgWarner also offers electric vehicle propulsion solutions, a market that is growing worldwide as well as in Brazil. The company’s products include complete electric drive modules, electric motors, transmissions, power electronics, battery heaters and cabin heaters. BorgWarner foresees global growth from 900 thousand electric vehicle produced in 2017 to 5.6 million in 2023.

"With different needs in different markets, BorgWarner offers a broad portfolio of technologies, encompassing combustion, hybrid and electric propulsion systems. We have the experience and localized manufacturing capability to provide these products to customers around the world," said Gallett.

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

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in 68 locations in 19 countries, the company employs approximately 30,000 worldwide. For more information, please visit borgwarner.com.

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