

Big 3 Engine Report: Smaller and Fuel Efficient

by Gerald Scott
News Dept.

Exterior styling steals most of the headlines in the auto industry when it comes to discussing cars, but revolutionary change is occurring in powertrain more than any other area of car architecture, according to one expert at the Detroit auto show.

Brandon Mason of PwC Autofacts discussed the many advances being made in powertrain to the Society of Automotive Analysts (SAA) meeting at Cobo Center in Detroit the night prior to the start of the annual show.

"I always like to end (my talk) with powertrain because it's near and dear to my heart," said Mason.

"What we're seeing is a gradual shift away from traditional combustion engine that doesn't have any of the bells and whistles on it.

"Certainly the use of direct injection and turbocharging will continue to gain traction

within our marketplace as we move towards the 2016 and 2025 CAFE standard."

Indeed, the freshly announced agreement between the EPA and the Detroit auto industry, particularly the far target of 54.5 mpg across production fleets in 2025, is driving much of today's improvements and changes.

If you tour the show floor at Cobo Center, "small" is in across the board as far as vehicle size and weight go, but also powertrains are on the long march from powerful V8s and heavy truck engines at the end of the 20th century into something much more svelte, much more fuel efficient today, just 12 years into the new century.

Just when you think powertrain engineers have cooked every last ounce of fuel efficiency out of these highly refined, newer powertrains, along comes another innovation like variable valve timing (VVT) to shave another couple tenths of a mile per gallon

off the current standard.

That, and Mason cited the relentless march backwards down the engine displacement curve, correlated with the lesser number of pistons per engine these days.

Continued Mason, "We're going from a V8 to a V6, V6 to an I4 and - I didn't think I'd say this a few years ago, but, gasp - an I4 to an I3 in some cases as we move into smaller segments in the U.S.

"Also, advanced transmissions, 6-7-8-speed applications as well as dual clutch and CVTs, continue to be a trend."

Taken together, all of these advances in powertrains and transmissions are allowing for greater flexibility in vehicle builds for the automakers.

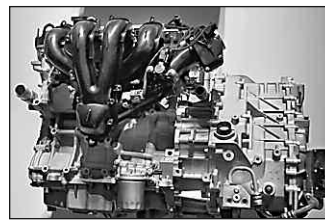
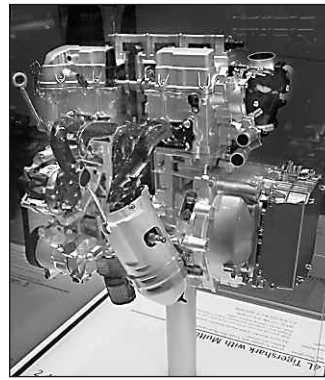
At Ford, the last North American plant building the smaller Ranger pickup truck closed last month, but that was as much because low-end F-150s can now get much the same mileage that the smaller Rangers once did. In effect,

super-efficient powertrains put the Ranger out of business here in the U.S. market. But the F-150 gained at Ranger's expense, so pick your poison or your transmission fluid, so to speak.

Somewhat likewise at GM: whoever thought the Detroit automaker would be trumpeting the fact that its Buicks and Cadillacs - nameplates famous for being landboats in the 20th century - can now be powered by four-cylinder engines?

Again, Cadillac and Buick, famous for big V8 powerplants 50 years ago, are now coming in with four- and six-cylinder engine options.

And Chrysler's engine display at the auto show was led by the 2.4L and 2.0L Tigershark options being built for the new Dodge Dart at the automaker's engine plant in Dundee. So, 50 years ago automakers bragged about how large and powerful their engines were, while today they brag about smaller displace-



Left is Ford's Energi hybrid engine; upper left is Chrysler's Tigershark; and above is GM's 3.6L, V6 engine for passenger cars and other applications.

ments and fewer numbers of cylinders.

The X factor in all of this is in how the hybrid and EV engines will cause the automakers to morph internal combustion engines (ICE) with this amazingly new technology such as being used on the Chevrolet Volt, Nissan Leaf and lately the Ford Focus Electric.

"Where we see hybrid and electric vehicles going, we see a very slow shift, very slow market share gain with those technologies. I think we ended the year in the U.S. with about 2.2 percent share for hybrid and EVs combined," Mason observed.

All said, the drive to smaller engines continues on.



Derrick Kuzak, Group vice president, Global Product Development, Ford Motor Company, introduced its new 2013 Ford Fusion, center, and 2013 Ford Fusion Hybrid, left. Ford took the already successful Fusion and dramatically altered its exterior styling.

Ford Turns Heads with Edgy Styling on 2013 Fusion

By DEE-ANN DURBIN
AP Auto Writer

DETROIT (AP) - Ford hopes its redesigned Fusion can help it catch the Camry.

The original has been a huge hit since entering the market in 2005 and it topped the Honda Accord and Hyundai Sonata last year with sales of 250,000. But the Fusion is still lagging Toyota's Camry, the best-seller among midsize sedans, which sold nearly 309,000.

Ford unveiled the new Fusion last week at the Detroit auto show. Gone is the shuttered grille, replaced by a more aggressive diamond-shaped one. The new version borrows the chiseled, aerodynamic look of Ford's other new cars, the Fiesta and Focus.

In the past, Ford would make different versions of a car for different regions of the world, spending millions more on development. But the 2013 Fusion will be sold globally, so Ford canvassed customers worldwide before choosing the final design. The company changed its original headlight, for example, after Chinese customers found it too sinister.

Here's more about the 2013 Fusion:

POWER: Ford will offer several types of Fusions, including a hybrid and plug-in hybrid. Ford expects the hybrid to get 47 miles per gallon (20 kilometers per liter) in city driving, while the Fusion Energi, a plug-in hybrid that runs for a longer time on the battery alone, should get the equivalent of more than 100 miles per gallon. A 1.6-liter, four-cylinder engine with Ford's EcoBoost system will get 37 mpg on the highway,

while a 2.0-liter EcoBoost will be offered in a performance version.

Ford's base engine, a 1.6-liter I-4, will be the first Ford with an automatic stop-start system that shuts off the power when the car stops and restarts it when the driver releases the brake pedal, reducing fuel consumption. It's expected to get slightly better fuel economy than the current Fusion, which gets 33 mpg on the highway.

EXTERIOR: Ford wants the car to have a premium feel, so it even took the extra - and more expensive - step of embedding the Ford badge in the hood instead of attaching it to the grille. Ford designer Chris Hamilton described the look of the current Fusion as "slightly cold." Of the new Fusion, he says, "We wanted that feeling of the surfaces being worked on by hand."

INTERIOR: The 2013 has more rear-leg room thanks to thinner seats up front. Ford

says it has used better, softer materials. Among the options are Ford's Sync voice-controlled entertainment system and its My Ford Touch dashboard screen.

OPTIONS: Ford will be the only car in its class with a lane-keeping system, which uses cameras to monitor whether a driver is staying in his lane and alerts him if he swerves off course. It will also have a system that parallel

parks the car automatically, a blind-spot warning system and a cross-traffic alert that monitors oncoming traffic when the car is backing out of a parking space.

PRICE: Not revealed. But Ford Americas President Mark Fields said last week that it will have a base price close to the current Fusion, which starts at \$20,200.

CHEERS: Analysts were wowed by the design.

Penske Hires New Driver For No. 22 Dodge Racer

MOORESVILLE, N.C. - Penske Racing has named AJ Allmendinger as the driver of the team's No. 22 Shell-Pennzoil Dodge Charger for the 2012 NASCAR Sprint Cup Series.

Allmendinger, who has competed in the Cup Series since 2007, is coming off a strong season that saw him finish 15th in the series standings while battling for a position in the Chase for the Championship.

The 30-year-old native of Los Gatos, Calif., earned one top-five, 10 top-10 and 22 top-15 results in 2011 while driving the No. 43 car for Richard Petty Motorsports.

"I am really excited about the opportunity to join Penske Racing and drive the No. 22 Shell-Pennzoil Dodge in 2012," said Allmendinger.

"I have always admired Roger Penske and the way his teams compete and win in every series where they race. It is a privilege for me to represent such iconic and respected brands as Shell and Pennzoil, AAA and Dodge. I am honored to join Penske Racing and I will do my very best to continue to build on the standard of excellence established across the organization."

Allmendinger will join a winning team that's poised to compete for a position in the 2012 Cup Series Chase.

The No. 22 Shell-Pennzoil Dodge team produced two wins, three poles and 16 top-10 finishes in 2011 as it earned a spot in the Chase and finished 11th in the series standings. Allmendinger will be paired with crew chief Todd Gordon, who led the Penske Racing No. 22 Nationwide Series team to six victories last season and was named last week as the new chief of the Shell-Pennzoil Dodge.

"AJ is a very talented and motivated driver and we believe he will be a terrific fit with our team," said Roger Penske.

"He has shown great promise and consistent results on the track over the last few seasons and working with Todd and the Shell-Pennzoil Dodge team will allow him to take the next step and compete for race wins and a spot in the Chase in 2012."

tremely pleased by Penske Racing's selection of AJ Allmendinger to drive the No. 22 Shell-Pennzoil Dodge," said Lisa Davis, president of Shell Oil Products U.S.

"AJ has consistently demonstrated great potential and continuous improvement as a driver, and with Penske's track record, our employees and customers can look forward to seeing him contending for wins and ultimately a championship in the NASCAR Cup Series. We know he will represent our brands well on and off the track and we look forward to a successful 2012 with AJ behind the wheel."

Allmendinger honed his skills in the open-wheel racing ranks. Earlier, he won the Barber Dodge Pro Series title in 2002 and the Toyota Atlantic Championship in 2003.

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