

MAINTENANCE



Russ Evans

HYBRID CARS

By now you have surely heard of hybrid vehicles. Created by engineers looking to lower greenhouse gas emissions and increase fuel economy, these vehicles have now been among us sharing our roads for more than a decade. Starting with the introduction of the first Honda Insight in 2000 there are now more than 18 models to choose from and even more when you include the hybrid delivery trucks like the Dodge Sprinter van.

When the Insight was first introduced it looked more like something you would see in a science fiction movie. It had a pointed nose, a curved rear, and wheel skirts, all in the name of fuel saving aerodynamics, picture a tear drop with wheels. To say the least it took a lot of getting used to and the new technology it was boasting made it intimidating for the everyday buyer. The Insight sold only 18,000 units over its six year run but led the way for the many, much more attractive hybrid vehicles we have today. In this article I will try to answer some common questions about Hybrids.

What is a hybrid?

A hybrid vehicle is any vehicle using more than one power system to move it down the road. Most of the hybrids in the United States are gasoline electric. The electric motor provides added boost when needed so that a smaller more energy efficient gasoline engine can be used. This pairing gives the vehicle much better fuel economy and greatly reduces vehicle emissions. Hybrids can also be diesel electric and work in the same way as their gasoline counterparts.



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Most hybrids run off of the electric motor only while at parking lot speeds and then add power from the gasoline engine to aid in acceleration. This type of operation results in zero emissions from the tailpipe when in electric only mode and also gives incredible fuel economy in town. In fact most hybrids, even the heavy Cadillac Escalade gets better fuel economy in town than when on the highway which is opposite of what we are accustomed to.

Hybrids have batteries in them to power the electric motor. This is their fuel system like the gas tank is the fuel system for the internal combustion engine. The batteries in a conventional hybrid receive their charge while the gasoline engine is running and also during braking in a process called regenerative braking. As the car slows, braking force is converted to electricity to charge the batteries. The higher the level of charge the more fuel efficient the vehicle can be.

What is a plug in hybrid?

You may have heard the term "plug in hybrid" used during the presidential campaigns, specifically "the development of plug in hybrids". Many of you have asked me what a plug in hybrid is, if you have to plug them in to keep them charged, and if they will stop when they are out of juice.

A plug in hybrid is a hybrid vehicle that has the addition of an on board battery charger. This charger tops off the batteries typically while parked overnight and allows the vehicle to use the electric motor more often resulting in better economy and less emissions. A typical hybrid uses the electric motor only to get the vehicle to speeds around 25mph. A plug in hybrid may reach 65mph or greater on electricity only.



This means the typical in-town commuter may not have to use gasoline for their commute if plugged in overnight. You don't have to plug them in, but be aware if not fully charged, the car will perform like a regular hybrid, emissions will increase, and battery life may suffer.

What does a hybrid cost?

Hybrid vehicles are higher priced than their gas counterparts. This leads us to ask ourselves some questions.

Do I drive enough miles to offset the extra cost with the increase in fuel savings?

Do I want to contribute to a cleaner environment by driving a "greener car?"

For comparison a Honda Civic EX with a gasoline engine was priced at \$19,500 and the comparable hybrid version was priced at \$22,600 a difference of \$3,100 - that's a lot of money but factor in the differences.

The standard Civic gets about 30mpg city and 40mpg highway. The hybrid version gets 49mpg city and 51mpg highway. That's almost 20 mpg

better in town! At \$3.00 a gallon and 15,000 miles driven a year the fuel savings over five years would approach \$2,000.00

Fuel may be a little cheaper today but we all know it can't possibly be expected to stay that way.

The standard Civic does not qualify for the 2008 tax credit which was \$2,100.00, some vehicles had credits as high as \$3,000.00. The credit combined with the fuel savings now makes the hybrid slightly cheaper than its counterpart.

The Civic Hybrid also emits much less pollution than the standard Civic, making it a greener choice. In some cities driving a hybrid allows you to park at meters for free and to drive in the car-pool lane by yourself. What is the value of cleaning up the planet?

Are hybrids harder to drive than a regular vehicle?

No, hybrids drive just like a regular car

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but they can take some getting used to due to the quiet nature of the drive system. When the electric motor operates at low speeds you will hear nothing but the tires on the pavement. Have you ever driven a golf cart? Driving a hybrid is very similar at low speeds. There are a few other differences to note as well. When you start a hybrid it may or may not fire the gasoline engine depending on outside temperature, state of charge, etc. If the gas engine does fire it does so by means of the electric motor that powers the vehicles wheels so there is no starter noise, it just goes from off to on with a quiet whir. Hybrid vehicles also have extra instrumentation on the dash to notify you of the power-trains state of operation. While the operation is seamless and requires no interaction, most owners enjoy the added feature and use it to optimize their fuel economy. For the most part you just get in and enjoy the drive.

Do hybrids require extra maintenance?

What about warranty?

Hybrids need the same maintenance as a regular car. Neglecting needed repairs will have the same result as with a regular car leading to more expensive breakdowns at a later date. There is little maintenance needed on the hybrid part of the drive system but if kept long enough, say 10 years or more, you may need a battery which can be very expensive.

I have not seen many bad battery packs. There are many 10 year old Honda Insights on the road with 200,000 miles and original batteries. Also keep in mind as more hybrids hit the road, more used batteries will be available at a discounted rate from auto recyclers.

Manufactures are covering batteries

for 8-10 years depending on the vehicle. Ask before you buy, what is covered and what is not.

Most general repair shops can handle the everyday repairs to your hybrid. The tools to repair these cars have been available to shops for many years now.

If you plan on working on your own hybrid vehicle, only do what you are comfortable with, as with any vehicle. The one exception to working on a hybrid vehicle that differs from all others is DO NOT TOUCH, CUT, OR IN ANY WAY CHANGE ANY ORANGE WIRES! These wires are the high voltage power wires that power the vehicle. These wires are D.C. voltage exceeding 300 volts and can cause serious harm if touched. If you have any questions, consult an experienced technician.

What is the future of hybrids?

Hybrid vehicles are increasing on our roads everyday with the need for more fuel efficient vehicles that help keep our environment clean. GM has plans to announce up to fourteen new hybrid models by 2012 as well as many new models from other manufactures. The new Cadillac Escalade hybrid has taken off, making a traditional gas-guzzler more appealing. Look for the 2010 Honda Insight return in a much more eye pleasing body. I foresee hybrids and fully electric vehicles to become part of our everyday lives as we transition to a cleaner, more fuel efficient society. Take a look around as you drive, you'll be surprised just how many vehicles wear the name HYBRID.

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