Tech Center News

31201 Chicago Road South Warren, Michigan 48093 586-939-6800

Contact us:

Info@TechCenterNews.com

Deadline: Thursday 5:00 p.m. for the next edition of Monday

William Springer II, publisher Lisa A. Torretta, operations Jim Stickford, news

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www.TechCenterNews.com

LTU Engineer Sees A Light at the End Of Potholed Roads

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slightly, and then the process is reversed when there is a thaw often with disastrous results, Bandara said.

"Even during the winter, you get 40-degree weather, and the ice thaws to water - so then there's a void under the pavement," Bandara said. "And when a heavy vehicle passes by, there's a collapse, and you have a pothole.

Before joining the Lawrence Tech faculty in 2012, Bandara said he was supervising geotechnical engineer at the regional headquarters of the Michigan Department of Transportation (MDOT) in Southfield. He is continuing his research on the freeze-thaw cycle and soil stabilization in road construction. He is currently working on an MDOT-sponsored study adding recycled materials to soil to further stabilize roads.

Bandara said he predicts better days ahead for motorists because roads built in Michigan during the past few years use a new technique to allow water to seep through the road base and just keep going away from the pavement.

The new construction you see MDOT and other agencies using has drainable bases," Bandara said. "The idea is, when the water seeps through cracks, it's not going to stay there. It drains through the drainable base and keeps going down. The idea is not to have any water under the pavement, so nothing can freeze. That is the solution.

"Keep an eye on the area of I-96/I-75 around the Ambassador Bridge in Detroit, among other places," Bandara said. "This road reconstruction, part of the so-called Gateway Project, used this new technique - so check this road in the coming springs for potholes, to make sure it works. Hopefully, you will see fewer potholes."





'Quality is What Keeps People Coming Back to GM'- Hardie

by Jim Stickford

GM's high excellent durability rankings in the "J.D Power 2014 Vehicle Dependability Study are no accident, said Mike Hardie, director of Quality Strategy for GM.

The 2014 study tracked 2011 model-year vehicles in the third year of ownership, Hardie said

"What we had to do to achieve our rankings was think about the process of making a vehicle and how we could do it better," Hardie said. "One of the most difficult things we've found is getting people excited about the VDS study. Several of our vehicles mentioned are no longer being built anymore.'

For example, Hardie said, the Buick Lucerne was one of the highly-rated vehicles in the study. Taking the data about the Lucerne and trying to get the people at the Tech Center in Warren excited about it isn't easy.

"But it should tell the Buick buyers of today that Buick makes great products," Hardie said.

Getting these good results comes from using different metrics, Hardie said. GM has started looking at parts replacements. By seeing how often parts wear out, GM engineers are able to see where a vehicle's weaknesses are. And achieving better scores with parts replacement indicates how durable the vehicles are.

"This is important," Hardie said, "because we believe a poor showing in a study like this detracts from customer loyalty. And having a better score enhances that loyalty. We are not in this for the short haul. We want to satisfy our customers today, tomorrow and hopefully forever. I believe if you do develop the best products that are built with excellent quality, that you will have a car that the consumer loves. And that's what keeps people coming back to GM.'

Hardie said it all comes down to three factors. First, build a good car upfront. Make sure that product is something that people will want and love. Finally, do it over a length of time.

"I know this sounds easy," Hardie said. "But it is very diffi-

Giving customers what they want requires listening to them and finding out what features are attractive. Once that's done, then GM "clinics" the features by offering them to real customers. If these customers like them, then the features are offered on a more broad scale in more vehi-

As to creating dependability, Hardie said that's actually the easiest thing to do. GM's durability improvement rate over the past five years has improved at twice the rate of the industry as a whole, he said.

"These days, you can't just be good in terms of designing and building a car," Hardie said. "You have to be better than everyone else. It's a moving goal line, I'll tell vou.'

To achieve that quality, Hardie said, GM adopted its Six Sigma system that allows its engineers to examine data such to reduce failure and improve performance. The system also allows engineers to learn from past mistakes and to apply what they've learned on the next project.

"Technology has also helped," Hardie said. "Using new IT tools, we've been able to pull back the pages, as it were, and plot designs that have been proven the

best. This is part of the 'Design for Six Sigma' system to resolve the top issues.

Hardie said he came to GM from another automaker in 2012, but that the company has been using its Six Sigma method since the mid 2000s.

And part of the company's efforts to improve quality meant changing company culture. Now, Hardie said, designers are more 'customer-centric."

"Every decision we make is made in consideration of the customer," Hardie said. "The people at GM have always been customer-centric to a certain degree, but with new management, especially from Alicia Boler-Davis, it's at the forefront.'

In the past, other things could get in the way, Hardie said. Things like deadlines, budgets and the like.

"And I want to say that quality is a team effort," Hardie said. "It takes a lot of people to design and build these cars. Everyone from engineers to the members of the UAW and the CAW work hard and work together to make GM vehicles as good as they can be. That needs to be said."

2014 Corvette Stingray Earns Motorweek's 'Best of the Year'

by Jim Stickford

The products of the Big Three continue to do well with critics.

The Website MotorWeek.org presented its 2014 Drivers' Choice Awards on Feb. 7, and among the winners were the 2014 versions of the Corvette Stingray, the Ford Fiesta, the Chevrolet Impala, the Cadillac CTS, the Jeep Cherokee and the Ram 1500.

In its announcement, Motor-Week stated that "each year we roll out the red carpet for our annual Drivers' Choice Awards. These are the cars and trucks we would like to have parked in our driveway, or at least dream about owning if we won the lottery.

'We look at the factors mattering most to consumers - price, practicality, performance and fuel efficiency. Then our editorial staff selects the best models in a variety of lifestyle categories ranging from family sedan to luxury car, to large utilities and pick-

"From that group, an overall best of the year is chosen each vear. The MotorWeek's Drivers' Choice Awards have been presented annually since 1983.'

The big winner was the Corvette Stingray, which won in the "Best of the Year" category.

"With MotorWeek's longstanding reputation for representing the pulse of the consumer and best market choices. Chevrolet is honored and delighted to be the recipient of the Drivers' Choice,

Best of the Year, 2014 with the Chevrolet Corvette Stingray," said Tim Mahoney, chief Marketing officer, Global Chevrolet.

This is a fabulous award and one that we are exceptionally proud to call our own."

"The Chevrolet Corvette Stingray is an amazing effort at an amazingly affordable price," said MotorWeek host John Davis. "It looks great from every angle, and is a total high-performance package that is truly world-class.

"Nothing is left out – from track-ready features, to impressive driver comfort, to the kind of fuel economy that is the envy of the sports car world.

The Ford Fiesta ST won in the "Best Subcompact Car" category. In describing why the Fiesta ST was chosen, editors stated, "While we don't normally pick a subcompact winner that is a narrowly focused performance model. we could not resist the Fiesta ST. This European-style 5-door packs a potent performance punch with a 197 horsepower 1.6-liter I4 providing the power and a lowered suspension that carries the goods through corners. All for a base price of around \$22,000."

The Chevy Impala was tops in the "Best Family Sedan" segment. It was chosen because of its "beautiful styling and roomy interior," said the editors. But they also stated that "the handling was the quality that sealed the deal."

Cadillac's CTS was chosen to



2014 Corvette Stingray

represent the "Best Luxury Sedan" category because of its "strong looks, excellent interior and performance that was as great as it looks."

Jeep's Cherokee was the winner in the "Best Small Utility" category. Editors stated that the "name may have been gone from America for a while, and early pictures had many skeptical, but the proof for us was in the driving. Whether you choose I4 or V6 power, there's an industry-first 9speed automatic transmission."

The Ram 1500 was chosen as

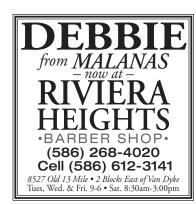
"Best Pickup Truck" for its "handsome new style and fuel-efficient V6 gasoline powertrain, but this year the editors' crush is the result of bringing the manliest of all powertrains to the halfton market, a diesel! Its 3.0-liter turbo-oil-burning V6 puts down 420 lb.-ft. of torque for a 9,200pound tow rating and more than 25 mpg for commuting duty.

With big truck performance, luxury sedan comfort, and now ultimate manliness under the hood, it's no wonder the Ram 1500 wins again."



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