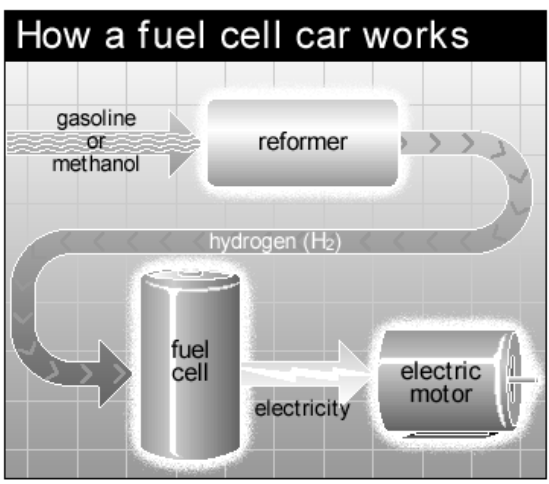
Fuel cells in our future?

A technology that predates the Moon race is gaining ground on earth. Fuel cells have powered spacecraft since the 1960s, but only now is the cost declining enough to consider using them in cars.

Fuel cell vehicles are similar to electric cars, but they don't need banks of batteries or a place to recharge. Instead, the fuel cells turn hydrogen and oxygen into electricity for the motors that propel the car. The potential benefits are near–zero vehicle emissions and better fuel economy than today's automobiles.



Prototypes of fuel cell cars are on the road now and early consumer models could be ready in four years. Will they sell? That depends on several factors.

One key problem is fuel. Based on current technology, refueling cars directly with pressurized hydrogen is expensive and potentially unsafe. And, unless there is a technical breakthrough, enough compressed hydrogen to run a fuel cell vehicle 300 miles would need a heavy storage tank the size of an average car's trunk.

To avoid these problems, scientists are seeking ways to extract hydrogen directly from liquid fuels such as gasoline or methanol, a product made from natural gas. Together with several automobile companies, ExxonMobil is developing the technology to use a specialized gasoline in fuel cell vehicles.

At the heart of this research is the reformer, a device that rearranges the molecules of gasoline to release hydrogen. Reformers are common in oil refineries — and as tall as five story buildings. The trick is making one small enough to fit in your family car.

Gasoline–powered fuel cells offer air quality benefits and fuel economy similar to methanol. Gasoline is also widely available. With nearly 200,000 stations in the United States, there are plenty of places to refuel. Methanol has neither a convenient distribution network nor the manufacturing base to supply it.

Will fuel cell vehicles replace conventional cars and trucks? Not necessarily. Fuel cells are just one of several competing automotive technologies.

Auto makers are already improving the efficiency of current vehicles by turning to lightweight materials, improved fuel injection, advanced computer controls, variable valve timing, and new generation transmissions to enhance the performance of internal combustion engines.

Also promising are hybrids — electric cars with small gasoline or diesel engines. Toyota and Honda are now introducing the first models to the U.S. market and other manufacturers say more are on the way.

No one can yet pick winners in this race for cleaner, more efficient cars. The government should ensure policies affecting vehicle choice are unbiased. Consumers will need to be the final decision-makers. They will balance factors such as price, convenience, reliability, safety, and environmental considerations. As an energy company, we are working to ensure that whatever fuel consumers ultimately require, we will be there to provide it.

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