

## Ford to Make Hybrid Explorers

By KEITH BRADSHER

DETROIT, Jan. 8 — The Ford Motor Company will announce plans on Tuesday to install electrically assisted gasoline engines to sharply increase fuel efficiency and reduce emissions in a large proportion of the Ford Explorers it sells in 2004, company executives said.

The plans are the broadest yet in the auto industry to introduce electric technology — specifically, starters that turn a vehicle's engine on and off automatically, eliminating idling — into the mass market.

The new technology will help Ford raise the fuel efficiency of the Explorer, the nation's best-selling family vehicle in recent years, by 42 percent, to 27 miles per gallon from 19, the executives said.

Ford also plans at Detroit's auto show, under way this week, to announce many safety improvements to all of its sport utilities, intended to make them less dangerous to their occupants and other motorists.

The announcements coincide with a stepped-up effort by Ford to settle lawsuits filed by the families of people killed or crippled in Explorers that rolled over after their Firestone tires failed. This morning, the company settled, for a sum said to be in the tens of millions of dollars, one such high-profile lawsuit scheduled for trial on Tuesday in Corpus Christi, Tex.

Martin Inglis, Ford's vice president for North American automotive operations, said the timing of the settlement and the fuel-efficiency and safety improvements was a coincidence. He noted that Ford had made safety and environmental announcements at the Detroit auto show every year since 1998, in anticipation that these issues will become more important to consumers, especially in the sport utility market.

"They don't really care at this time," Mr. Inglis said. "We believe over time more and more customers will care, and we want to be there before them."

After introducing the new starters as an option on Explorers in three years, Ford plans to add them to a wide range of other sport utilities, cars and minivans, company executives and engineers said. The new electric technology will allow the automaker to meet its goal of improving the average gas mileage of all

its sport utilities by 25 percent by 2005, and make further gains thereafter, said Gurminder Bedi, Ford's vice president for light trucks.

The new device automatically shuts down a gasoline engine when the vehicle stops and then restarts it immediately when the driver's foot touches the accelerator. The quick start-up is possible because Ford will also upgrade the Explorer's electrical system to 42 volts, from 12 volts now. With the higher voltage, Ford will also introduce other technology that will allow air and gasoline to be mixed more precisely in engines — further improving fuel efficiency and emissions.

"It's going to be as dramatic as the change going from carburetors to direct injection," said John Miller, a Ford engine design manager.

Many automakers are developing 42-volt technology, working with the Massachusetts Institute of Technology, but Ford is the first to commit itself to introducing it on a large scale.

The General Motors Corporation plans to use 42-volt electrical systems in 2004, but on so-called hybrid vehicles with both gasoline engines and electric motors. Hybrid vehicles like the Honda Insight and Toyota Prius are already on the market, and stop and start automatically without idling, as will the Explorer. But the Insight and Prius have been niche vehicles because they are expensive to produce and can be hard to repair expect at dealerships.

Explorers and later vehicles with the high-voltage system, but without electric motors that actually power the wheels, will have a 42-volt battery in addition to the 12-volt battery found in cars today. The Explorers will have a new brake system that will slow the vehicle partly by using it to recharge the high-voltage battery, as well as by conventional friction with the brake pads. The entire electrical system will be an option probably costing less than \$1,000 on Explorers, a Ford official said.

Taken together, Ford's plans represent the broadest commitment so far by any automaker to address the safety and environmental drawbacks of sport utilities. The backdrop for the announcements is not just the uproar over fatalities involving Explorers that flip when their Firestone tires tear apart, but the rise in gasoline prices over the last year that has eaten into consumer confidence and helped slow the American economy.

Currently, sport utilities are the biggest gas-guzzlers in the nation's passenger fleet, partly because they qualify for more lenient federal regulations than cars. They are also allowed to emit up to five-and-a-half times as much smog-causing gases as cars. Ford voluntarily builds its models to pollute as little as cars, a policy announced at the 1998 auto show here, but few automakers have followed suit; President Clinton a year ago ordered that all sport utilities meet the same pollution standards as cars by 2009.

A few of the safety measures to be announced on Tuesday have been previously disclosed for one or two models, like anti-rollover devices and front-end designs that reduce damage to cars during collisions. These will now be used on all Ford sport utilities and pickups.

Other measures involve broader, more sophisticated applications of technology now found on a few competitors' models. For example, Ford plans to install air-pressure sensors inside the tires of all sport utilities and pickups, a step General Motors took several years ago on some of its cars. Still other changes involve a shift in corporate philosophy, like making sport utility brakes as effective as car brakes — a sharp change for Ford, which strongly argued three years ago that there was no need to improve sport utility brakes.

Brian O'Neill, the president of the Insurance Institute for Highway Safety, an insurer-financed group that seeks to reduce the cost of crash claims, said that Ford's plans were the clearest sign yet that the auto industry accepted that sport utilities posed different safety issues from cars.

"There's no question that there has been, belatedly, a recognition that there are safety issues with S.U.V.'s, both for their own occupants and for the occupants of the vehicles they hit," he said when told of Ford's plans.

Mr. Bedi and three other Ford managers said that the automaker planned to:

- Lower the steel beams inside the front ends of all Ford sport utilities and pickups to the same height as in cars over the next several years.
- Install matchbox-sized electronic pressure monitors inside all sport utility and pickup tires.
- Adopt a sophisticated version of anti-lock brake technology on all sport utilities, and make other

brake changes so as to reduce the vehicles' stopping distances to that of cars.

- Make available on all sport utilities a kind of ceiling-mounted air bag that covers the side windows during a rollover, to prevent occupants' heads from going through the windows and striking the pavement when a vehicle starts flipping over.
- Include an electronic vehicle stability system on all sport utilities and pickups that will automatically pull the vehicle out of most skids with tiny applications of the brakes to one wheel at a time, reducing the frequency of rollovers.
- Equip sport utilities and pickups with high-technology air bags and seat belts that take different actions depending on the severity of the crash, including seat belts that automatically tighten much faster during a high-speed crash.

All of the safety systems will be available for all sport utilities and pickups by 2005, usually as standard equipment. Exceptions are the tire-pressure sensors, which will become standard equipment by 2003, and the ceiling-mounted air bags, which will only be installed on sport utilities, Ford engineers said.

The new systems will be available by the end of this year on Explorers, although several — including the electronic stability system and high-tech seat belts — will not be ready when a completely redesigned 2002 Explorer goes on sale next month, said Stephanie Sweeney, Ford's crash safety supervisor for Explorers.

Priya Prasad, Ford's top safety researcher, said that the lower steel beams in the front ends of sport utilities and pickups, together with similar changes planned by other automakers, should save the lives of 1,000 motorists a year struck by these vehicles.

Federal regulators say that the designs of sport utilities and pickups are causing 2,000 extra deaths a year. Mr. O'Neill cautioned that all such estimates rely on many assumptions, but said that the insurance industry's crash tests showed that lowering steel beams was the best remedy.