

# The power of the Future?

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*Automakers move into competitive phase of new fuels*

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By: Dale Dempsey

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DAYTON – These aren't your daddy's V8's, V6's and fourbangers.

Automakers are seeking the engines, drivetrains and fuels that will power the cars of the future.

There are a few prototypes at this week's North American International Auto Show in Detroit. While there's no telling when the new technology will become commonplace, it's obvious the competition is heating up.

"Ford, Daimler, Toyota, GM – they are really all working on them, and they are not talking," said David Cole, director of the Center for Automotive Research, based in Michigan. "That tells you they've moved into a competitive phase."

Toyota and Honda already have hybrid cars on the market, and Ford has one on the way based on the Focus.

The new engine set-ups run cleaner and boost mileage.

Hybrids like the Toyota Prius and Lexus, Honda Insight, Accord and Civic, run on a combination of a small, gasoline-powered internal combustion engine and electric motors. The engine and regenerative braking keep the nickel-metal hydride battery pack charged. They get 50 to 60 miles to the gallon.

Although he doesn't see mass production of alternative cars for the "next 10 to 15 years," Mike Martin of the Edison Materials Technology Center in Kettering, believes hybrids are an important link in the development of more advanced vehicles.

Martin and his team at EMTEC are working on the power source that many hope will power not only cars but power plants and houses.

EMTEC has received several Ohio Third Frontier grants to research fuel cells, bring them to market and create jobs in the state.



MICHAEL MARTIN, director of Fuel Cell Technology at EMTEC, shows a cutaway of a prototype hydrogen storage cell like those that will eventually hold the alternative fuel in automobiles. SEP 17/05 DAYTON DAILY NEWS

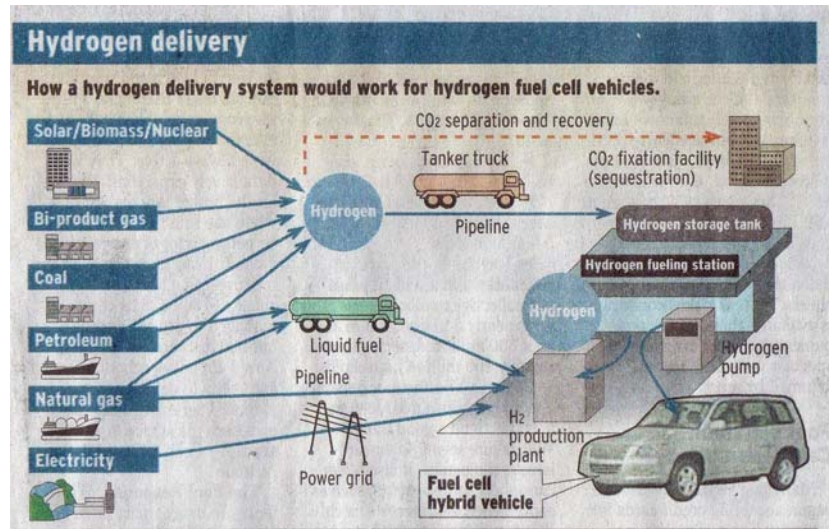
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### *Storage a problem for hydrogen*

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The organization is looking into how to manufacture a better, thinner electric membrane, or cell, which converts hydrogen to electricity. The only emission is water.

There are critics who believe the “hydrogen economy” doesn’t represent much of an advance because hydrogen has to be made with gasoline, natural gas, coal or electricity (more coal).



“If you use a gallon of gas to make a gallon of hydrogen, you are still creating carbon dioxide,” Martin said. “But the thing about hydrogen is its efficiency. If you convert it into hydrogen, you can go twice as far on that gallon of gas.”

There are still many obstacles to overcome to create a hydrogen infrastructure. First and foremost is storage.

“Hydrogen made from water will leak out of anything you put it in,” said Martin. “To hydrogen, all tanks look like cheesecloth.”

Other problems with hydrogen at this time are distribution and affordability.

Developing cleaner-running cars, trucks and busses is important to the environment, as the world becomes more mechanized.

In 2000, there were 740 million people worldwide who owned vehicles. By 2050 it is predicted there will be 3.2 billion vehicle owners, as China trades its bicycles for cars.

Late last year, GM reached an agreement with Chinese auto maker Shanghai Automotive Industry Corp. to develop hybrid and fuel cell cars.

Honda already has a hydrogen fuel cell car in very limited production, the Honda CX. It is a small three-door hatchback. There are 12 leased to government agencies in Los Angeles and San Francisco, and another seven in Japan.

Cole, of the Center for Automotive Research, sees market forces as well as technical ones as obstacles to bringing alternative cars to the market.

“The power trains are very expensive, and they contain lots more parts,” Cole said. “It would be hard to eliminate those costs.”

What technology will the future bring?

The Center for Automotive Research last summer brought together companies working on new technology.

“Toyota and the Big Three all said they don’t know,” Cole said. “School is still out.”