



Clean, Green, with a Touch of Mean!

The 2008 North American International Auto Show at a Glance

by Dale Malcolm

Here we are, seven percent of the 21st century behind us and almost all of our cars are still using the same basic fuel they did one hundred years ago. Increasing oil prices, talk of global warming and increased social consciousness finally has driven the automobile industry to start delivering the types of vehicles that will take us into the next century. This year at the 2008 North American International Auto Show the theme was "green." Each of the major manufacturers presented their vision of the next generation vehicle. The list of new technologies includes: 100-percent electric, clean diesels, hydrogen fuel cells, plug-in hybrids, E85 ethanol and variable displacement, to name a few.



The Dodge ZEO Concept (1-4) is a 100-percent electric, 2+2 sports car.

The Hybrid

Gasoline-powered hybrids have been around for ten years (since 1997 in Japan and 2000 in the United States) and now are being challenged by diesel hybrids and plug-in hybrids. The typical gasoline hybrid uses battery-powered electric motor(s) to supplement the gasoline engine during stop-and-go use or under acceleration. Diesel hybrids work much the

same while taking advantage of the greater fuel economy and greater torque the diesel provides. New clean-diesel technologies being used to trap particulates in the exhaust are giving the diesel a greener and cleaner image. Plug-in hybrids get their batteries recharged by plugging into an electric charging station between uses. The battery capacity of these hybrids is greater than the typical hybrid



Nissan describes its Forum Concept as the “family vehicle of the future.”



The Chrysler ecoVoyager Concept is a rechargeable electric vehicle with a small-range-extending fuel cell.



The Lincoln MKT Concept is a luxury sedan powered by an EcoBoost gas turbo engine.



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Toyota showed its A-BAT gas hybrid compact pickup.



Suzuki equipped its X-Head Concept with storage in the rear-quarter panels.

system because of the corrosive effects of ethanol

and allows the vehicle to run completely on electric power until the engine is needed for longer range. Plug-in hybrids can achieve up to 100 mpg in city driving. While the hybrid vehicle may not be the long-term solution to high oil prices, the technology being developed like lightweight batteries and efficient electric motors will be part of future vehicles. Advances in batteries and electric motors make 100-percent electric vehicles and fuel cell vehicles possible.

One of the most promising technologies is the hydrogen-powered fuel cell. Powered by compressed hydrogen the fuel cell mixes oxygen with hydrogen and this reaction produces electricity. The only byproducts are water and heat creating a true zero-emission vehicle. Currently only limited by lack of fueling stations this technology has great promise. E85 designated vehicles are becoming more common as ethanol-based bio-fuels are available. This technology requires modifications to the fuel

and the lower oxygen content of the fuel. In the Midwest where these fuels are more plentiful, the demand for these vehicles is higher. It is important to note that all of these technologies require energy in one form or another. Gas and diesel hybrids still need oil-based fuels and still have some emissions even though they decrease as efficiencies rise. One-hundred-percent electric and plug-in hybrids need electricity, and much of the electricity produced in the United States uses oil, coal or natural gas. These are subject to increased prices as world demand for energy increases. Hydrogen for fuel cells is produced by extracting it from natural gas or by breaking down water with electricity. To become truly "green" all forms of energy must be examined for efficiency, emissions, cost effectiveness and sustainability. Nuclear power popular in other countries may have to be revisited along with the advances in clean coal technology. Wouldn't it be ironic if the hydrogen fuel-cell pow-

ered vehicle of the 21st century gets its fuel from the coal that powered the trains two hundred years ago?

The Glass

What about glass in these vehicles, you might ask? The changes in how glass is used in new designs started several years ago. The increased use of sound-decreasing and heat-reducing glass will continue to become more and more common.

It is important to note that changing a vehicle's original design by the use of a non-solar glass when one was original to the vehicle could overload the climate control system with which the vehicle was equipped.

The increased use of overhead glass will continue and become more common on lower-priced vehicles.

The special needs of alternative fueled vehicles may become more critical in areas like electrically heated glass where there is no engine to produce heat.

The use of bare-edged glass remains about the same, but the gaps between the glass and body appear to be narrowing as the designers put pressure on the engineers for smaller sight lines.

The skills needed for the coming years are as much about identifying the correct part needed as the ability to replace it without damage to the vehicle in the process. ■



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The Maybach Landulet Concept has a super-luxurious open-air touring saloon.



The Saturn Flextre Concept turbo diesel-hybrid comes complete with two Segway Personal Transporters stored in the rear.



The Tang Hua Detroit Fish Amphibious Concept vehicle was on display at the show.

The Jeep Renegade Concept is a fully off-road-capable BLUETEC Diesel range-extended electric vehicle with an electric motor for each axle.

