Hybrid Electric Vehicles and Cars (HEV or EV)

Contributed by Greg Allen
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As your gas pump clicked past $20… $30… $40… maybe you thought about getting a hybrid automobile that gets better mileage. I just read today that the price may reach $4.00 per gallon by summer. Imagine that. Most every car manufacturer has announced plans for develop their own electric car using some sort of ultra-capacitor battery. Toyota has the new Camry Hybrid., Honda has the Insight, GM is working with DaimlerChrysler, to build a new hydrogen powered hybrid system for cars and trucks. It is still to be determined who will have the best SUV. The world is turning renewable.

Perhaps the most promising near-term alternative to fuel cell driven vehicles is Hybrid Electric Vehicle (HEV or EV) technology. HEV technology combines the best characteristics of fuel-driven engines, electric motor drives, and energy storage components. It is designed with a combustion engine that functions as the primary power source, and an electric power storage system that functions as the secondary power source. The presence of the secondary power source allows designers to size the combustion engine for cruising power requirements. The secondary source handles peak power demands for acceleration. In addition, the secondary source is used for capturing regenerative braking energy and applying that energy for further acceleration or for the basic energy needs of supplementary electrical systems. Through this basic design structure, HEVs promise to offer low maintenance, clean operation, and high fuel economy.

- Hybrid Vehicles are good for the environment. They can reduce smog by 90 percent and they use far less gasoline than conventional cars.
- Hybrid Vehicles are economical. They can get up to 55 to 60 mpg in city driving, while a typical SUV might travel 15-20 miles per gallon, or use three times as much gas for the same distance!
- Hybrids are better than all-electric cars because hybrid car batteries recharge as you drive so there is no need to plug in. Also, most electric cars cannot go faster than 50-60 mph, while hybrids can. How does a hybrid automobile work? THE HYBRID'S ELECTRIC MOTOR

The electric motor handles normal stop-and-go travel and initial highway acceleration. The electric motor also assists the gas or diesel engine to reduce fuel consumption and emissions. For example, it is the electric motor that drives energy-wasting accessories like the power steering pump and air conditioner. THE HYBRID'S GASOLINE MOTOR

The gasoline- or diesel-powered internal combustion engine kicks in whenever the vehicle gets to higher speeds. Hybrids have a sophisticated computer control system that decides when to switch from one power source to the other. The gas or diesel engine also can generate power for the electric motor. At highway speeds, the gasoline engine recharges the electric motor's battery. THE HYBRID'S SUPER BATTERY

The Hybrid's batteries feeds power to the electric motor. The battery itself is recharged during the times that the vehicle is coasting and braking. (Therefore, Hybrids never need to be plugged into an outside charging device.) During coasting and braking, the electric motor switches to "generate" instead of "consume" electricity. Whenever the brake is released, the engine restarts instantaneously. This process of switching power between the two types of engines saves gas and avoids pollution. Just like the battery under the hood of your current vehicle, a Hybrid vehicle's electric battery pack may eventually wear out and need to be replaced. However, auto manufacturers are stating that the Hybrid's battery is designed to last the lifetime of the vehicle - somewhere between 150,000 and 200,000 miles. It is simply too early to tell.

Advantages and Disadvantages of hybrid cars & vehicles. Honda Hybrids Move To The Market The Insight is the two seated hybrid vehicle by Honda. It has been the leader in gas mileage since introduced in 2000. The Insight is unlike anything else on the road today. The aerodynamic shape, the ample use of aluminum construction, and the compact design, all contribute to its fuel efficiency. The the average US vehicle has the EPA mileage of only 20.9 miles per gallon, the Insight’s estimates are of 57 city and 56 highway for the automatic transmission and 60/65 for manual.The Insight is powered by a 1.0 liter, 3 cylinder aluminum engine with an electric motor mated to it for additional assist when needed. Two transmission choices are available: Honda’s Continuously Variable Transmission (CVT), or the 5 speed manual transmission. Hybrids Geared Up for Growth Hybrid vehicle sales will grow by nearly 400 percent during the next seven years, according to a new report from analyst firm ABI Research. By 2013 hybrids will make up 6 percent of annual U.S. auto sales, says the analyst firm. That's more than a million hybrid vehicles per year, and along with clean diesel vehicles, which will probably sell almost as widely by then, that's a lot less emissions and a few million barrels less of oil being imported. (For example, the Ford Escape Hybrid uses about 5 barrels less of oil per year than the non-hybrid model.) But I disagree with the folks at ABI that performance hybrids will be a significant driver in sales. The Honda Accord is aimed more at performance, and it arguably the worst-selling hybrid to date. Yes, it will be nice to get 6-cylinder performance out of a 4-cylinder engine, but that will be small potatoes compared to the folks who want to spend and expel less.If crude oil goes back up to $70+ again and stays there and the auto companies are smart we could see 10 percent growth. I look forward to the day when passenger vehicles that get less than 30 mpg or can't use biodiesel or ethanol go the way of the dinosaur, a fitting circle.

December 2006 - Hybrid for Everyone in 2007 Soon car buyers won't be able to use the excuse that "There isn't a hybrid in the class of vehicle that I want," as the reason for not considering a fuel-efficient vehicle. By the end of 2007 we'll likely see Nissan, VW, and GM enter the hybrid competition, and possibly even DaimlerChrysler as the variety of hybrid options greatly increases. Nissan took the wraps off the 2007 Altima Hybrid, a stylish sedan that will get 40 mpg in the city. The car borrows technology from Toyota as Nissan is still developing its own hybrid technology. Pity that it will only be available in eight states. GM will have a Chevy Tahoe hybrid out soon, the first fruit from the GM/DCX/BMW joint

hybrid initiative. The trio opened its research facility last week to advance the two-mode hybrid technology that will optimize fuel economy for long distance driving and hauling as well as city driving. GM's Saturn Auro will be the company's first hybrid sedan, and BMW's first hybrid will give a second luxury option to compete with the Lexus line. The retooled 2008 Mercury Mariner Hybrid will be out in early 2007, an economic SUV that puts less emphasis on fuel economy. Toyota will continue to have the most hybrid options as a Sienna minivan, the first of its class, will join the Prius, Camry and Lexus models. Honda is likely to produce the least expensive hybrid vehicle yet with the Fit. So forget considering hybrids a fad, especially when plug-in hybrids arrive. Hybrid Car Real World Miles Per GallonEVWORLD - REAL-WORLD MPG AVG MPGAVG EPAOWNERSFord Escape Hybrid 27.9 33.524Honda Insight 61.8 65.0103Honda Civic Hybrid 44.1 47.578Honda Accord Hybrid 30.2 33.05Honda Civic Hybrid II 45.3 50.08Lexus RX400h 28.1 29.07Lexus GS450h 25.0 26.51Toyota Prius 45.3 46.5186Toyota Prius II 47.0 55.581Toyota Highlander Hybrid 21.8 30.512Toyota Camry Hybrid 39.0 39.01