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Chrysler Group Partners with Canadian Government, McMaster University to Develop Advanced Electric and Hybrid Powertrains

- Total project investment $18.2 million ($9.25 million from Chrysler Group; $8.93 million from the Natural Sciences and Engineering Research Council of Canada)
- Goal to develop next-generation, energy-efficient, high-performance electrified powertrains and powertrain components suitable for a range of vehicle applications
- Work to be performed primarily at McMaster University by research engineers, faculty members, engineering students and engineers from Chrysler Group's Global Electrified Powertrain Group
- Students to benefit from training and possible recruitment by Chrysler Group

October 24, 2013, Hamilton, Ontario - Chrysler Group LLC has entered a 5-year, $18.2 million partnership with McMaster University, with funding support from the Canadian government, to develop next-generation, energy-efficient, high-performance electrified powertrains and powertrain components.

The partnership was announced today by the Honourable Greg Rickford, Canada's Minister of State for Science and Technology. It will see Chrysler Group invest $9.25 million in cash and in-kind contributions, with an additional $8.93 million coming from the Natural Sciences and Engineering Research Council of Canada (NSERC), the lead agency within Automotive Partnership Canada (APC), an initiative that supports industry research at Canadian universities and government laboratories.

Work will be centred at McMaster University, where 20 engineers from Chrysler Group's Global Electrified Powertrain Group and seven McMaster research engineers will team with 16 faculty members and 80 graduate and undergraduate engineering students.The partners will also use Chrysler Group laboratories and test vehicles.

"Legislative pressure and socioeconomic forces are compelling the auto industry to deliver unparalleled technological advancement at an unprecedented rate," said Bob Lee, Chrysler Group Vice President and Head of Engine, Powertrain and Electrified Propulsion Systems Engineering. "This project harnesses the kind of intellectual capital and collaboration required to respond to such challenges. The result – superior technology developed from efficient new processes.

"Chrysler Group is grateful for the support of the Canadian government and McMaster University, a world-class institution with faculty to match," Lee added.

McMaster's Dr. Ali Emadi is the Canada Excellence Research Chair (CERC) for Hybrid Powertrain Research. Sponsored by Canada's federal government, the CERC program supports universities in their efforts to build on Canada's growing reputation as a global leader in research and innovation.

"We at McMaster are truly excited by the opportunities this funding creates," said McMaster President Patrick Deane. "It allows our researchers to focus on developing the automotive technology that will enable more

sustainable, efficient, and safe travel, as well as promote greater economic stability.

“We are grateful for the investments of resources and trust from our partners, and we look forward to the creation of technological advances that will yield benefits for our community and for society at large.”

To advance Chrysler Group’s electrification strategy, the partnership will develop multiple prototypes of critical components, platforms and tools that will strengthen the company’s future product lines. Six facets of vehicle electrification will be explored:

- Electrified powertrain architecture and optimization
- Power electronics
- Electric machines
- Motor control
- Energy management systems
- Embedded software

Because low production volumes and the associated high component costs have conspired to limit market penetration of electrified vehicles, affordability will be a hallmark of the technology that emerges from the Chrysler-McMaster partnership. For example, the electric machine activity will target ways to reduce rare-earth mineral content in the magnets that enable electric motor function.

Component reliability, durability, weight, size and scalability will be primary considerations as commercial applications are expected to span a variety of powertrains and a range of vehicle segments.Energy storage solutions such as ultra-capacitors also will be a key focus.

"Our Government is investing in automotive research and development to put greener, better-performing vehicles on the road to create jobs, strengthen the economy and improve the quality of life of Canadians," said Minister Rickford. "Automotive Partnership Canada does just this - builds research capacity, drives innovation, and increases the competitiveness of our industries. Today's announcement allows Canada's knowledge and know-how to be shared with even more people and businesses from around the world and provides us with even greater opportunity for growth."

In addition to the technological gains Chrysler Group will reap from the partnership, students will benefit from training in an area of growing importance to the auto industry.

Chrysler Group also will be on the lookout to bolster its engineering ranks by drawing from the pool of skilled McMaster graduates, Lee said.

Chrysler Canada employs more than 200 engineers at two assembly plants, a casting plant and the Chrysler Canada/University of Windsor Automotive Research and Development Centre in Windsor, ON.

The project consists of three phases, each building on the achievements of the previous one. The final phase is scheduled to conclude in March of 2018.

The partnership builds on Chrysler Group’s current electrification endeavours, such as the 2013 launch of the widely acclaimed Fiat 500e battery-electric vehicle (BEV) and the company’s industry-leading research into vehicle-to-grid technology.

Chrysler Group’s ongoing cooperation with the U.S. Department of Energy has produced test fleets that included the first factory-assembled vehicles with vehicle-to-grid capability and the first factory-assembled Advanced Technology Partial Zero-Emissions Vehicles (APTZEVs) to pair plug-in hybrid technology with V-8 engines.

The partnership also complements Chrysler Group’s concerted efforts to develop clean-running, capable powertrains for today’s motorists. Since 2009, the company has invested $2.6 billion in projects that benefit the production of advanced engines and transmissions – more than 41 per cent of its total investment in manufacturing.

For model-year 2014, Chrysler Group will introduce four new engines,

one of which – the 3.0-liter EcoDiesel V-6 – will deliver best-in-class fuel economy ratings in two of North America's most vital and vibrant vehicle segments: full-size pickup truck (Ram 1500) and mid-size SUV (Jeep Grand Cherokee). In addition, Chrysler Group is launching the world's first production vehicle to feature a nine-speed automatic transmission.http://media.chrysler.com/newsrelease.do?id=14494&mid=97

About McMaster University

McMaster University, one of four Canadian universities listed among the Top 100 universities in the world, is renowned for its innovation in both learning and discovery. It has a student population of 28,000, and more than 159, 000 alumni in 139 countries.

About NSERC

NSERC is a federal agency that helps make Canada a country of discoverers and innovators for all Canadians. The agency supports some 30,000 postsecondary students and postdoctoral fellows in their advanced studies. NSERC promotes discovery by funding more than 12,000 professors every year and fosters innovation by encouraging about 2,400 Canadian companies to participate and invest in postsecondary research projects.

About Automotive Partnership Canada

Automotive Partnership Canada (APC) is a partnership of five federal research and granting agencies under the Industry Canada umbrella. It provides research funding to support significant, collaborative R&D activities that will benefit the entire Canadian automotive industry. APC's mission is to support R&D that will help drive the Canadian automotive sector to a greater level of innovation.

About Chrysler Canada Inc.

Chrysler Canada Inc. is a wholly owned subsidiary of Chrysler Group LLC. In addition to its assembly facilities, which produce the Chrysler Town & Country, Dodge Grand Caravan, and Ram Cargo Van in Windsor, and the Chrysler 300, Dodge Charger, and Dodge Challenger in Brampton, Chrysler Canada operates an aluminum casting plant in Etobicoke, a research and development centre in Windsor, and has sales offices and parts distribution centers throughout Canada.

About Chrysler Group LLC

Chrysler Group LLC, formed in 2009 from a global strategic alliance with Fiat S.p.A., produces Chrysler, Jeep, Dodge, Ram, SRT, Fiat and Mopar vehicles and products. With the resources, technology and worldwide distribution network required to compete on a global scale, the alliance builds on Chrysler Group's culture of innovation, first established by Walter P. Chrysler in 1925, and Fiat's complementary technology that dates back to its founding in 1899.

Headquartered in Auburn Hills, Mich., Chrysler Group's product lineup features some of the world's most recognizable vehicles, including the Chrysler 300, Jeep Wrangler, Dodge Challenger and Ram 1500. Fiat contributes world-class technology, platforms and powertrains for small- and medium-size cars, allowing Chrysler Group to offer an expanded product line including environmentally friendly vehicles.

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