



Head-on view of one of two trucks that Oshkosh entered in the Baja 1000 offroad race in Mexico. Since the trucks will likely be used in Middle East deserts, it's a practical test, Oshkosh says.

Ford to Feature Four Nameplates with 40 mpg

Ford Motor Company will add its fourth nameplate in 2011 with 40 mpg or higher fuel economy, more than any other full-line manufacturer.

No other automaker offers four nameplates with 40-mpg ratings, according to the 2011 EPA Fuel Economy Guide.

"Ford's drive for fuel economy is paying off for millions of customers who benefit from the largest-ever company investment made several years ago to develop new engines, transmission, hybrid systems and EcoBoost engine technology," said Barb Samardzich, Ford vice president of Powertrain Engineering. "The best news of all? Today's customers can choose how they would like their fuel economy, with the freedom in the Ford lineup to select which type of fuel-efficient, fun-to-drive vehicle they prefer."

Record investment in new engines, six-speed transmissions and new fuel-saving technologies such as EcoBoost, twin independent variable camshaft timing (Ti-VCT) and electric power-assisted steering (EPAS) has raised Ford's fleet average fuel economy performance faster and at a greater percentage than any other automaker, according to a report from the EPA.

Based on an analysis of data published by the EPA, Ford's fleet average fuel economy improved more than any other automaker between 2004 and 2009. Ford's improvement more than doubled its nearest competitor.

Still, at Ford, the fuel economy push continues in 2011. For instance, Edge and Explorer, two Ford nameplates that have never been offered with four-cylinder engines,

Ford Expands Powertrain Options For Its Portfolio of Large Cars

Ford is expanding the powertrain offering for its latest portfolio of large cars, the new Mondeo, the S-Max and the Galaxy models. From this month, the efficient new 1.6-liter 160 PS Ford EcoBoost engine will offer customers the chance to downsize capacity without sacrificing power output.

This 4-cylinder Ford EcoBoost powertrain represents a completely new generation of downsized, high-efficiency, low-CO2 petrol engines. Developed for global application by Ford engineers based in Europe, the new UK-built 1.6-liter engine – along with the Spanish-built 2.0-liter unit also recently introduced across Ford's large car line-up – combines latest powertrain technologies to achieve fuel consumption and CO2 emission reductions of up to 20 percent when compared to conventional larger displacement petrol engines with similar power outputs.

For customers looking for even better fuel efficiency, the new introduced Mondeo and the latest S-MAX and Galaxy ranges also offer a number of Ford ECONetic Technologies features, including Smart Regenerative Charging, the Ford Eco Mode driver information system and an Active Grille Shutter system. All of these technologies come as standard equipment on the new 1.6-liter EcoBoost engine.

Thanks to innovative Ford EcoBoost downsizing technology, the new 1.6-liter Ford EcoBoost are impressive. With a peak power of 160 PS (118 kW) and a maximum torque of 240 Nm within a rev band from 1,600 to 4,000 rpm, the new Mondeo equipped with this engine and a six-

will be available with fuel-saving 2.0-liter engines can increase fuel economy by as much as 20 percent over similar-sized conventional engines with no loss of performance.

"EcoBoost remains a cornerstone of our commitment to lead or be among the leaders in fuel economy with every new vehicle we bring to market," said Ford Group Vice President of Global Product Development Derek Kuzak. "EcoBoost is a game changer for millions because it's affordable, scalable – it can be applied to everything from small cars to large trucks – and the technology is reliable and proven. Most importantly, it doesn't ask owners to sacrifice the joy of driving in exchange for fuel economy benefits."

EcoBoost is fundamental to Ford's strategy to provide technologically advanced, high-output, smaller-displacement powertrains that deliver uncompromised performance and fuel economy. EcoBoost engines deliver fuel economy gains of up to 20 percent and reduction of CO2 emissions of up to 15 percent, compared to larger, less-efficient engines.

In addition to turbocharging with direct injection Ford engineers have enhanced EcoBoost's technology capabilities by adding variable valve timing and precisely controlling all aspects of the engine. Ford has at least 125 patents on its EcoBoost technology.

"Fuel economy and technology are consumers' biggest priorities – and we have made them Ford's as well," Kuzak said.

speed manual transmission has a combined fuel economy of just 6.8 i/100km, which translates into an average C)2 emission of only 158 g/km.

The 1.6-liter Ford EcoBoost engine is a lightweight, all-aluminum design featuring centrally-mounted high-pressure direct injection, low-inertia turbocharging and twin independent variable cam timing.

While each of these features has potential technical advantages on its own, deploying all three together brings significantly enhanced performance and results in a much more efficient combustion process across the full engine operating range.

This advanced combustion system brings new levels of performance and fuel efficiency to petrol engines of this power output. It enables the 1.6-liter Ford EcoBoost to deliver the strong low-end torque and responsive performance of a large capacity engine, but with the size, weight and fuel economy of a much smaller unit.

"Ford EcoBoost engines are designed to provide customers with many of the benefits offered by the latest diesels, including impressive torque at low engine speeds and reduced CO2 emissions," said Graham Hoare, executive director of Powertrain development, Ford of Europe.

"At the same time, Ford EcoBoost engines retain the free-revving driving character and cost advantages of a petrol unit – effectively giving customers the best of both worlds."

Auto analysts have said that encroaching CAFE standards have forced Ford to think on its feet for powertrain improvements.

Oshkosh Runs Two LCVs at Baja 1000 Off-Road Race

OSHKOSH, Wis. – As military vehicles go, you don't expect them to be competing in an off-road race, especially one with such prestige.

But, Oshkosh Corporation competed for the first time ever in the 43rd Annual Tecate SCORE Baja 1000 off-road race Nov. 18-20 in Mexico.

The Oshkosh Extreme Racing team ran its Light Concept Vehicles (LCV) through the rugged 1,061-mile desert course from Ensenada to La Paz.

"Oshkosh got its start as a developer of severe-duty four-wheel-drive trucks, so it is only fitting that it competes its latest concept vehicle in the most extreme off-road race – the Tecate SCORE Baja 1000," said Sal Fish, president and CEO of SCORE International, which has sanctioned and produced the event since 1975.

Oshkosh engineers have designed the LCV to incorporate the company's latest advancements in off-road suspension and diesel-electric powertrain performance. The Oshkosh Extreme Racing team raced two vehicles in the Tecate SCORE Baja 1000 as part of its rigorous testing protocol.

"Oshkosh engineers are dedicated to producing the most advanced vehicle tech-

nologies for a variety of highly-specialized industries," said Chris Yakes, Oshkosh Corporation vice president of Advanced Products Engineering and Oshkosh Extreme Racing team member.

"In pursuit of next-generation technologies for future fleets, we've been testing our concept vehicles in remote locations in the United States, and we are now competing in the Tecate SCORE Baja 1000 – our most intense challenge to date. We are excited about this opportunity."

The LCV includes the next-generation of TAK-4 independent suspension systems. The new system expands on the Oshkosh-patented TAK-4 suspension by increasing off-road mobility, improving vehicle maneuverability and providing a smoother ride. The Oshkosh ProPulse diesel-electric powertrain design delivers improved fuel economy and can export significant levels of electrical power.

"We've created a new class for the Oshkosh Extreme Racing Team based on their vehicle's unique capabilities, weight and dimensions," said Fish.

The two Oshkosh Extreme Racing vehicles, numbered M1 and M2 for the race, were driven by members of California Gold Racing (CGR), led by legendary race mogul Glenn



Military truck supplier Oshkosh Corp. put two of its concept trucks through a unique real-world test bed: it entered them in the 43rd Annual Tecate SCORE Baja 1000 Offroad race in Mexico.

Harris.

As a member of the Oshkosh Extreme Racing team, CGR provided logistics support, while Oshkosh engineers managed the pit crews and technical support for the race.

"We've looked forward to the race and its inherent ability to push our team and the vehicle technologies we've developed," Yakes said. "We've learned a lot from this event and will apply those learnings to our ongoing research and development efforts."

The 43rd Annual Tecate SCORE Baja 1000, the granddaddy of all desert races, which is the season-finale of the five-race 2010 SCORE Desert Series was held on

Mexico's magnificently mysterious Baja, Calif., peninsula. Massive crowds reaching nearly 250,000 were anticipated to again be spread out along the rugged 1061.69-mile course that travels on both sides of the peninsula as the world's most famous desert race.

Entries have come from 37 U.S. states and 19 countries. SCORE International, the world's foremost desert-racing sanctioning body, is headquartered in Los Angeles. It was founded in 1973 and has been led since soon after that date by Fish. The organization produces the five-race SCORE Desert Series, with three events held annually in Mexico and two in Southern Nevada.

Ford Wins Fourth Straight 'Best of' PS Tech Award

Ford Motor Co. won two 2010 "Best of What's New" awards today from "Popular Science," marking the fourth straight year Ford has been honored by the world's top science and technology magazine. The company's inflatable rear seat belts and 2011 Fiesta won in the automotive category and will be featured in the publication's December issue.

"Appearing for a fourth year in the 'Popular Science' Best of What's New awards is an important accomplishment for Ford, proving that we're delivering innovative technology consumers really want and can use," said Derrick Kuzak, Ford group vice president of Global Product Development. "Inflatable belts show how technology can benefit safety, while Fiesta proves that customers don't

have to sacrifice high-tech features when they choose to drive a small car."

Ford recently introduced the world's first production automotive inflatable seat belts, combining attributes of traditional seat belts and airbags to provide added crash safety protection for rear seat occupants. The advanced restraint system is designed to reduce head, neck and chest injuries for rear seat passengers – often children and older adults who can be more vulnerable to such injuries.

The new belts will launch on the all-new Ford Explorer, which goes into production next year for the North American market. Over time, Ford plans to offer the technology in vehicles around the world.

The new 2010 Ford Fiesta is

proving that cutting-edge technologies and connectivity can help redefine consumers' small car experiences.

Fiesta features – including Push Button Start, a PowerShift transmission and Ford SYNC hands-free communications and entertainment – are not found on competitive products such as Honda Fit, Toyota Yaris or Nissan Versa.

Fiesta is also the first vehicle to allow hands-free control of popular smartphone apps. Using the downloadable SYNC AppLink software upgrade, 2011 Ford Fiesta owners with SYNC can control apps on their Android or BlackBerry smartphones with voice commands and vehicle controls without having to interact with the mobile device itself.

Inflatable seat belts and the Ford Fiesta both use tech-

nologies grounded in the present but packaged in innovative ways, pointing toward key applications in the future. That quality was crucial to winning the "Popular Science" award.

"For 23 years, 'Popular Science' has honored the innovations that surprise and amaze us – those that make a positive impact on our world today and challenge our views of what's possible in the future," said Mark Jannot, editor-in-chief of "Popular Science." "The Best of What's New award is the magazine's top honor, and the 100 winners – chosen from among thousands of entrants – represent the highest level of achievement in their fields."

The magazine described Ford as a leader in putting practical tech into cars.

Wozniak Talks About Founding Apple Computers

By Stefanie Carano
Staff Reporter

"You start thinking when you're very, very young, 'What am I in life?'"

Apple co-founder Steve Wozniak was talking to the Macomb Center for the Performing Arts about his development of early computers and the events that led to the founding of Apple more than 40 years ago.

"I was good at math, and I went into the science fair and built a small, tiny little project and, 'Wow, you know? I'm good at science too,' and I started getting known for those things," Wozniak said.

"I had friends in the neighborhood, we had a lot of engineers that were moving into Sunnyvale.

"When we did gardening work for the neighbors, instead of being paid cash, we asked to look at their mayonnaise jars full of parts."

He said he first discovered how a computer works after visiting a science fair in 9th grade.

"I did have a problem discovering what a computer was," he said. "I was so shy. Even as I built projects that got closer and closer to what a computer was, I didn't really know and I was too afraid to ask."

"I finally figured it out in 9th grade, I went to a science fair and saw, 'Oh, a computer does one little thing after another, after another and it can go back and repeat them, that's how a computer works. So, it was a big discovery."

"In high school, I found a manual that described the architecture of a computer, like the architecture of a building. Now, I couldn't afford the lumber, the parts to build it, I couldn't afford the chips to build my computer, but I sat down on paper and started drawing. And I taught myself, I had no book."

Wozniak said he then went into "competition with him-

self," trying to build the same computers over and over, making them a little bit better each time.

He said he met his fellow Apple founder Steve Jobs while working for an electronics company between his second and third year of college, after designing and building a computer for the company he was working for.

"So, I met Steve and we just hit it off so well, we had so many things in common.

"But then he went off to college, I went off to college. He was more of the counter-culture hippie type, the real, you know, free-spirited type and I admired that. I admired that thinking very much," he said.

One year after meeting Jobs, Wozniak got a job at Hewlett-Packard designing the first handheld scientific calculator when he became inspired by the Pong game.

"So, my career kept going up and up and up and I never got back to that fourth year of college for a long time and I saw the 'Pong' game, the first arcade game that was going to affect the masses," he said.

"As I was looking at that Pong game, I said, 'Wait a minute, I know how to design anything. I can put pulses out anytime I want on the wires, and I know how television works from high school electronics. I can build one of these.'"

With the chips Hewlett-Packard allowed him to use, Wozniak said he built up his own Pong game and showed it to Jobs.

"So, he took it down to Atari Corporation, which was in Los Altos, Calif., where I live now, and he sort of acted like we both designed it, and they hired him," Wozniak said.

While at Atari, Jobs was asked by the owner to build a one-player Pong game design, which came to be a design called "Breakout," and gave him four days to do it.

"They didn't have software

back then," Wozniak said. "Software you can do in a half hour and hardware it's a one-year job, half-year job. I said, 'I don't know if I can do it in four days,' and I guess Steve needed the money quick but I said, 'I'll try.'"

"We stayed up four days and four nights, all night long, we both got mononucleosis and we delivered a working 'Breakout' to Atari and I invented it, I did all the design myself."

When Jobs and Wozniak then saw someone typing on a teletype to a computer in Boston, playing chess, it inspired another idea for Wozniak.

"I said, 'Wait a minute, why don't I design a little board that instead of putting paddles and balls on my TV at home, it puts characters on my TV?'"

"And then I bought a keyboard for 60 bucks that designed this little device. I saw a picture of it back in the room where I was waiting. It became the Apple I computer."

"Well, no. But, first it was just a terminal where I could type to a computer in Boston and the computer in Boston could type back to my TV."

"Steve Jobs came along and said he knew how to sell it. And we sold some."

Through some new contacts, Wozniak said he became aware of the microprocessor.

He studied a data sheet and realized that the microprocessors are like all the computers he designed in high school, and said, "I'm in business."

"Now I saw the formula to build a computer," he said, "a complete computer that I could run programs on . . . I saw the formula."



Apple co-founder Steve Wozniak visited Macomb Community College to talk about creativity and innovation as part of the college's "American Ingenuity: Embracing the Freedom to Dream" lecture series.

Jobs told him he could sell it and said they could start a company to make a PC board so it's easier for people to plug in the parts and solder it together.

Jobs said he got an order from the one store in the area that wants to buy the computers completely assembled – 100 computers for \$500 each.

Soon, Jobs and Wozniak built the Apple I and the Apple company was born.

Wozniak's talk was part of MCC's ongoing "American Ingenuity" lecture series.

"I think robotics is really very much in the future," he said. "I go to the FIRST Robotics competitions, I judge them, it's a very dear part of my heart."

He said the United States needs invention and innovation.

"You really want to get out ahead of the rest of the world and be advanced," he said. "So we need innovation, the inventor type . . . who thinks, 'Whoa, here's a whole different approach that's been done before, could it be possible' – and those guys are usually independent thinkers, they work on their own, they come up with an idea, etc."