



BorgWarner Creates High-Voltage, Electrified Demonstration Vehicle

- *BorgWarner transformed an Ariel Nomad into comprehensive electrified demonstration vehicle*
- *Vehicle showcases BorgWarner's complete electric propulsion system capabilities*
- *Company's new ride helps expedite research, development and validation processes for implementing new technologies*

Auburn Hills, Michigan, October 25, 2019 – BorgWarner, a leader in advanced propulsion systems, is proving its electrification expertise with the development of its Corporate Advanced Engineering (CAE) group's first high-voltage, all electric demonstration vehicle. The new test platform, created from the all-terrain Ariel Nomad, gives its engineering team and customers a comprehensive view of BorgWarner's technologies as well as their performance. The technologies highlighted on the vehicle include traction inverters, a torque-vectoring rear drive unit, an electric coolant pump, vehicle and traction control software, a DC/DC converter and a high-voltage battery pack, magnifying the company's product leadership and ability to deliver an entirely electric propulsion system. <https://youtu.be/hEAu7SnaMWA>

"Our new high-voltage demonstration vehicle illustrates BorgWarner's leadership in electrification and gives us a fantastic tool to showcase our extensive capabilities, collaborate with industry partners and evaluate BorgWarner's current and future technology at a system-level," said Hakan Yilmaz, Vice President and Chief Technology Officer, BorgWarner Inc. "We will continue to embrace projects such as this EV demonstration vehicle that help us validate next-generation products and, ultimately, propel the industry toward a cleaner, more energy-efficient world."

A benefit of the vehicle's electrified powertrain is its improved steering response made possible through torque vectoring. This feature allows both forward motion and regenerative braking, delivering a dynamic and controllable driving experience. Another key technology is

BorgWarner's thermal-management system, which circulates coolant via an electric pump through the inverters and battery pack. The liquid-cooled, 350V 30kWh pack delivers peak power of 200kW.

Beyond the significant propulsion technologies that make up the vehicle, BorgWarner's CAE group was able to build its demo vehicle in just six months. Part of the reason the Ariel Nomad was chosen as the base vehicle for this demonstration project was the ease of access to install and remove components due to the open-air design of the vehicle.

The vehicle also is a proving ground for BorgWarner's partner companies. Cascadia Motion, a BorgWarner-owned company, developed the rear-wheel-drive system featuring two separate BorgWarner High-voltage Hairpin (HVH) 250 electric motors and eGearDrive gear sets, each one independently controlling a rear wheel. This system, also featuring two of BorgWarner's inverters, gives complete authority over the vehicle and enables more power and durability.

In addition, BorgWarner's joint venture with Romeo Power, a leading-technology battery pack and module supplier, allows BorgWarner to power the demonstration vehicle with different configurations of battery power, and test and validate particular battery pack applications for specific vehicle goals or driving experiences. The joint venture's battery modules and packs are expected to include intelligent battery management systems with proprietary algorithms for enhanced performance and cycle life, as well as proprietary thermal engineering for active and passive cooling.

The speedy and proficient evolution of the demonstration vehicle exemplifies BorgWarner's competence in rapidly implementing new technologies for future projects – a timeline that will steadily get faster through the use of this new, powerful demo 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.

About Cascadia Motion LLC

Cascadia Motion LLC was created to combine assets and operations of the former Rinehart Motion Systems and AM Racing into one company that is wholly owned by BorgWarner. Based in Oregon, Cascadia Motion specializes in design, development and production of hybrid and electric propulsion solutions for prototype and low-volume production applications.

About Romeo Power Technology

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Romeo was founded in 2015 by a group of engineers from SpaceX, Tesla, and Samsung on a mission to advance energy technology so they could help end energy poverty. They build “tighter and lighter” battery packs for electric vehicles and stationary energy storage that perform better and last longer thanks to industry-leading energy density and battery management. Learn more at romeopower.com.



BorgWarner's new high-voltage, all-electric demonstration vehicle exemplifies the company's advanced propulsion capabilities and supports the rapid implementation of future technologies.

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