

Windshield Wiper Self-Start Technology Debuts in Encore

As the saying goes, everyone talks about the weather, but no one does anything about it.

Well, GM has done something about it, with Buick's new automatic windshield wiper technology.

"We've all experienced that startling moment when a passing vehicle splashes a flood of water onto your windshield and, suddenly, your visibility is seriously compromised," said Buick spokesperson Lauren Indiveri.

"Instinctively, you start to reach for the windshield wiper stalk, but the wipers have already begun to swoop. Relieved, you wonder, 'How does my Buick know the windshield needs to be cleared?'"

Vehicles like the Buick Encore small luxury crossover can be equipped with the convenience of Rainsense wipers, which when activated, can automatically turn on the wipers when rain or water is detected on the windshield, Indiveri said.

Using a rain sensor positioned

behind the rearview mirror, a signal sent to the vehicle's computer triggers the wipers when water is detected. But the technology goes beyond simply sticking a sensor on the windshield.

"There is a multi-stage process and testing procedure that we must go through with the Encore, for example, in order to integrate the Rainsense function," said Matt Piazza, General Motors' global design engineer for rain sensor technology.

"Each vehicle is unique and there are a lot of factors like windshield pitch, rain intensity, vehicle speed, and light conditions that all have to be accounted for and validated."

The rain sensor itself is about the size of a wristwatch, Piazza said. It is actually a light sensor that uses infrared light beams invisible to the human eye to detect water through light refraction when droplets contact the windshield.

Using advanced software, the sensor takes a reading once



GM engineer Matt Piazza runs rain sensor integration test on Encore.

every 40 milliseconds, or in about the time it takes a hummingbird to complete a flap of its wings, Piazza said. The sensor measures droplet size and frequency and sends a signal that determines how slow or fast the wipers move.

Unlike the traditional "inter-

mittent" wiper settings, adjustment of the Encore's wipers with Rainsense adjusts the sensitivity of the sensor rather than changing the time between wipes.

The speed at which the Encore is traveling also is a critical fac-

CONTINUED ON PAGE 3

SAE Mid-Michigan To Cover Safety For EV Responders

The Mid-Michigan section of SAE International meets at 6 p.m. Monday, April 28, in the Holiday Inn, 5353 Gateway Center, Flint.

GM Technical Specialist Todd Mackintosh, chairman of the SAE task force, "Hybrid and EV Recommendations for First and Second Responders," will address the group.

Mackintosh, who holds a Master of Energy Systems Engineering degree from the University of Michigan, will discuss "Advanced Propulsion and First Responder Needs."

Mackintosh will cover the subject of electrified vehicles involved in unplanned events such as mechanical breakdown, collision, and vehicle fire scenarios that can present new hazards associated with the stored energy in the vehicle's Rechargeable Energy Storage System.

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SAE INTERNATIONAL

WELCOME TO SAE 2014 WORLD CONGRESS

GM Will Invest \$449 Million In Hamtramck, Brownstown

by Jim Stickford

The increase in manufacturing in and around Detroit was the main topic of discussion April 8 at the Automotive Press Association luncheon held at the Detroit Athletic Club.

The three speakers – GM Vice President of North American Manufacturing Gerald Johnson, Michigan Gov. Rick Snyder and Detroit Mayor Michael Duggan – talked about positive factors in the area.

"General Motors is committed to building award-winning products and developing technologies in America, which helps to grow our economy from a resurgent auto industry," Johnson said.

In preparation for the next gen-

eration of electric vehicles and advanced battery technologies, he said, General Motors will invest \$449 million to upgrade manufacturing processes at Detroit-Hamtramck Assembly and Brownstown Battery Assembly plants.

"General Motors is committed to building award-winning products and developing technologies in America, which helps to grow our economy from a resurgent auto industry," he said.

"These investments will help the next-generation Chevrolet Volt build on its position as the leader in electrified propulsion."

The investment is the largest to date at both facilities, he said, and includes \$384 million at De-

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From left, GM's Gerald Johnson, Gov. Rick Snyder, Detroit Mayor Michael Duggan at APA luncheon

Manual's Popularity Overseas Aids Chrysler's Expertise Here

by Jim Stickford

The automatic transmission has conquered the American market, but for Chrysler, the marketplace is more than North America.

"A point of interest," said Michael Kirk, director of Manual Transmission, Driveline & Axle Engineering for Chrysler. "While in the U.S. most cars – more than 90 percent – are automatics, customers in the majority of the world still drive using manual transmissions."

Kirk was at the SAE World Congress in Detroit last week. He was glad to talk about manual transmissions.

There are several reasons for the popularity of them outside the U.S., Kirk said.

First is the cost of fuel. Gas is more expensive outside the U.S. and manual transmissions get better mileage.

Second, he said, manual transmissions are less expensive and in many markets emerging middle-class car buyers are looking for entry-level vehicles at the best price. That means manual transmission.

"I don't think the Big Three in general, and Chrysler in particular, are at a disadvantage," Kirk said. "Through Fiat, the company

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Ford's laser sensor

Ford, U-M Still Researching To Perfect Driverless Cars

by Jim Stickford

Many believe that autonomous driving will play a big role in the future of the auto industry – including Ford.

The automaker last week showed off some of the autonomous driving technology that it is developing with the University of Michigan at the 2014 SAE World Congress in Detroit.

U-M researcher Johannes Strom explained about the school's "Next Generation Vehicle" project to people visiting Ford's SAE display.

"We're working with Ford to develop an autonomous driving platform," Strom said. "We actu-

ally buy the laser sensors from a supplier. These sensors collect two million points of data per second around the test car. We call it a point cloud. This data is meant to accomplish a number of things."

First, he said, it is supposed to track the location of surrounding vehicles, and also is used in lane detection and vehicle safety.

"These data points can be used to build a safety system for the car by allowing it to perceive its environment," Strom said. "The road, other vehicles. But we're years away from true autonomous driving."

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Ford, U-M Still
Researching
Driverless Cars

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“U-M is interested in collaborating with Ford because there are a number of research questions about autonomous driving that need to be addressed. We’re not at autonomous driving yet, but this is the kind of research that will get us there.”

Gaurav Pandey, a research scientist at Ford, said that getting to autonomous driving, at this stage, isn’t a matter of developing the technology.

“The tech is there, but now it’s more about making it more robust,” Pandey said. “By that, I mean more reliable and accurate. An autonomous driving system has to work all the time. Getting 95 percent isn’t good enough.”

Strom said the system they brought to the SAE World Congress has been taken for a spin on the Ford test track. It worked by using 32 lasers placed in the four spinning containers, which send out light beams that “map” out the surrounding area.

This information, in turn, is used to give the vehicle’s hardware a sense of the environment, and this information is used to direct the autonomous car.

“We use the test track because, legally, we’re not allowed to take the test car out on the road,” Pandey said.

“When I get asked what my biggest surprise is in testing this system, I say every day is a surprise. This is an ongoing project and there are lots of questions that still have to be answered.”

SAE Mid-Michigan
To Cover Safety

CONTINUED FROM PAGE 1

These hazards include potential for chemical, electrical, and thermal exposure and injury for members of the emergency responder community, said section spokesperson Patrick Bisson.

Other incidents, said Bisson, such as garage structure fires and flooding/water submersion will be discussed because they may also present risks to responders when a Hybrid Electric Vehicle or Electric Vehicle is involved.

The cost is \$30 for First Responders, SAE and SVEC members, \$25 for SAE retirees, and \$35 for non-members. Students are \$20. The event is open to the public.

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GM Places Two Engineers on Paid Leave in Ignition Recall

DETROIT (AP) – General Motors has placed two engineers on paid leave as an outside attorney investigates why the company took more than a decade to recall millions of small cars for an ignition switch problem.

The action was taken after a briefing from former U.S. Attorney Anton Valukas, whom GM has hired to figure out why the company was so slow to recall the cars. GM says at least 13 people have been killed in crashes linked to the problem, but family members of those who died say the death toll is much higher.

GM spokesman Greg Martin would not identify the engineers. CEO Mary Barra called the move

an interim step as the company tries to find out what happened, according to the statement.

GM is recalling 2.6 million compact cars worldwide, including the Chevrolet Cobalt and Saturn Ion, to replace the switches.

During congressional hearings on the matter last week, Sen. Claire McCaskill accused one GM engineer of a cover-up. Ray DeGiorgio, the lead switch engineer on the Cobalt, said in a deposition last year for a lawsuit against GM that he never approved a change to the ignition switch. But McCaskill produced a document from GM’s switch supplier that showed DeGiorgio signed off on a replacement, but

with the same part number. Failing to change a part number makes the part harder to track.

“There is no reason to keep the same part number unless you’re trying to hide the fact that you’ve got a defective switch out there that in fact ended up killing a number of people on our highways,” the Democrat McCaskill said on a Sunday television news show.

During the hearings, Barra called the failure to change the part number “unacceptable.” She said at the time that the company has not fired any employees in connection with the recall. But she said if inappropriate decisions were made, GM will take ac-

tion, including firing those involved.

GM would not make DeGiorgio available for an interview. He did not return telephone messages left by The Associated Press.

Ford Recalls 435K
Vehicles with Seat
And Frame Issues

DETROIT (AP) – Ford is recalling nearly 435,000 cars and SUVs in the U.S. and Canada to fix rusting frame parts or faulty seats.

The biggest of the two recalls covers nearly 386,000 Ford Escapes from the 2001 through 2004 model years. Ford says the subframes can rust, allowing a control arm to separate and hamper steering control. Ford is aware of one crash but no injuries linked to the problem.

The SUVs were originally sold or registered in 20 states and Washington, D.C., where salt is used to clear snow and ice from roads. Six Canadian provinces also are included.

Dealers will install a reinforcement brace to fix the problem.

The Escapes covered by the recall were built 1999-2003, and 2003-04, Ford said in a statement issued April 7.

The second recall covers 49,000 Ford Fusion, Lincoln MKZ, Ford Escape and C-MAX vehicles from 2013 and 2014.

Dealers will replace seat back frames that weren’t welded properly. No crashes or injuries have been reported from the problem, Ford said.

Defective Engine Starter, Other Problems
Prompt Toyota’s Recall of 6.39M Vehicles

TOKYO (AP) – Toyota Motor Corp. is recalling 6.39 million vehicles globally for a variety of problems spanning nearly 30 models in Japan, the U.S., Europe and other places.

No injuries or crashes have been reported related to the recalls announced April 9. But two reports of fires are linked to one of the problems, a defective engine starter that can keep the motor running.

Some vehicles were recalled for more than one problem. The total rises to 6.76 million if vehicles with multiple recalls are counted for each recall.

The recall is for 27 Toyota models, the Pontiac Vibe and the Subaru Trezia, produced from April 2004 through August 2013.

The Pontiac Vibe, which is a General Motors Co. model, is also involved because Toyota and GM made cars at the same plant in California and the recalled model is the same as the Toyota Matrix.

It was recalled for a problem with a spiral cable attached to an air bag. It is unrelated to a separate GM recall over ignition

switches linked to at least 13 deaths.

Subaru is partly owned by Toyota, and the model was the same as the Toyota Ractis.

For the recall, Toyota also reported problems with seat rails, the bracket holding the steering column in place, the windshield-wiper motor and a cable attached to the air-bag module.

The recalls affect a large range of models, including the Corolla, RAV4, Matrix, Yaris, Highlander, and Tacoma.

By region, the latest recall affects 2.3 million vehicles in North America, 1.09 million vehicles in Japan and 810,000 vehicles in Europe.

Other regions affected by the recall include Africa, South America and the Middle East.

Toyota was embroiled in a massive recall crisis in the U.S. starting in late 2009 and continuing through 2010, covering a wide range of problems including faulty floor mats, sticky gas pedals and defective brakes. In response, it has become quicker to issue recalls.

Last month, the Japanese automaker reached a settlement

with the U.S. Justice Department to pay a \$1.2 billion penalty for hiding information about defects in its cars. It earlier paid fines of more than \$66 million for delays in reporting unintended acceleration problems.

The National Highway Traffic Safety Administration never found defects in electronics or software in Toyota cars, which had been targeted as a possible cause.

VW Stops Selling
25,000 Models

DETROIT (AP) – Volkswagen is telling U.S. dealers to stop selling its most popular cars until transmission fluid leaks can be fixed.

The order covers about 25,000 Jetta, Passat, Beetle and Beetle convertible models equipped with 1.8-liter, four-cylinder engines and automatic transmissions, spokesman Scott Vazin said. They were built after Feb. 1.

An “O-ring” that links a transmission fluid line to a cooler can fail and cause leaks, potentially causing a fire. Vazin said no fires or crashes have been reported.

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GM's New 8-Speed Transmission Debuts in 2015 Stingray

Call it an example of great things coming in small packages.

An eight-speed paddle-shift automatic transmission will be offered in the Chevrolet Corvette Stingray for 2015.

The new tranny will enhance the performance and efficiency of the 2014 North American Car of the Year, said GM spokesman Tom Read.

Designed and built by GM, the new transmission delivers shift times that rival the best dual-clutch designs, Read said.

The new, GM-designed 8L90 eight-speed is expected to contribute up to 5 percent greater efficiency, when compared with the previous six-speed automatic, Read said.

EPA fuel economy test results are pending and will be announced later.

The new transmission also makes the Corvette Stingray one of the few sports cars to offer the choice of a conventional manual

transmission or an eight-speed automatic.

"Corvette Stingray's new eight-speed automatic delivers the comfort and drivability of a true automatic transmission, as well as lightning-fast shifts and the manual control that enhance the performance-driving experience," said Bill Goodrich, assistant chief engineer for eight-speed automatic transmissions.

"It was designed to enhance the Stingray's driving experience, with performance on par with dual-clutch designs, but without sacrificing refinement."

The available 8L90 transmission is based on the same eight-speed automatic that will be offered on the supercharged 2015 Corvette Z06, but this one has unique clutch and torque converter specifications matched to the torque capacity of the Stingray's LT1 6.2L naturally aspirated engine, Goodrich said.

For performance driving, the

transmission offers full manual control via steering wheel paddles, Read said.

A new transmission-control system and unique algorithms, said Read, deliver shift performance that rivals the dual-clutch/semi-automatic transmissions found in many supercars – but with the smoothness and refinement that comes with a conventional automatic fitted with a torque converter.

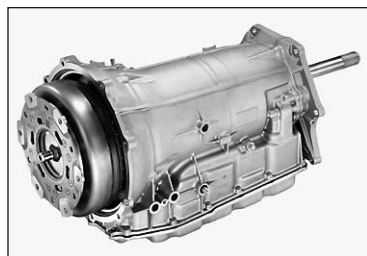
The transmission controller analyzes and executes commands 160 times per second, and wide-open throttle upshifts are executed up to eight-hundredths of a second quicker than those of the dual-clutch transmission offered in the Porsche 911, Goodrich said.

Smaller steps between gears, compared with the previous six-speed automatic, keep the engine within the sweet spot of the rpm band, said Read, making the most of its horsepower and

torque to optimize performance and efficiency.

With four gearsets and five clutches, creative packaging enables the new eight-speed automatic to fit the same space as the previous six-speed automatic, Goodrich said.

Extensive use of aluminum and magnesium make it more than eight pounds, or 4 kg, lighter than the six-speed. Design features that reduce friction con-



2015 Corvette's 8-speed automatic

tribute to the expected 5 percent greater efficiency.

The 8L90 is built at GM's Toledo, Ohio, transmission facility.

Wiper Self-Start Technology Introduced in Buick Encore

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tor in determining the wipe frequency.

Rainsense also works in the dark, Indiveri said. While the human eye perceives total darkness, a raindrop still refracts some amount of light.

The programming of the rain sensor changes sensitivity in darkness to trigger more wipes, reducing windshield glare.

While in theory, it may seem like a simple system; however, assimilating Rainsense technology into each vehicle requires countless hours of testing where Piazza and team work alongside the sensor supplier, HELLA Electronics.

Integration into the Encore begins with a so-called "bench test." This test, a critical stage of the system placement, is where

the sensor is tested to validate its relationship with the software.

On the bench, Piazza and team confirm a signal receipt when triggered.

From there, it's onto the complex task of mounting the sensor to the windshield.

Placement is key and the best location is behind the rearview mirror, which is prime real estate for other electronics, including a camera for the Encore's available Lane Departure Warning feature, Indiveri said.

This requires use of a smaller sensor mounted to the windshield at a 25- to 30-degree angle.

After mounting, the Encore enters HELLA's rain chamber where a series of tests with artificial rain enables engineers to tweak the software, Indiveri said. Light, droplet size, and droplet frequen-

cy are all factors in testing the system.

Real-world testing comes next, where engineers validate the calibration and functionality by collecting data with a video overlay in natural rain leading to final adjustments.

"The advanced technology of Rainsense wipers are another added level of luxury and convenience for Buick Encore drivers," Piazza said.

"It constantly monitors the windshield, so that's one less thing on the driver's mind, allowing them to concentrate on the road ahead.

"Once you experience it, you won't want a vehicle without it."

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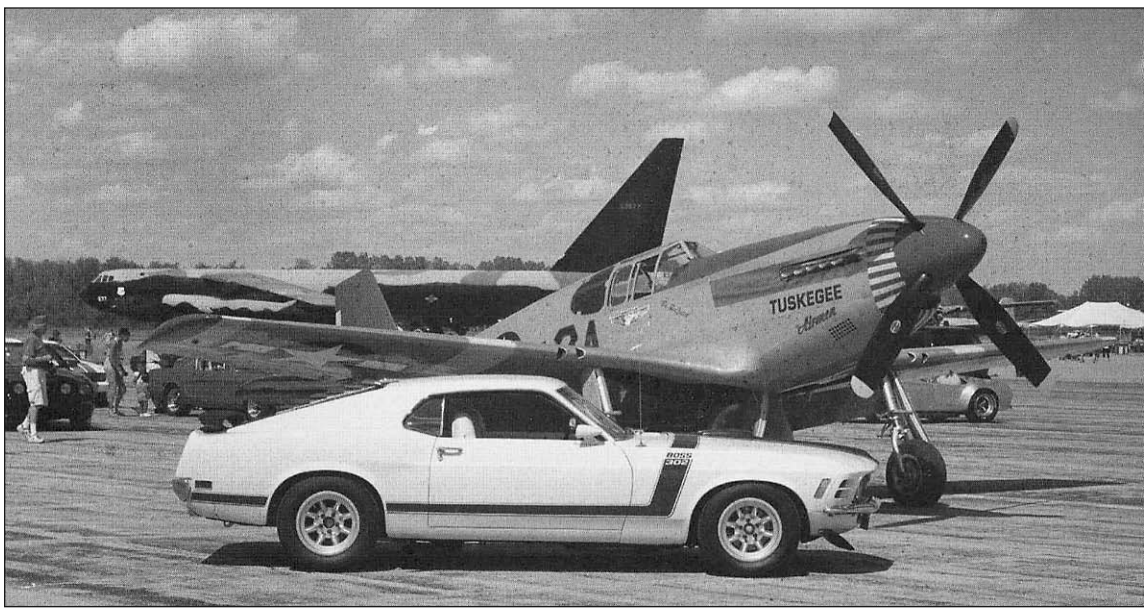
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Mustang Cruises Through Five Decades

As Michael W.R. Davis wrote in his book about the history of the Ford Mustang, success has many fathers.

In the case of the Mustang, he should know – he was there at the beginning.

Davis worked for Ford for more than two decades in the Dearborn automaker's public relations department. In the introduction of his book, he writes about how his boss, Walter Murphy, said that Lee Iacocca was saying bad things about the Cardinal, a small car made in the States and Europe.

Iacocca told Murphy that Ford needed a new kind of car to grab the consumer. It was no accident that the Ford Mustang was introduced to the public a couple of years later, Davis said.

When writing the book, titled, "Images of America: Mustang and the Pony Car Revolution," Davis decided to go back further than 1962.

He traced the history of small, affordable and sporty cars back to the 1920s to give context to the development of the Mustang.

He also wrote about vehicles developed by Chrysler and GM in response to the Mustang.

Davis said that his research showed that the success of the Mustang was somewhat of a surprise.

“The information I saw showed that Ford expected to sell under 100,000 vehicles a year,” Davis said. “That figure was the basis of the plan in which the company went forward.”

“The Mustang was first made in the Rouge facility, but they had



A press release photo of this '65 Mustang ties the vehicle with the horse.

to ramp up production so plants in New Jersey and California started making the Mustang.” Retired Engineering Executives (FREE) put him in contact with some of the people who worked

Davis said his book presents the development of the Mustang through pictures and captions. That's a skill he learned in his old

on the original Mustang. Unfortunately, Davis said, many of the people who were there at the beginning are no

newspaper days. He was helped in his research by the Detroit Public Library's "excellent" automotive history

archives.	tang.
He also was able to contact former colleagues at Ford for information.	“When my friends learned that I was writing a book about the Mustang, they were very helpful.”

One entity he didn't work with was Ford itself. "They wanted me to be licensed with them," Davis said, in providing materials for me to use," Davis said.

"I was also able to go to my own private archives and do

“so they could get a share of the proceeds. I told my publisher, Arcadia Publishing, that being licensed with Ford wouldn’t give some research.”

And, he was able to talk to the car guys who go to Steve Pasteiner’s store on Woodward in Birm-

“Steve’s place used to be called Auto Zone Hobbies,” Davis said. “Every Saturday, a bunch of car guys who work or have worked in

the industry get together for coffee and donuts and talk about

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Henry Ford II poses with a Mustang at the 1964 New York World's Fair.

cars. They know a lot about the history of the industry and they were also very helpful to me.” pictures he was able to track down, including a shot of a World War II P-51 Mustang fighter plane

Davis's biggest challenge was tracking down some pictures he knew were taken back in the 1960s. "It was difficult trying to find next to a Mustang car. Davis said the book is on sale to the public as of April 7. It's an easy read that gives a pictorial

some of these photos," Davis said.

"I knew they were taken, but trying to find someone who had a

copy was sometimes difficult.” Davis was also frustrated because he wanted to include photos of Mustangs that appeared in the

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GM Will Invest \$449 Million In Hamtramck, Brownstown

CONTINUED FROM PAGE 1

troit-Hamtramck for new Body Shop tooling, equipment, and additional plant upgrades to build the next-generation Chevrolet Volt and two future products.

This brings GM's total investment at Detroit-Hamtramck to more than \$1 billion over the last five years.

GM's \$65 million investment at its Brownstown Battery Assembly will support the next generation of lithium-ion battery production and future battery systems.

When asked why GM was investing \$65 million at the Brownstown facility when there was excess capacity in lithium-ion battery production, Johnson said GM was just continuing a pledge made in 2007.

"When GM decided to build the Volt back in 2007, it was decided that we would invest in the technology," Johnson said. "This is just a follow-up to that decision."

Gov. Snyder said, "Michigan is poised for even greater global leadership in automotive innovation. This significant investment by GM will harness the power of our state's unparalleled assets, such as its talent, world-class universities, and research and development capabilities.

"While challenges remain throughout the auto industry, this announcement shows that it is looking to the future, and the resulting technological advancements will strengthen our economy and benefit our environment. This is great news for Detroit, the region and all of Michigan."

Since 2009, GM has announced more than \$5.4 billion in U.S. facility investment for vehicle technologies that benefit customers, Johnson said. This includes more than \$2.8 billion invested in Michigan-based facilities alone.

And this investment in Detroit-based facilities shows GM's faith in the city, Duggan said.

"When I was first elected mayor of the city, I sat down with some people at GM," Duggan said. "I thought we were going to talk global automotive strategy. I was cross-examined.

"They asked me questions about getting the street lights turned on. They asked me about urban blight. I was told that GM is here in Detroit and they want to continue to invest in the city. And getting city services to work is an important part of that."

Snyder, when asked about the UAW and the right-to-work law passed under his administration, said he doesn't consider himself as for or against unions. What he is working for, he said, is creating conditions that have companies considering setting up shop in Michigan.

He said that since he got right-to-work passed, a "screen" was removed that kept many companies from considering Michigan as a place to do business. But once companies come here, whether they go union or not is not his job.

Johnson was also asked about how many different vehicles would be made at the Detroit-Hamtramck facility.

He said there are currently five, and GM is looking at building two different vehicles at the plant that aren't currently being built there. But he would not say if GM was going to build seven or six or five vehicles there after the plant upgrades were completed.

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DRIVE A LITTLE...SAVE A LOT!

GM and BorgWarner's Commitment Earns PACE's Innovation Partnership Award

General Motors, along with BorgWarner, received an Innovation Partnership Award for collaboration in a newly developed solenoid valve that is part of a stop/start system for a 2015 GM vehicle that will be announced later.

The accolade was handed out April 7 at the Premier Automotive Suppliers' Contribution to Excellence (PACE) Awards 20th anniversary ceremony.

"Fuel economy improvements with stop/start systems are an example of our focus that strives to put the customer at the center of everything we do," said Steve Kiefer, vice president of GM Global Powertrain Engineering.

"Being recognized with an Innovation Partnership Award is special for General Motors as it affirms what we are determined to do - collaborate and partner successfully with the suppliers that can help improve our products."

GM Powertrain spokesperson Tom Read said receiving the partnership award highlights GM's willingness to collaborate with suppliers.

"We really appreciate the best that a world-class company like BorgWarner can do," Read said. "And it's important for us to work with such companies."

"To collaborate on a project like this and to have it be so successful is proof that GM truly understands what it can accomplish with its suppliers when they work together."

The solenoid valve is a low-noise, high-flow, low-leak valve that achieves quick hydraulic pressure for smooth launches when the engine restarts, Read said.



From left, Steve Kiefer, BorgWarner's Robin Kendrick and judge J Ferron.

The technology helps deliver improved fuel economy and performance as part of a stop/start system.

The stop/start system automatically shuts down the engine when the car comes to a stop under certain driving conditions, such as a stoplight.

The engine will then automatically restart when the driver takes his or her foot off the brake.

The 2014 Malibu is the first vehicle in its segment with a standard engine that features fuel-saving stop/start technology, Read said.

The stop/start equipment is featured along with other technologies in the Malibu's new 2.5L intake valve lift control, or iVLC, powertrain along with direct injection, variable valve lift control and a new six-speed automatic transmission.

All contribute to EPA-estimated fuel economy ratings of 25 mpg in city driving and 36 mpg on the highway - 14 percent and

6 percent improvements, respectively, over earlier models of the same vehicle.

The new technologies on the 2.5L model enable the Malibu to deliver a higher combined fuel economy rating than the base engines of several midsize sedan competitors, including the Toyota Camry, Ford Fusion, Kia Optima, Hyundai Sonata and Chrysler 200, Read said.

Additionally, BorgWarner received a PACE award for the specific work the supplier accomplished in the development on the solenoid valve that was ultimately used by GM.

"They were doubly honored," Read said.

"They won an award for the actual solenoid valve, and they won an award along with GM for collaborating on the development of that valve."

The PACE Innovation Partnership Awards, Read said, recognize automakers that excel in collaborative innovation with a supplier.

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Vincentric Toasts GM Vehicles' Fleet Values

General Motors won eight Vincentric 2014 Best Fleet Value in America awards, the second consecutive year GM has topped the list.

That means the company leads all automakers in number of vehicles recognized since the awards program's launch in 2006, said GM spokesperson Robert Wheeler.

GM's 2014 Best Fleet Value winners:

- Buick Encore – Four-door utility front-wheel-drive, compact premium crossover;
- Buick Enclave – Convenience four-door utility front-wheel-drive, large premium crossover;
- Buick LaCrosse – Front-wheel-drive large premium sedan;
- Buick Verano – Premium mid-size sedan;
- Chevrolet Spark EV – 1LT electric/plug-in hybrid;
- Chevrolet Express G3500 – standard wheelbase, full-size one-ton passenger van;
- GMC Sierra 2500HD Work Truck – crew cab, two-wheel-drive, long wheelbase, full-size heavy-duty 3/4-ton pickup;
- GMC Sierra 3500HD Work Truck – regular cab two-wheel-drive, long wheelbase, single-rear-wheel, full-size heavy-duty 1-ton pickup.

“GM's award-winning vehicles cover a wide variety of segments, including passenger cars, vans, crossovers and trucks,” said David Wurster, president of Vincentric.

“This is a testament to the

Shaeffler Earns PACE Award for Torque Converter

Schaeffler, with a development center in Troy, was named a 2014 *Automotive News* PACE (Premier Automotive Suppliers' Contribution to Excellence) Award winner in the product category.

The award was presented for Schaeffler's “fuel-saving and vibration-reducing torque converter for rear-wheel drive with centrifugal pendulum absorber.”

Patrick Lindemann, vice president of Product Development at LuK Wooster, accepted the award on behalf of Schaeffler during an award ceremony held April 7.

“We are honored to receive this prestigious award and be recognized for our dedication to providing our customers with innovative products and technologies,” said Lindemann.

“Our torque converter with its centrifugal pendulum absorber is a true testament to how we are working to create products that assist automakers as they face current and future industry requirements.”

Since downsized engines tend to vibrate more than larger ones, Schaeffler developed a pendulum, operated by centrifugal force and mounted to the torque converter, which cancels vibrations from the engine, said Schaeffler spokesperson Richard Neilson.

As a result, fuel consumption and CO2 emissions are reduced, and comfort is increased due to the reduced vibration.

The torque converter is developed at Schaeffler's LuK USA facility in Wooster, Ohio.

This is the fourth time since 2009 that Schaeffler has received the PACE Award, most recently earning the recognition for its UniAir fully variable engine valve lift system that allows engines to operate more efficiently, Neilson said.

Schaeffler is a global manufacturer of automotive products and systems for engines, transmissions and chassis applications.

company's ability to meet the varying needs of a widely segmented fleet industry.”

In its ninth year, the Vincentric Awards are used by fleet operators to understand vehicle lifecycle costs, a key component of the purchasing process.

This is the first Best Fleet Value in America award for the Spark EV in the electric vehicle category, which Vincentric introduced last year, Wheeler said. Chevrolet's newest electric vehicle also took top honors in its class in the consumer market awards Vincentric announced earlier this year.

“We are committed to providing our commercial customers with vehicles that are not only great on the road, but great for their bottom line,” said Ed Peper, U.S. vice president, GM Fleet and Commercial.

“These awards demonstrate the depth of our product lineup and the business value we provide to all customers – small and large – no matter their needs.”

To determine this year's award winners, Wheeler said Vincentric analyzed more than 3,400 vehicle configurations in 20 different lifecycle cost scenarios, using eight cost factors: depreciation, fees and taxes, financing, fuel, insurance, maintenance, opportunity cost and repairs.

Lifecycle costs were measured in all 50 states and Washington, D.C., Wheeler said. This resulted in 25 million lifecycle cost measurements used to determine the Best Fleet Value in America winners.

Earlier this month, Chevrolet was named the Best Value Truck Brand in America by Vincentric, in the consumers market.

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All prices & payments include GM rebates. Pictures may not represent actual vehicle. Prices subject to change per GM incentives. Prices and payments are inclusive of active GM Employee Discount. (Unless otherwise stated). Leases are 36 months, 10,000 miles per year w/ approved \$ Tier credit w/ \$999 due at signing, (unless otherwise noted). Prices & payments are plus tax, title, and plate fees. Refundable security deposit required on certain vehicles – to be determined by lender. Must qualify for Conquest or Loyalty. \$3500 trade-in guarantee for 2003 or newer vehicle in drive-able condition with less than 115,000 miles, less any reconditioning costs, no branded titles, see sales person for details. **Certain restrictions may apply, see dealer for complete details. Expiration Date – 4/30/2014

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