

# autotech<sup>daily</sup>™

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OCTOBER 23, 2007  
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## Talk Back

Click [HERE](#) to respond to this week's reader question:  
How would you describe the quality of Toyota vehicles?

### *electronics*

#### **INFINITI TO GIVE DRIVERS CHOICE ON NEW LANE DEPARTURE SYSTEM**

Valeo SA's new lane-departure prevention system warns drivers when they stray from their intended course and gently nudges a vehicle back on track by applying the brakes to the appropriate wheels. Valeo demonstrated the system to reporters yesterday in Dearborn, Mich.

The French company will supply the camera-based system as an option on two 2008 Infiniti vehicles in the U.S.: the M sedan in November and the new EX crossover in December. But owners will have to push a button after start-up to fully enable the system. Otherwise, only the warning portion of the lane departure monitor will function. Infiniti says it chose an opt-in system because it's the brand's first use of an active technology that works independently of the driver to make a correction.

The system also is safeguarded to prevent interference with intentional maneuvers, such as when the turn signal is on. It will engage only at vehicle speeds above 45 mph and if the steering wheel is turned less than 2°.

### *product planning*

#### **NEXT-GENERATION HONDA NOT FIT YET FOR U.S.**

Honda Motor Co. will launch the second-generation of its Fit small car later this week in Japan. But the car won't arrive in the U.S. until next fall. This will allow Honda to keep selling the current model, which was introduced in the U.S. in April.

The new model is 2.2 inches longer and 0.8 inches wider than the first-generation Fit. It also gets a new 1.3-liter engine. Design changes include more forward A-pillars and enlarged front quarter windows.

Honda hopes to sell 144,000 of the new models next year in Japan. That's twice as many of the current Fits the company expects to move this year in the U.S.

### *research*

#### **MILLIONS FOR MICRONS**

More accurate engine and powertrain component production—and the potential to save U.S. automakers more than \$1 billion per year—is the goal of a new \$4.9 million federal grant awarded to the Powertrain Engineering and Manufacturing Alliance (PEMA).

The primary objective of the PEMA grant, which is part of a larger three-year, \$12 million research program, is to increase U.S. automakers' global competitiveness through reduced variation in component quality. The program's aim is to reduce tolerance levels to two microns or less vs. six times that level today. A micron is roughly one-hundredth the thickness of a human hair.

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PEMA is supported by General Motors, Ford, Chrysler, Coherix, Harley-Davidson, Roush Enterprises, Kettering University and the University of Michigan. Its new grant comes from the National Institute of Standards and Technology unit of the U.S. Department of Commerce.

Based on holographic imaging technology invented at the University of Michigan more than a decade ago, the new “metrology” systems under development by PEMA will enable companies to dramatically improve the speed and precision with which they measure component quality. A long-term objective is to reduce the capital, operating and warranty costs of automotive powertrain programs by 30% or more. The partners also hope to boost powertrain quality, performance and fuel economy.

## *In the Box*

### **MECHATRONICS 101 AND BEYOND**

**E**lectromechanical systems such as electronic stability control continue to gain favor in new vehicles. But there often is a disconnect between the mechanical and electrical engineers that develop such technologies.

Lawrence Technological University Prof. Vladimir Vantsevich says the problem is that neither group can easily explain what it wants in terms the other can understand. To help bridge that gap, Vantsevich spearheaded the launch last year of a new master’s degree program in mechatronics at Lawrence Tech in Southfield, Mich.

Mechatronics degrees are common in Europe and Asia. But the Lawrence Tech program, which melds mechanical, electrical and computer engineering disciplines, is the first in Michigan and one of few in the U.S.

Vantsevich, who has a doctorate in automotive engineering from the Belarusian Polytechnic Institute, joined the Lawrence Tech faculty in 2001 after a nearly 30-year academic career in Belarus, where he specialized in designing driveline systems and control devices. At Lawrence Tech, he began to add courses on control technology to the undergraduate mechanical engineering course work as a precursor to the mechatronics program.

Vantsevich notes that all the courses are new, not repurposed electrical and mechanical engineering classes. In some cases, there aren’t even textbooks. Instead, the focus is on real-world applications, with the goal of teaching students how to design a mechatronic

component from the ground up rather than simply integrating separate subsystems.

Lawrence Tech also has added a mechatronics lab with equipment and software valued at \$460,000 contributed by Bosch, dSPACE, Festo, Kistler USA, KUKA Robotics and National Instruments. In addition, representatives from these companies and other

industry partners serve as adjunct professors to complement a group of six Lawrence Tech professors, led by Vantsevich. In some cases, up to a half dozen outside experts contribute to a single course.

Class titles include Analytical and Adaptive Dynamics, Intelligent Controls, Digital Signal Processing, Advanced Microprocessors and Complex Algorithmic Synthesis.

There are about 30 students in the program, all of whom are practicing engineers. Most are under 30, but there are few 50-year-olds too.

Underscoring the pent-up demand for mechatronics, Vantsevich says applications are flooding in—including from overseas students—now that word of the program has spread. Another good sign: Five of the current students have received promotions since enrolling in the program.



**Vladimir Vantsevich**

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Hampton AutoBeat LLC  
Box 33068  
Bloomfield Hills, MI  
48303-3068  
**Bill Hampton, Publisher**  
(248) 540-2530  
bill@autotechdaily.com

**SUBSCRIPTIONS:**  
Paula Doan  
(888) 771-6430  
paula@autotechdaily.com

**ADVERTISING:**  
Dan Keelan  
(248) 455-7252  
DKeelan@cbs.com

**NEWS:**  
Steve Plumb  
(610) 917-2276  
steve@autotechdaily.com

PEMA's program, which is expected to begin in early November, will require close collaboration between multi-disciplinary researchers in laser holographic interferometer metrology, laser optical system design including SuperContinuum lasers, multiscale data decomposition, data characterization, advanced manufacturing technology and process modeling. The grant will help fund work by engineering faculty members and graduate students at the University of Michigan and Kettering University. Other PEMA members also will provide engineers to the study.

## *fuel cells*

### **CONSUMERS TO TEST GM FUEL CELL VEHICLES**

General Motors Corp. will put 100 fuel cell-powered Chevrolet Equinox SUVs into the hands of U.S. consumers next year. Dubbed "Project Driveway," the program will take place in Los Angeles, New York and Washington, D.C.



**Fuel-cell-powered Chevrolet Equinox**

driveability, reliability, refueling process and safety perceptions.

The Equinox test models will be powered by GM's fourth-generation fuel cell propulsion system. They also will be equipped with the company's OnStar telematics service, which will offer tips on operating the vehicles and provide help in finding hydrogen filling stations.

## *racing*

### **FERRARI DRIVER RAIKKONEN WINS F1 TITLE, MAYBE**

In a year marred by repeated controversy, Formula One's dramatic season-ending race on Sunday added another wrinkle: Ferrari driver Kimi Raikkonen won the race, but his resulting one-point victory in clinching this year's championship was immediately protested by McLaren.

McLaren's two drivers—two-time champion Fernando Alonso, and rookie Lewis Hamilton—finished third and seventh, respectively. Both ended up with 109 points for the year vs. 110 for Raikkonen.

But McLaren says the three cars that finished between Alonso and Hamilton should have been penalized for inconsistencies in fuel temperatures discovered during post-race inspection. If McLaren's appeal is accepted, Hamilton would be elevated to a fourth-place finish on Sunday—thereby outscoring Raikkonen and snatching the championship.

Last month, McLaren was fined \$100 million and stripped of its team points because its chief engineer was found to have technical data belonging to Ferrari at his home. McLaren maintained it did nothing wrong but decided not to contest the fine.