

Ford PowerShift Tranny Is 'Most Sophisticated'

With gasoline already more than \$4 per gallon in some American cities, the new fuel-saving dual dry-clutch Ford PowerShift six-speed automatic is the right transmission at the right time.

Ford PowerShift – the company's most sophisticated transmission ever – is part of a suite of advanced fuel-saving technologies available immediately on the Fiesta and the all-new Focus, enabling both cars to deliver as much as 40 mpg on the highway.

"The Ford PowerShift transmission is a technological leap over the competition," said Piero Aversa, PowerShift engineering manager. "Now that it's available in the new Focus as well as Fiesta, PowerShift gives us two great small cars that not only lead in fuel economy, but are more fun to drive as well."

The all-new Focus, available in sedan and five-door bodystyles and featuring a 160-horsepower, direct-injected 2.0-liter engine, is arriving now at Ford dealers across the nation.

More than 95 percent of new-car buyers purchase their vehicles with automatic transmissions, even though many prefer the crisper acceleration, sportier performance and higher fuel economy traditionally offered by manual transmissions. Ford's PowerShift dual dry-clutch transmission delivers the convenience of an automatic with the fuel efficiency and fun-to-drive sporty feel of a manual gearbox.

PowerShift is part of Ford's commitment to lead or be among the leaders in fuel economy in every segment in which the company competes. Ford offers six-speed transmissions in nearly its entire North American lineup of Ford and Lincoln brand luxury vehicles. Ford is the only automaker to offer North American vehicle buyers 12 sales segment fuel economy leaders, with four vehicles EPA-certified at 40 mpg or higher.

The PowerShift unit available in Fiesta and Focus models is one of the most advanced transmissions available for subcompact and compact cars. Dual-clutch transmissions, like PowerShift, were born at the race-track and saw their application for production road cars in ultra-expensive exotics, such as the \$1.7 million Bugatti Veyron and \$200,000 Ferrari California.

Among competitor vehicles in the Focus segment – Honda Civic, Toyota Corolla, Volkswagen Jetta, Hyundai Elantra, Chevrolet Cruze and Nissan Sentra – none offers drivers more horsepower, faster acceleration and higher fuel economy with an automatic transmission. Plus, no other car in the Fiesta segment offers a six-speed automatic of any type.

Unlike regular hydraulically operated automatic transmissions, which use power-sapping torque converters, wet clutches and pumps, Ford's new dual-clutch PowerShift automatic consists of two manual transmissions (in the same case) working in parallel. Each has its own independent clutch unit controlled by computers and fast-acting electromechanical actuators that shift the gears.

One clutch carries the odd gears, 1, 3 and 5, while the other carries the even gears, 2, 4 and 6, and reverse. PowerShift is an automatic because the gear changes are coordinated by a computer that directs the clutches to engage and disengage in a way that provides seamless delivery of torque to the wheels, even during gear changes.

As a result, the driver benefits from a 10 percent fuel economy gain along with the direct and sporty power-to-the-wheels feel and crisp acceleration normally associated with a manual gearbox, but in a transmission that shifts automatically.

Ford PowerShift's advanced features include:

- **Torque Hole Fill:** A Ford-developed and patented innovation that eliminates the slight hesitation drivers feel during acceleration when the transmission upshifts into a higher gear. PowerShift sends a smooth, seamless stream of torque to the wheels for uninterrupted acceleration

- **Hill Start Assist:** If sensors detect the Fiesta or Focus on a slope of 5 degrees or more, Hill Start Assist automatically prevents the car from rolling backward in the instant when the driver moves his or her foot from the brake to the accelerator. PowerShift's computer controls the brake pressure and engine to hold the car in place

- **Neutral idle:** This feature helps improve fuel economy by eliminating the drag a traditional hydraulic transmission puts on the engine when a vehicle is idling

- **Reduced weight:** PowerShift weighs nearly 30 pounds less than the four-speed automatic transmission in the 2011 Focus. Less weight helps improve fuel economy

Ford engineers began developing the dual-clutch technology when advances in the speed of processors, memory and the mechanical actuators that shift the gears progressed to the point that a manual transmission could be made to perform as smoothly as an automatic.

"The kind of computing power needed in terms of speed and amount of memory advanced to the point where it is now possible to offer the driver fast, crisp and seamless shifts from this advanced transmission at an affordable price," said George Herr, PowerShift calibration supervisor.



PHOTO: GERALD SCOTT

Auto media studies the difference between 2011 and 2012 engine parts as Ford's Scott Makowski, right, goes over the details.



PHOTO: GERALD SCOTT

Scott Makowski, Ford's Manager of I4 Engine Programs, briefs the media about the 2.0L GDI engine at the Ford Dynamometer Lab in Dearborn last week.

Ford's 2.0L Gasoline Direct Injection Engine Is Hit

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"Twin-independent, variable cam timing, or Ti-VCT, Ford has invested a record amount in powertrain to get us where we are today."

And where they are is, almost literally, being that fuel economy leader in the segments that they compete in based on the thinking and foresight Ford employed some five years ago.

"No company has improved its fuel economy more, and faster than Ford, according to the Environmental Protection Agency," Fascetti said.

"We have more vehicles – 12 – that lead their sales segments in fuel economy. . . . and that's more than any other automaker. Four of those cars rated at 40 mpg or higher – something else no other automaker can match.

"One of the technologies that's helping us get there is Direct Injection. We launched

DI here in North America on our EcoBoost 3.5L engine in the summer of 2009. The engine you'll hear about today (2.0 GDI) is our first non-EcoBoost engine featuring direct injection."

Makowski and Russ further explained the engineering dynamics built into the Ford 2.0.

Makowski championed the 2.0 GDI as being the ideal engine for the Ford Focus.

"The C segment as you know, is just a huge segment – almost 2 million units (in the U.S.) and it continues to grow," Makowski observed.

And, of course, it's new, fuel efficient but powerful engines like the 2.0 that are giving the Focus and Fiesta the critical raves and dealer sales that they've been earning.

"Our answer to that (C segment sales challenge) in the

Focus – it's a very special car," Makowski continued.

And it has a very special engine, part of a new family of powertrains that is putting Ford in the enviable marketing position that it currently enjoys. If you're looking for a place to begin to credit Ford for its high mileage fuel scores these days, well, the Ford Dynamometer Lab is probably a good place to start.

Ford Seeks Euro Customers for EV

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power thanks to its unique combination of car-like driving dynamics, generous cargo capacity, easy accessibility and low operation costs.

With a cargo volume 3.8 m3 and a payload of 500 kg, Transit Connect Electric will particularly appeal to operators who travel predictable, short-range routes with frequent

stop and go driving. Transit Connect Electric can be recharged using standard European 220/240-volt outlets in approximately eight hours. Commercial van users generally return to a central location at the end of a driving cycle perfect for recharging overnight.

Transit Connect Electric builds on an existing relationship between Ford and Azure

and battery supplier Johnson Controls-Saft.

"Transit Connect Electric exemplifies how we are leveraging our relationships as well as our hybrid and advanced powertrain programs to bring energy-efficient technologies from the laboratory to the street," said Derrick Kuzak, Ford group vice president, Global Product Development, in Dearborn.

Chrysler Foundation Donates \$100,000 for Japan Relief Efforts

The Detroit auto industry continues to support Japan.

The Chrysler Foundation, the philanthropic arm of Chrysler Group LLC, announced last week it will donate \$100,000 to the American Red Cross for Japan disaster relief efforts. Additionally, the Foundation will match employee and dealer Red Cross contributions up to an additional \$100,000.

"Our hearts go out to the people of Japan," Jody Trappasso, president – The Chrysler Foundation, said. "We are confident that Chrysler employees, contractors and dealers will once again respond to help others in need, which is why the Foundation will also match their generous contributions."

The Chrysler Foundation has a long history of providing humanitarian aid throughout the United States and the world.

Within days of the Sept. 11, 2001, terrorist attacks, a \$10 million Help the Children Fund was established for the children of victims. Chrysler employees, retirees and dealers raised another \$400,000 for the scholarship fund and many employees worked at the recovery site or collected

donations of supplies.

Following Hurricane Katrina in 2005, The Chrysler Foundation contributed \$550,000 for disaster relief, including \$150,000 in matching funds. The donations were distributed to the American Red Cross, The United Way and food banks in Alabama, Louisiana and Mississippi. Chrysler also donated 100 vehicles and supplies, collectively valued at \$4.4 million.

The Foundation also provided \$100,000 for flood relief and cleanup programs in Cedar Rapids, Iowa, in 2008, and \$100,000 for wildfire disaster relief in San Diego in 2007. Both of these initiatives also involved volunteers and in-kind support from Chrysler Group dealers.

In 2010, the Foundation donated \$100,000 – \$50,000 each – to Oxfam America and the United States Fund for UNICEF, to support humanitarian relief and recovery efforts in Haiti after that country's devastating earthquake. Later that year, the Foundation contributed \$50,000 to the village of Dundee, Mich., and another \$50,000 to ISOH/Impact in Perrysburg, Ohio, for relief efforts following severe tornadoes that hit Michigan and Northern Ohio.

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