

Ford Prepares Customer Base for New Generation of Plug-in Electric Autos

DEARBORN – When owners of the Ford Focus Electric or C-MAX Energi plug-in hybrid charge up their cars, they'll find a natural, instinctive fit. That's not by chance – it's by design, and it's because Ford engineers did their homework in ensuring customers had the perfect place to "fuel" up.

"After benchmarking multiple competitive vehicles, we found there wasn't much consistency in charge port location," said Susan Curry, Ford Electrified Vehicle Technology Integration supervisor. "We wanted to give customers a location that made the most sense for them and would seem as simple as filling up at the gas station."

Finding the best charge port location may seem inconsequential. However, an electric vehicle owner is likely to plug in or disconnect his or her car four times a day, or nearly 1,500 times a year.

This is compared to the once a week or 52 times a year frequency of filling up a gas tank. The higher frequency of interaction the charge port entails played a role in Ford wanting to make sure the location was just right.

The team used market research to find out how customers expected to charge up. The research showed most customers would charge their vehicle at home, which was helpful in determining the best place for the port. Feedback

also indicated the location should be kept out of areas with high risk of damage in the event of small crashes. This was a driving factor in the choice of the side of the vehicle rather than the front or rear.

To meet customer usage patterns, engineers considered the driver side, the passenger side and the front and rear of the vehicle. Placement in the front could have created problems with customers having to bend down to plug in or out, snow packing, dead insects or debris, and potential damage from car accidents. The rear of the vehicle would have invited the same issue, with damage from fender benders, as well as less accessibility when trying to connect to a charging station.

"The left front fender location keeps the charge port in sight, before the customer enters or exits the car, for an easy reminder to unplug or recharge," said Mary Smith, Ford Electrified Vehicle Technology Integration supervisor. "It creates an intuitive placement for owners that also has aesthetic appeal."

Additional thought went into the port location from a style perspective to ensure it would provide that "wow" factor. Being positioned on the side of the vehicle delivers the best visibility, especially when lit to show the charge state, as opposed to being buried in the

front with the grille and other style cues.

Other considerations included maximizing commonality with the entire Ford electrified vehicle portfolio, meeting the usage patterns of North American and European customers, and maximizing investment efficiency in terms of new tooled parts and magnitude of the investment.

The demonstration fleet of Ford Escape plug-in hybrid electric vehicles also uses the driver side of the vehicle for the charge port. Engineers received positive feedback from customers on that placement. And they would know best; the Ford Escape plug-in hybrid demo fleet has logged more than 400,000 miles.

Electrification is an important piece of Ford's overall product sustainability strategy, which includes the launch of five electrified vehicles in North America by 2012 and in Europe by 2013. Ford launched the Transit Connect Electric small commercial van in 2010 and will launch the all-new Focus Electric later this year.

In 2012, these models will be joined in North America by the new C-MAX Hybrid, a second next-generation lithium-ion battery hybrid and C-MAX Energi plug-in hybrid. This diverse range of electrified vehicles allows Ford to meet a variety of consumer driving needs.



Ford engineers researched several locations for the Focus Electric and C-MAX Energi charge ports to ensure the port was in the best possible place for customer use.

Major Fleets Buy 27 Ford Transit Vans

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"Energy producers like Azure customers' DTE, SoCal Edison, NYPA, Xcel and others are using the vans to help them understand necessary energy production and distribution requirements related to the increasing national fleet of EV vehicles.

"Last, our Ford dealership partners are eager to meet interest from their customers who are seeking the operational benefits that the Transit Connect Electric promises."

At FedEx Express, the Transit Connect Electric will be part of one of the world's hardest working vehicle fleets providing fast and reliable delivery to more than 220 countries and territories. The five vans, ordered through Holman Ford Lincoln in Pennsauken, N.J., will further the FedEx goal of decreasing environmental impact in day-to-day operations.

DTE Energy, headquartered in Michigan and one of the nation's largest diversified energy companies, is dramatically and rapidly expanding its use of alternatively-fueled vehicles in its fleets. The three vans, ordered through Subur-

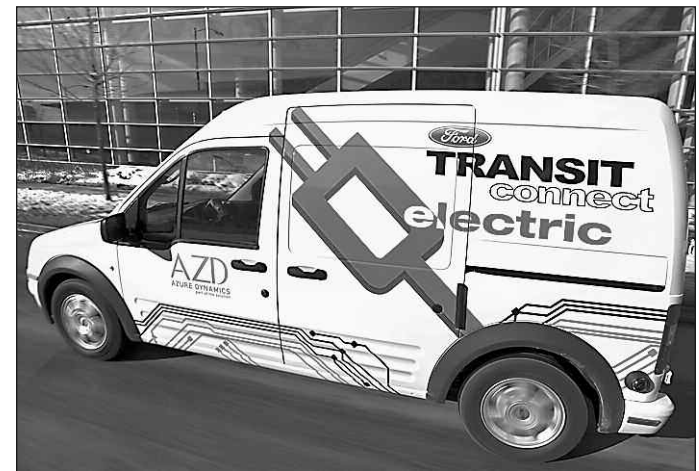
ban Ford of Sterling Heights, will join DTE's fleet and are among the first pure EV vehicles that the company will employ.

The City of Toronto, another returning Azure Dynamics customer, ordered four Transit Connect Electric vans through Eastcourt Ford Lincoln in Agincourt, Ontario.

FedEx Express and the City of Toronto had previously acquired Azure's Balance Hybrid Electric drivetrain, demonstrating that commercial fleet

customers may deploy multiple alternative energy technologies to serve various fleet needs. The Balance™ Hybrid Electric has a 60% market share in the medium duty (Class 2c-5) hybrid commercial truck market in North America.

An additional 15 Transit Connect Electric vans were sold to a variety of Ford commercial truck dealers who will use the vehicles as customer demonstrators to increase awareness and appreciation of the product with potential customers.



Ford partner Azure Dynamics of Oak Park has begun receiving orders for the Transit Connect Electric from new customers.

Ford Using Virtual Reality to Assist In Ensuring Ergonomically Safe Work

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engineering direction while continuing to raise quality.

The digital manikin's first global assignments are for new products planned for new assembly plants in China, the new Focus being assembled in Germany and the U.S., and the global Ranger being built in Thailand and South Africa.

The new effort is expected to help Ford continue its impressive quality gains around the world.

Those earlier avatars called "Jack and Jill" are examples of the versatility of Ford design these days, the automaker said.

As part of Ford's product development, the ergonomic data they provide are handed off to the virtual build arena, where a program team – designers, engineers, suppliers and line operators – assembles a vehicle part by part, virtually speaking of course.

This all happens long before the first physical parts are produced and a prototype vehicle is built. In fact, the virtual build takes place even before Ford and its suppliers install tooling and set up workstations.

In the virtual build event, Jack and Jill assemble the vehicle part by part on a wall-sized computer screen as the program team scrutinizes the

vehicle's manufacturing feasibility – that is, how well the parts go together in the assigned sequence and at the specific plant where the vehicle is to be produced.

"We need to have all four regions of (global) Ford using the same manikin," Stephens said. "Because we're building global vehicles, we need to have an engineering direction. That's what we have done."

To determine the new dimensions of the modernized Jack and Jill, Ford North America and Ford of Europe collected data from their operators in six assembly plants

around the world – Mexico, Spain, China, Germany, England and the U.S.

The data were then analyzed by a researcher at Penn State, who determined a dimension that would reflect Ford's global worker population.

The global worker population is larger, taller and heavier than the original. A 5-foot, 4-inch female global manikin was determined to represent the smallest individual found in a global Ford facility.

The standardized manikins can then be customized to the regional Ford population that is building a specific vehicle.



PHOTO: GERALD SCOTT

Ford ergonomics engineer Patty Racco demonstrates "motion capture" technology at the Ford VR Lab in Dearborn last week.

IIHS Gives 2012 Ford Focus a 'Top Safety Pick'

DEARBORN – The awards just keep piling up for the 2012 Ford Focus.

Ford Motor Company could see the popularity of the 2012 Focus increase even more as it joins the growing list of Ford vehicles to earn a Top Safety Pick rating from the Insurance Institute for Highway Safety.

Now, there are 12 Ford vehicles that have earned the prestigious award.

Last week's IIHS announcement comes one day after Euro NCAP announced the new Ford Focus has earned a maximum five-star overall safety rating in its tests.

Both IIHS and Brussels-based Euro NCAP independently test the safety levels of vehicles and present major safety awards and rankings based on their findings.

Demand for the new Focus is high already as sales increased 22 percent to 17,265 in April compared with the same month a year ago.

The 2012 Ford Focus features a strong, stiff and lightweight steel body structure that has been engineered to meet global safety standards.

The structure makes use of advanced high-strength steels and innovative fabrication techniques to minimize body

weight while delivering enhanced crash performance, improved vehicle dynamics and superior refinement. The body was rigorously designed using state-of-the-art computer simulation tools.

Fifty-five percent of the body shell is made of high-strength steels, of which 31 percent is ultra-tough boron steel, more than any other Ford built to date.

"We were committed from the beginning with the new Focus to design and engineer a vehicle that leads the way both in terms of technology and safety," said Gunnar Herrmann, Global C Car vehicle line director.

"The inherent strength of the new Focus is the structural rigidity of the body and its extensive use of high-strength steels."

Computer simulation also played a major role in development of the restraint system used in the 2012 Ford Focus. Ford safety engineers in the United States and Germany crash tested the vehicle more than 12,000 times in real and virtual simulations to prove innovative new technologies designed to protect occupants in crashes.

As a result, the North Amer-

ican version of the 2012 Ford Focus features advanced restraint systems with innovative next-generation airbags that provide enhanced chest protection.

The new airbag uses a reconfigured curve-shaped tether system that pulls in the lower section to create a "pocket" to help lessen the impact of the airbag on the driver's chest and ribs in frontal crashes.

Other standard safety features for the 2012 Ford Focus include:

- AdvanceTrac Electronic Stability Control;
- SecuriLock passive anti-theft system;

theft system;

- SOS Post-Crash Alert System;
- Tire Pressure Monitoring System (TPMS)

With the 2012 Ford Focus on the list, the company now has 12 vehicles on the road in the U.S. to have earned a Top Safety Pick from IIHS.

To earn a Top Safety Pick, a vehicle must receive a rating of "good" in offset frontal-, side- and rear-impact tests and the roof strength evaluation, as well as offer electronic stability control.

Locally, Ford dealers launched the 2012 Focus with a big public event on May 12.



The 2012 Ford Focus recently received high crash-test ratings from a third-party service.

New Consumer Reports Survey Says Car Buyers Really Do want 'Economy'

YONKERS, N.Y. – The tough economy and high gas prices are driving consumers to prioritize fuel economy with their next car purchase according to a new survey by the Consumer Reports National Research Center.

And to save at the pump, they are willing to compromise on purchase price, amenities and size – but not on safety.

Taking the pulse of American motorists on car buying and fuel economy issues, the Consumer Reports National Research Center conducted 1,764 random, nationwide telephone interviews of adult car owners from April 28 - May 2, 2011.

(The results of the survey are available online at the Consumer Reports Web site).

The economy has caused a significant drop in annual car sales over recent years, and the age of the average car driven by respondents has increased to eight years.

This trend was consistent across most demographics, though household income was a key factor. In households earning \$50,000 or more a year, the average age of their cars was six years, whereas lower-income households drove 10-year-old vehicles on average.

A significant 23 percent of surveyed motorists are driving cars from the 1990s, many of which must be at the tail end of their reliable service life and certainly well behind current, 21st century safety standards.

Meanwhile, for their next car, nearly twice as many consumers expect to choose a model with much better or somewhat better fuel economy (62 percent) relative to those who are targeting about the same fuel economy (32 percent).

Just 5 percent say their next car will have worse fuel economy, likely driven by changing needs, such as a growing family (minivan) or launching a small business (pickup truck).

Survey respondents expect their next car to deliver an average of 29 mpg. Older drivers, women and those from lower-income households expect even greater fuel economy.

These demographic groups favor small cars and sedans – car types that can deliver that desired mileage. More than 10 percent said they expect 40 mpg or better in their next car.

To get significant fuel-economy gains, more than half of respondents are willing to pay extra for a more efficient vehicle, playing right into the strategy of several automakers who offer special-edition models for a premium.

Often the gains for such models are slight, just 1-2 mpg, and the return on that investment – even when just a few hundred dollars – may be much longer than consumers anticipate.

Next, despite consumers craving relief from operating costs, and owning older cars, just 17 percent plan to purchase a car in the coming year. Younger consumers (aged 18-34) are three times as likely to buy a car this year as older consumers (aged 55 and over).

Among those who plan to purchase, about four in 10 will buy a new car, led by older, more affluent consumers.

Most car shoppers (55 percent) will likely buy used, thereby avoiding the initial depreciation hit experienced with new cars and giving them more vehicle for the money.

And compared against their current cars, shoppers are moving away from both new and used sedans, despite that many sedans provide a good balance of fuel economy and safety.

The number of respondents who expect to buy a new or used sedan is 5 and 8 percentage points lower, respectively, than the number who currently own a sedan. Pickup truck interest is also down, but that is less surprising given current economic conditions.

The car-type shift sees shoppers gravitating toward new and small mid-sized SUVs – traditionally versatile vehicles, though often not the thriftiest choices.

There is only a 1 percentage point shift from large SUV ownership (6 percent) to purchase intent (5 percent), giving this expensive, gas-guzzling category surprising market resiliency. The best balance of dynamics, flexibility, and ownership costs is often a wagon, yet wagons rate at the absolute bottom for actual purchase intent.

Older consumers intend to buy a new sedan or small car more than other options.