

## Fuel Me Once

An interesting aspect of living near Detroit is the connection between the auto industry and everyday life. A typical item on the news might concern the latest finance rates on new cars. This kind of “news” affects those who live and work in the Detroit area and is as important to the future of the area as, say, corn prices are to Iowa. In fact, the high percentage of domestic cars that I pass on the roads here is not typical. I seem to notice more Toyotas and Hondas when I’m in California.

The recent auto news affecting those living in the Detroit area, however, goes beyond finance rates. Of more immediate impact are the massive layoffs by the U.S. auto manufacturers, which have no counterpart at non-U.S. automakers. In fact, while sales of U.S. cars are down, sales by non-U.S. competitors seem to only go up.

Fortunately, new technology can revitalize auto sales. Hydrogen-fueled cars are under development, as testified by U.S.-government funding and full-page ads in major publications, showing gleaming pumps with futuristic styling. Hydrogen fuel is analogous to gasoline in the sense that you would drive your car to the corner station and refill your car’s tank as you do today except for what flows through the nozzle. As gasoline becomes more and more expensive, we can presumably expect gas stations to seamlessly transition to hydrogen.

Within this scenario, hybrid vehicles, which use a combination of batteries, motors, and gasoline-powered internal combustion engines, represent an intermediate step, an idiosyncratic stopgap measure along the road

to hydrogen. Yet hybrid technology, developed extensively by non-U.S. automakers, is gaining in popularity and even finds its way into some domestic vehicles. Nevertheless, the gleaming hydrogen pumps serve as a reminder that hybrid is nothing more than a distraction from the metaphorical “hydrogen superhighway” into the future.



SAW BERNSTEIN

Editor-in-Chief Dennis Bernstein hiking the Waterloo Trail in southeastern Michigan.

Or maybe not. Perhaps the next step in hybrid vehicle development is to increase battery capacity and add plug-in capability. By allowing the batteries to be recharged from wall power, less fuel would be used, reducing the frequency of trips to the gas station. Since I drive only about 100 miles a week, I could imagine, say, one gasoline refill per month. Or—even better—perhaps none.

In fact, General Motors offered a technologically advanced, all-electric car, the EV1, from 1996 to 1999, leasing about 800 vehicles. Not surprisingly, the electric vehicle technology had limitations, and the EV1 and associated technology development was a money loser, at the very least a

distraction from the lucrative business of large, petrol-powered vehicles. Despite enthusiastic drivers, GM discouraged interest, convinced the California Air Resources Board to drop its zero-emission-vehicle mandate, and stopped production of the EV1. All of the vehicles were collected as their leases expired, and almost all were crushed for landfill. At about the same time, GM bought the rights to the Hummer brand.

But what would have happened if GM had continued to invest in electric-vehicle technology rather than SUVs? No one will know to what extent battery technology would have improved or whether such a venture would have been profitable. What is clear is that increases in the price of gasoline—a difficulty not attributable to pensions and health-care costs—have made consumers balk at buying inefficient vehicles that are expensive to drive.

What do we as engineers and scientists have to say about the direction in which technology develops? History shows repeatedly that true progress is often made from the ground up, by those who don’t buy into the nonsensical propaganda of empty press releases about unrealistic technology, but rather advance realistic technology against prevailing trends and conventional wisdom. This view of technology development may seem as outdated as the vacuum tube, but I often wonder whether inspired, meaningful invention is the true engine of technological progress. True or not, that’s cold comfort to those whose jobs vanish due to short-sighted investment.

—Dennis S. Bernstein

