Ford vs gm hybrid essay

Hybrid technology is not new. During World War II submarines ran on diesel engines while cruising at or just below the surface; the diesels charged banks of batteries that propelled the subs underwater, where the diesels are inoperable. Hybrid cars also integrate, through use of computer control, a gasoline engine, a set of batteries, and one or more electric motors. The engine charges the batteries, and the car can be propelled by the gasoline engine alone, the battery-powered electric motor(s), or the two together. Because batteries are charged by the operation of the vehicle, the hybrid does not draw charge from an electrical outlet, an inconvenience of conventional electric vehicles.

The hybrid vehicle concept squeezes miles from gasoline in other ways. The electric motor may grab energy typically squandered as heat in braking to charge the batteries in a concept called regenerative braking. Hybrids can shut down the gasoline motor when idling, for example, at a long stoplight. Hybrids are lightweight and shaped to reduce aerodynamic drag. Some have a more efficient, electronically controlled variable-gearing transmission.

Low-drag, stiff tires also increase fuel efficiency, but they may not be best for road adherence in snowy weather. Some of these concepts can and have been used in improving gas mileage in fully gasoline-powered vehicles. For example, Honda’s Insight and Civic and Toyota’s Prius travel over 50 miles per gallon in freeway use. GM and Ford will soon be offering hybrid SUVs; The Escape SUV by ford was recently released in 2004. Ford’s 2004 Escape SUV may deliver 40 miles per gallon in city driving. General Motors offered their hybrid versions of their cars in 2006 when they offered Saturn VUE and later Chevrolet Malibu and Tahoe.

Also General Motors distributed around 240 hybrid buses in Seattle. The basic purpose was to reduce the consumption of oil up to 65%. Other than these cities General motors offered Houston, Portland and Philadelphia with the same hybrid bus models. One drawback of hybrids is the purchase price, which is $2, 000 for a Ford Car and $3, 000 higher than that of conventional GM vehicles. Offsetting the higher vehicle price would be the lowered cost of gasoline per mile.

If the cars were kept long enough, their batteries would need to be replaced, at a cost of approximately $2, 000. With excellent fuel economy and low emission of pollutants, hybrids seem to answer several concerns about petroleum. Still, while consumer ability to buy the more expensive vehicles may rise with planned purchase subsidies like tax credits, that strategy may not be so petroleum saving. Hybrid vehicles save gasoline use as long as the number of miles traveled over the life of a car remains the same. If history repeats, that optimism fails. As the new century dawned, some industry analysts were predicting the SUV market in particular might be targeted for extinction, not because of pollution or fuel economy concerns, but rather, because baby boomers–then turning fifty at the rate of 10, 000 per day–were looking to downsize.

Smaller, more car like vehicles might be on the way back, the analysts predicted. But the automakers were ready for anything–or at least some of them were. Subaru, Mercedes, and Toyota had begun building SUVs on car rather than truck chassis. Soon, all the other automakers were following suit. A new type of vehicle was being designed to cater to the boomers’ new desire: a “ hybrid” sport utility (not to be confused with hybrids so named because of their engines). The hybrid sport utilities are designed to be smaller, more agile, less truck like.

These vehicles, however, would also cut into the old passenger car market. But would the automakers take the opportunity of this vehicle redesign to also improve environmental and energy performance? William Clay Ford did say that Ford and Mazda would be making some smaller SUVs at a plant in Kansas. Hybrids are coming on like gangbusters," said Ford's CFO John Devine in late 1998, " But this isn't a static business….

We have products coming out that will help us remain a leader. We are not going to go to sleep and let this important segment of the market get away from us. " (Norma Carr, 2007). Ford was then working with Mazda on a new hybrid based on Mazda's 626 platform, had plans to start building new hybrids by 20001, and was also considering a combination car, minivan, and SUV blend for another new vehicle. GM was looking at the possibility of a sport wagon.

New designs were part of the perpetual new-model dictum laid down years ago by Alfred Sloan. " Keep them buying up," or in today's market at least, buying different. (Norma Carr, 2007). There was a bit of the 1970s in all of this, a time when the Japanese first came to the American market with small, fuel-efficient cars just as two energy crises hit, snapping up new American customers and market share. However, this time there was no energy crisis.

But the market was changing in a fundamental way. Indeed, GM's Jack Smith saw this coming in 1997 as he viewed in amazement all the new green technology that both Toyota and Honda had showcased at the Tokyo Auto

Show. He worried about GM’s product line. GM would have to become a leader in high-mileage cars with extremely low emissions, he said.

“ It crystallized in my mind we needed to do a good job on that. ” (Jim Motavalli, 2007). But why hadn’t GM done a good job on emissions and mileage all along? Was Smith now saying that GM would have to play catch up? And could GM really become the leader? Certainly, with GM’s one sixth of the global market share at stake, the company had a lot to lose. In any case, the ICE was edging out of the picture–however slowly. Environmental and energy values were permeating the marketplace in a new way. And it appeared, once again, that the Honda Motor Company had a big hand in making that happen.

In late December 1999, General Motors announced it would buy low emission V6 engines and transmissions from Honda as part of a “ worldwide partnership,” whose immediate effect was that of helping GM meet California’s future low emission standards. Honda’s V-6 Ultra-Low Emission Vehicle engines were the leading candidates in the race to meet those standards, and GM apparently didn’t have similar capability. This too seemed to repeat a pattern of the 1970S when GM and other automakers went to Japanese firms to strike deals or buy new technology. GM president Richard G.

Wagoner said the new partnership reflected GM’s strategy of using its global reach to bring new products to market quickly. “ We have a tremendous respect for Honda’s technical heritage,” said Wagoner. “ Together we can strengthen our abilities to develop future technologies.” (Jim Motavalli, 2007). The deal would bring some GM diesel engines to Honda for sale in Europe, and would also give Honda access to other GM technology. But GM was really after about 100, 000 Honda engines annually over the next five years.

The deal was valued at $2. 1 billion. Honda would also supposedly have access to GM's latest alternative fuel engines, which some believed Honda might be hard-pressed to develop on their own, financially. For GM, however, the deal was an admission that it hadn't been paying much attention to low emission engine work and now was simply buying its way back in. It was also one of the few times in GM's history when it would put another manufacturer's engine–the heart and soul of the business–into GM's North American cars.

And that brought a few hot complaints from some GM loyalists back in Detroit. " The fact that GM would even consider outsourcing engines from Japan is a national disgrace and a slap in the face to every American and to every GM employee," offered Ray T. Bohacz, a technical writer. " GM has the greatest engineering resources in the world, but it refuses to let its engineers do what they do best–design engines.

GM has spent millions of dollars trying to re-establish its brand identities. What brand identity will be left when there is a Honda power train under the hood of a GM car? " (Andrea Woloski, 2006) The " 100, 000 cars" promise had been made before. Remember GM's Roger Smith in 1990? He also promised 100, 000 cars–electric cars. In Germany though, there had been aggressive activity on global warming.

In the posturing over the Kyoto treaty, for example, Chancellor Helmut Kohl of Germany pledged a 25 percent cut in CO2 below 1987 levels by 2005. Although that goal might not be achieved, German utilities had begun switching from lignite to natural gas. Daimler, as a highflying player in Germany's economy, had every reason to want to be a leader on the automotive side. At the time of its announcement, Daimler also agreed to pump up its relationship with Ballard Power Systems, putting another $350 million into Ballard to launch a fuel-cell engine company and to take a 25 percent equity position in Ballard. Two joint ventures were created: one to license the technology to other companies, and another to sell fuel cells and fuel-cell engines.

Both would be " open for business" with other automakers. Still, Daimler's pledge of 100, 000 cars by 2005 had a long, rough road ahead. Daimler's competitors, however, were not nearly as far along. Toyota had the Prius and was clearly the leader and first to reach the market with hybrid technology. GM had its EV-1, leasing several hundred by that time. GM and Chrysler were also working on the fuel cell, but were " several years" behind Daimler by one estimate.

Ford was closer, saying it expected to have a prototype up and running by 2000. One key problem for all the researchers, however, was the fuel source to be used to power the hydrogen-making reaction in the fuel cell. Initially, it was thought that a fuel-cell powered vehicle could use hydrogen directly. But that proved a major obstacle in terms of the bulky hydrogen tanks on the vehicle itself, not to mention developing a hydrogen infrastructure to refuel the vehicles.

Soon, other fuels and strategies emerged as possible contenders. Hydrogen would be produced on board the vehicle from other fuels in a reformer to supply the fuel cell with hydrogen. Gasoline and methanol emerged as the leading reforming fuels, although in the long term it might be possible that the sun's power could be harnessed to produce the hydrogen, doing away with fossil fuels completely. Gasoline, even near current pump prices of $2 per gallon, is still a historical bargain. Compare this to the Arab oil embargo of 1973–74, when prices at the pump went from 30 cents to about $1. 20.

Add efficiency gains, whether through mandated fuel efficiency standards, market demands, or technology, and a trip of fixed miles gets cheaper in terms of gasoline. With lowered fuel costs, a family earner might choose to live farther from work to be near an excellent school system, because the cost per trip would be the same. Or a landscaper might travel farther, for the same gasoline cost, to more lucrative jobs that would enhance company profitability. Conservation through improved fuel efficiency as a strategy for slowing future petroleum usage may be undone by human nature. A more certain way to save petroleum is through the unpopular but historically successful practice of higher gasoline costs, including added taxes, to force use changes. Another way is through increased petroleum prices brought about by scarcity.

High fuel costs generate societal economic losses, however, especially for fixed- and low-income households. What about a revolutionary, nonpetroleum concept in transportation, such as vehicles powered by fuel cells in General Motor cars? One power storage device employed in the Apollo space program over 30 years ago, the hydrogen fuel cell, uses hydrogen to store energy and releases primarily water. In a vehicle, an advanced fuel cell would emit essentially no ingredients for smog, plus no carbon dioxide during travel. Still, hydrogen fuel cells have significant energy, economic, and environmental costs. Engineers at General Motors are working on advance Lithium Batteries required to power the Chevrolet Volt for up to 70 km.

The Battery would be 1. 8m (6 feet) and will weigh at around 180 kg. This will be located under the rear seats of a car. Hydrogen exists primarily bound in compounds like water. While seawater is plentiful, a substantial amount of energy is needed to separate its hydrogen and oxygen. Starting and ending with water as a supply of hydrogen means that fuel cells always use more energy than they provide.

The energy needed to get hydrogen by splitting it from water would come from the U. S. power supply. Thus, with fuel cell vehicles the dependence would be switched from petroleum to the power grid. Decreasing vehicle petroleum use substantially by way of fuel cells would require great expansion of the U. S.

electrical capacity, which is expected to grow 30 percent in the next 20 years in the absence of electrifying vehicles. At present, most U. S. electrical consumption is met by coal and natural gas, two fossil fuels that emit carbon dioxide. Over the entire cycle of manufacturing and using hydrogen in fuel cell vehicles, more carbon dioxide would be emitted than for an efficient gasoline or diesel engine.

Pollutants emitted from tailpipes would be lowered for fuel cell vehicles but would be displaced to electrical- generating facilities. Major use of fuel cells would also require a vast hydrogen supply system, roughly similar to the gasoline system. Vehicles would need to refill with hydrogen–possibly as liquid, an expensive form that exists only at temperatures near absolute zero (-400 degrees F). Otherwise, the hydrogen gas would tend to escape to space. Could alternative power be used to supply hydrogen to vehicles, thus reducing petroleum use, carbon dioxide emission, and smog-producing compounds from vehicles? Not at any reasonable cost.

Nonfossil-fuel electrical generation includes nuclear and hydroelectric power, whose expansion in capacity seems unpopular. Wind and sunshine are free but costly to harness for power. As intermittent sources of power, both are unable to produce electricity that is reliable, sufficient, and affordable. Rapid surges through the grid, for example, as wind blows and dies, must be quickly balanced by rapidly adding or removing power from conventional sources. Thus, coal, nuclear, natural gas, and hydro facilities must be kept spinning in reserve to match demand and keep the grid safe. Sunshine and wind are also dilute sources of power.

Solar and wind facilities require tens of thousands of square miles of landscape to produce an appreciable amount of hydrogen. Solar panels densely spaced on the land would produce a severe environmental impact. Wind turbines must be spaced apart and require large tracts of land covered with structures taller than the Statue of Liberty. Wind farm sitting must be planned carefully.

Wind farms, for example, require roads, fire-fighting facilities, and high-power transmission lines to carry the electricity to their customers. Spinning blades may kill birds, produce vertigo flicker in some susceptible individuals, and send low-frequency vibrations through the ground to be felt some distance away. Below is a graph which shows the sales of the major companies. Source: Hybrid cars The graph shows that Toyota has the best selling hybrid.

Comparing Ford and GM, it is visible that Ford's hybrid has better selling ratio than GM. The reason being that General Motors were installing the hybrid package in an SUV and a new model SUV hadn't been launched since 2003 where as other car companies were bringing out their 2008 models. Ford's escape and Mariner were the only cars which had flat sales which made them the only company to increase their sales in the month of September. Owing to their economic and environmental costs, solar and wind are not forecast to provide major amounts of power in the next 20 years. In the near term for Ford Vehicles, the likeliest option for the fuel cell vehicle is an onboard converter that plucks hydrogen from natural gas. The technology does produce carbon dioxide emission, however, and its use would lead to questions about the possible security risks of an expanded role for natural gas.

An added concern is the expansion of pipeline infrastructure for delivery of great quantities of natural gas. For at least the next decade fuel cells unless their hydrogen is supplied through nuclear power, will not replace fossil fuels without major environmental and economic impact. Costly hybrid vehicles offered by Ford and General Motors may make transportation less affordable for fixed- and low-income households; subsidies for the vehicles would have economic costs and could even undermine petroleum conservation efforts. Currently General Motors is working on numerous models of Hybrid cars due to be launched soon where as Ford have only one model in mind to be launched in 2008.

This will surely hamper the sales of Ford and GM will be a strong competitor to the Hybrid Models of Toyota. Ford needs to come up with new models so that they could be in the race for the best Hybrid models in the market. Petroleum seems to be indispensable to prosperity, health, welfare, and a clean environment. Even as petroleum use has increased dramatically, the emissions of six important (criteria) pollutants monitored by the EPA have declined.

Technological advances have continued to deliver greater economic output per amount of energy used. Technology may make reductions in carbon dioxide emission affordable. The National Academy of Engineering ranks the electrification of the United States as the greatest engineering achievement of the twentieth century. Following electrification are the automobile and airplane, energy-using achievements that have helped to generate prosperity. Those great achievements were made possible by fossil fuels, especially petroleum, as the largest share of energy supply for the United States and the world. The debt owed to petroleum is immense, as it has reduced the coarseness of nature and contributed much to the blossoming of humanity.

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