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UNIVERSITY OF WATERLOO STUDENTS WIN FIRST-YEAR GM AND DOE CHALLENGE X COMPETITION

Engineering Students Compete to Improve Fuel Economy and Emissions

MILFORD, Mich. – GM and the U.S. Department of Energy, lead sponsors for the *Challenge X: Crossover to Sustainable Mobility* engineering competition, congratulated students from the University of Waterloo, who took top honors today at the first-year competition.

The Waterloo team, located in Ontario, Canada, was among 17 universities from across North America that created a virtual advanced propulsion technology vehicle solution with the goal of improving on-road fuel economy and reducing emissions. The Waterloo team's propulsion technology design is a series fuel cell hybrid that uses a Hydrogenics PEM fuel cell engine with a COBASYS 288-volt NiMH battery and a Ballard 54-kilowatt electric drive. The design will be engineered into a 2005 Chevrolet Equinox in years two and three of the Challenge X competition.

The second place advanced propulsion technology solution, designed by students at the University of Akron, is a through-the-road parallel hybrid with a 1.9-liter Volkswagen TDI engine that runs on biodiesel fuel and a Ballard 65-kilowatt/45-kilowatt drive motor. Ohio State University was awarded third place overall with their design for a through-the-road parallel biodiesel hybrid that uses a Panasonic NiMH battery and a 1.9-liter Fiat 110-kilowatt CIDI engine.

“Developing the advanced technologies that reduce U.S. dependence on imported oil is critical to the future prosperity of our country. Challenge X shows that the cooperation of industry, government and academia is an excellent approach to developing more energy-efficient and ‘greener’ automotive technologies,” said Ed Wall, program manager for the FreedomCAR and Vehicle Technologies Office of the U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy.

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Larry Burns, vice president of GM's Research and Development and Planning, said the Challenge X teams are working on the same real-world challenge that GM engineers are marching toward on a daily basis.

"You are working on the same challenges that our GM engineers continually work on every day – high-efficiency, high performance vehicles that consume less fuel and produce fewer emissions from the well to the wheel," said Burns. "This hands-on learning will provide you an unparalleled experience that will enable you to embark on a career in engineering with a competitive advantage."

All 17 teams met the minimum Challenge X goals during the first year of the competition, and today each team received the keys to a 2005 Chevrolet Equinox.

The three-year program follows GM's Global Vehicle Development Process. Year one focused on vehicle simulation and modeling and subsystem development and testing, introducing the students to the engineering trade-offs that occur in the early stages of vehicle design. In years two and three, students will integrate their advanced powertrains and subsystems into the Chevrolet Equinox, a compact SUV that already provides competitive fuel economy. Competitions are held at the end of the 2006 and 2007 academic years to showcase the teams' learning and vehicle development from year to year.

The additional teams participating in Challenge X include Michigan Technological University; Mississippi State University; Pennsylvania State University; Rose-Hulman Institute of Technology; San Diego State University; Texas Tech University; University of California, Davis; University of Michigan; University of Tennessee; University of Texas at Austin; University of Tulsa; University of Wisconsin-Madison; Virginia Tech; and West Virginia University.

DOE and GM are the headline sponsors for Challenge X. Other sponsors include Natural Resources Canada; The MathWorks; National Instruments; the U.S. Environmental Protection Agency; the U.S. Department of Transportation; National Science Foundation; Visteon Corporation; Delphi Corporation; BP; Dana Corporation; Freescale Semiconductor; Cobasys; ChevronTexaco Technology Ventures; Johnson Controls, Inc.; Ballard Power Systems, Inc.; Michelin North America; AVL North America, Inc.; Sensors, Inc.; dSPACE, Inc.; IAV Automotive Engineering, Inc.; Opal-RT Technologies, Inc.; Compact Power, Inc.; Governors' Ethanol Coalition; Renewable Fuels Association; MotoTron Corporation; UGS; Ricardo; Gamma Technologies, Inc.; Igus, Inc.; Maxwell Technologies; Hydrogenics Corporation; OnStar and XM Satellite Radio.

Additional information about Challenge X is available on the Web at <http://www.challengex.org>.

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Photos of this event are available online at: www.wieck.com and at www.media.gm.com.