



**THREE BORGWARNER TECHNOLOGIES**  
**NAMED FINALISTS FOR THE 2013 AUTOMOTIVE NEWS PACE AWARDS**

*BorgWarner's Regulated Three-Stage Turbocharging System,  
Advanced Compact Brushless Actuator and  
Visctronic High-Speed Reservoir System Honored as Finalists*

Auburn Hills, Michigan, October 18, 2012 – Three BorgWarner technologies have been named finalists for the prestigious 2013 Automotive News PACE Awards:

- BorgWarner's **regulated three-stage (R3S) turbocharging system** combines the benefits of two-stage turbocharging for high specific power output and parallel sequential turbocharging for best drivability. The innovative technology increases power density while improving fuel economy and reducing emissions for downsized diesel engines.
- BorgWarner's **advanced compact brushless actuator (CBA)** is a patented, electronic rotary actuator that precisely controls a variety of functions, including exhaust gas recirculation valves, wastegate valves, variable turbine geometry (VTG) turbochargers and exhaust throttle valves. Engineered to deliver high torque, fast response and excellent durability even in high-temperature environments, the technology helps vehicle makers reduce nitrogen oxide emissions, optimize power and achieve better fuel economy.
- BorgWarner's **Visctronic<sup>®</sup> high-speed reservoir (HSR) system** provides faster response, increased durability and more precise electronic fan control. Compared with competitive systems, the technology augments the engine power used in the cooling system, allowing for better performance and improved fuel economy.

“BorgWarner’s first-to-market innovations are driving the auto industry forward with technologies engineered to improve fuel economy, reduce emissions and enhance performance,” said Timothy M. Manganello, Chairman and Chief Executive Officer, BorgWarner. “We are passionate about developing the next wave of must-have technologies to help engines become more powerful, efficient and environmentally friendly. It is an honor to be among this year’s distinguished PACE finalists once again.”

### **PACE Finalist: Regulated Three-Stage (R3S) Turbocharging System**

In 2004, BorgWarner introduced regulated two-stage (R2S<sup>®</sup>) turbocharging, bringing the advantages of an advanced technology to the broader diesel engine market. Driven to satisfy escalating demand for increased fuel economy and more powerful performance, BorgWarner engineered the R3S turbocharging system which consists of two small high-pressure VTG turbochargers integrated with one larger low-pressure turbocharger. Developed in close collaboration with BMW, this first-to-market technology includes entirely new components specifically developed for fuel-efficient turbocharging and is expected to become a mainstream technology.

### **PACE Finalist: Advanced Compact Brushless Actuator (CBA)**

To help diesel engine manufacturers meet more stringent emissions regulations in the U.S. and Europe, BorgWarner’s patented, electronic rotary CBA precisely controls EGR valves, wastegate valves, VTG turbochargers and exhaust throttle valves to reduce harmful nitrogen oxide emissions. Featuring a sophisticated, electronic actuator and low-weight gear train, the CBA delivers high torque, fast response and excellent durability, all while operating at very high temperatures. Built for flexibility and performance, BorgWarner’s CBA controls the exhaust throttle application in agricultural equipment as well as engine boost in performance race cars.

### **PACE Finalist: Viscronic<sup>®</sup> High-Speed Reservoir (HSR) System**

Traditional engine-driven viscous fan drive systems deliver the torque required to adequately cool the engine, but still draw considerable power from the engine when not in

use. Using improved electronics and a multitude of inputs, including engine speed, vehicle speed or engine load, the engine management system determines the best response for the vehicle's cooling system under dynamic vehicle performance conditions. Because the Visctronic HSR system operates only when needed, the average fan speed in any given duty cycle is lower, and the vehicle operates more efficiently, uses less fuel and emits fewer emissions. The new technology also improves driver comfort by lowering noise, vibration and harshness. Quickly becoming the cooling system of choice for a broad array of vehicles including vans, pickups, heavy-duty trucks and off-road vehicles, the Visctronic HSR system is supplied by BorgWarner to several large North American vehicle manufacturers.

### **About the PACE Awards**

Sponsored by *Automotive News*, Ernst & Young and the Transportation Research Center Inc., the 19<sup>th</sup> annual PACE Awards honor superior innovation, technological advancement and business performance among automotive suppliers. Known around the world as the industry symbol of innovation, PACE stands for Premier Automotive Suppliers' Contribution to Excellence. All three BorgWarner innovations were named finalists in the Product category. Winners are selected by an independent panel of judges and will be announced in Detroit on April 15, 2013. Since 2005, BorgWarner has received six PACE Awards, three PACE Innovation Partnership Awards and one PACE Environmental Award.

### **About BorgWarner**

Auburn Hills, Michigan-based BorgWarner Inc. (NYSE: BWA) is a technology leader in highly engineered components and systems for powertrain applications worldwide. Operating manufacturing and technical facilities in 57 locations in 19 countries, the company develops products to improve fuel economy, reduce emissions and enhance performance. Customers include VW/Audi, Ford, Toyota, Renault/Nissan, General Motors, Hyundai/Kia, Daimler, Chrysler, Fiat, BMW, Honda, John Deere, PSA, and MAN. For more information, please visit [borgwarner.com](http://borgwarner.com).