

New Ecotec Engines to Power GM's Small Vehicles Globally

The days in which different divisions of GM developed different powertrains for different parts of the world are gone.

A new generation of Ecotec small-displacement engines has streamlined General Motors' global powertrain portfolio said GM powertrain spokesperson Tom Read.

The engines feature a modular architecture that broadens their adaptability to global markets and reduces manufacturing complexity, he said.

The new engines were developed for global use and will power many of the automaker's highest-volume small cars and compact crossovers.

One of those vehicles is the next-generation Chevrolet Cruze specifically tailored for China.

It launches in 2014 as a 2015 model.

By 2017, more than 2.5 million new Ecotec engines are projected to be built annually in at least five manufacturing locations around the globe: Flint (U.S.); Shenyang, China; Szentgotthárd, Hungary; Toluca, Mexico; and Changwon, South Korea.

The Flint facility alone represents an investment of more than \$200 million in technology and tooling to support the engines' production.

"Transportation solutions vary around the world and GM is committed to developing engines matched to the needs of the regions where they're sold," said

Steve Kiefer, GM vice president, Global Powertrain Engineering.

"The new engine family is designed to achieve segment-leading refinement and efficiency, and will make its way into five GM brands and 27 models by the 2017 model year."

The new Ecotec portfolio will include 11 engines, with three- and four-cylinder variants ranging from 1.0L to 1.5L – including turbocharged versions – and power ratings ranging from 75 horsepower to 165 horsepower.

Torque will range from 70 lb.-ft. to 184 lb.-ft.

The architecture is also designed to support hybrid propulsion systems and alternative fuels.

The first production applications include a 1.0L turbocharged three-cylinder for the Opel Adam in Europe, and 1.4L turbocharged and 1.5L naturally aspirated four-cylinder engines for the 2015 next-generation Chevrolet Cruze in China.

The turbocharged variants enable the engines to deliver the power and torque of larger-displacement engines with the efficiency of smaller engines.

For example, the turbocharged 1.0L three-cylinder used in the Opel Adam makes as much power as the naturally aspirated 1.6L four-cylinder it replaces – with an estimated 20 percent improvement in efficiency.

In fact, Read said, the new Ecotec family is on the leading edge of efficiency, with the new



Two of GM's new 4-cylinder Ecotec engines on the left with new 3-cylinder Ecotec. They represent GM's development of global powertrains.

1.4L turbo up to five percent more efficient than the 1.4L turbo engine it will replace.

The new Ecotec engines also deliver segment-challenging refinement, said Read. Noise intensity, he added, is up to 50 percent quieter than Volkswagen's EA211 1.4L four-cylinder and up to 25 percent quieter than Ford's 1.0L turbo three-cylinder.

The new Ecotec engines represent a clean-sheet design and engineering process, Read said. Technologies such as central direct fuel injection, continuously variable valve timing, turbocharging and variable intake manifold airflow help achieve efficiency goals.

"The new Ecotec architecture represents the most advanced and efficient family of small-car gas engines in GM's history," said Tom Sutter, global chief engineer.

"Along with performance and efficiency targets, we've also aimed for segment-leading refine-

ment with low noise and vibration – and we've hit the bull's-eye."

Modularity in parts – such as four-cylinder and three-cylinder blocks – that share bore spacing, bore diameter, liners and other dimensions, reduces complexity while increasing the flexibility to quickly adapt the architecture for new applications, Sutter said.

The new Ecotec engines are calibrated to run on regular unleaded gas – even the high-output turbo variants.

The new 1.4L turbo for the 2015 next-generation Chevrolet Cruze in China is estimated at 148 horsepower and 173 lb.-ft. of torque.

The 1.5L is rated at an estimated 113 horsepower and 108 lb.-ft. of torque.

In China, Cruze models with the 1.4L turbo engine will also feature an all-new dual-clutch gearbox.

Warren, County Team Up to Fix Damaged Roads

Macomb County and the City of Warren are coming together on the war against potholes.

"This is going to be the most challenging season for road maintenance, but we are going to continue to try to be creative and resourceful in finding solutions in an attempt to keep up with these temporary fixes," said Macomb County executive Mark A. Hackel. "The real answer has to be addressed by our legislators who need to find a long-term solution for road funding to fix the roads."

The Macomb County Department of Roads has agreed to reimburse the city of Warren to cold patch county roads located within the city. These roads are 10, 12, 14 Mile roads, Schoenherr and Hayes, Hackel said.

The Roads Department will provide the cold patch needed and the city of Warren will provide manpower and equipment, Hackel said.

"We are happy to partner with the city of Warren to help in the goal of keeping our motorists safe and reducing damage to vehicles," said Bob Hoepfner, director of the Department of Roads.

For more information about the county road system, go to www.rcmcweb.org, or call 586-463-8671. The Macomb County Department of Roads is located 117 South Groesbeck Highway in Mount Clemens.

Tech Center Gets Another Wind Tunnel

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which are still providing exceptional testing conditions for our aerodynamics team," Ecclestone said. "The reduced-scale tunnel is necessary to help with the current overloaded schedule of our testing facilities and to minimize the time we need to rent off-campus facilities.

"It's a state-of-the-art facility and will be located directly between our current scalable wind tunnel and the design cen-

ter for ease of use by our engineering and design development teams. That's in the southwest corner of the campus by 12 Mile and Mound.

"With the enhanced focus on aerodynamics as part of the over-arching global CO2 emission reduction strategy – including CAFE standards – our aerodynamics teams have been running their testing around the clock. They've needed the additional facility to meet their ever-increasing productivity needs."

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