

# Free report on comparison of electric (tesla), hybrid (chevrolet) and gas (sedan)...

[Environment](#), [Electricity](#)



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## **The Electric Vehicles (EVs)**

Electric vehicles (EVs) are known to acquire all their auxiliary power from the inbuilt batteries. The batteries are rechargeable and are charged from the grid electricity. The electric car is normally powered by the electric motor instead of the gas engine. The motor receive its power from the controller which is powered by means of the rechargeable batteries. The technology of EVs is able to provide zero emissions of the Green House Gasses (GHGs) as well as the air pollutants. According to the international energy act of 2011, the electric vehicle can drive at an average range of 150 kilometers per recharge. Most electric vehicles were introduced in the market in 2010 (Hansen, K., Mathiesen, B. V., & Connolly, D. 2011).

In Tesla electric vehicle from Tesla Motors, Inc. it has a bank of electric batteries called Energy Storage System (ESS). The batteries are rechargeable lithium-ion. The vehicle has four major systems; the Energy Storage System, the Power Electronics Module (PEM), the Electric motor and

the Sequential manual transmission. All these systems are computer controlled for smooth running of the car. Tesla has four major versions of its electric vehicles (Anthony 2014). The graph below illustrates driving range of the four different Telsa electric vehicle models.

### **Source: Anthony 2014.**

#### The Hybrid Vehicles

Hybrid vehicles make use of more than one methods of acquiring energy for its propulsion. This essentially means that the vehicle will have the traditionally used internal combustion engine that makes use of fuel tank, electric motor (s) as well as the battery pack. Hybrid cars have a special advantage of using the electric bits in collecting and reusing the used energy. This used energy goes to waste in the normal cars (gasoline cars). Although the hybrid cars prove to be more fuel efficient, building both systems in the same vehicle is expensive (fueleconomy. gov, n. d.).

Source: (fueleconomy. gov, n. d.)

In the year 2007, Chevrolet Volt--a hybrid vehicle was launched by General Motors. The vehicle has the ability of using gasoline, diesel or the hydrogen fuel cell which will be used to supplement the onboard battery pack. The lithium-ion battery has a capacity of 16 kWh/45 A. h. charged by plugging the hybrid vehicle into 120-240 electricity outlets.

### **The Gas Vehicles**

The gas vehicle works much the same as the gasoline vehicle. In gas vehicles, the internal combustion engine is the heart of the car. The engine is responsible for converting the heat from the burning gas/fuel into the force

responsible for turning the vehicle wheels on the road. The gas engine has the lower part called the cylinder block which has the moving parts and the top cover called the cylinder head. The block contains the main shaft (crankshaft), which is responsible for converting the piston's reciprocating motion into the rotary motion. Gas engines are of different configuration namely the In-line engine, the V-8 engine and horizontally opposed engine (Salazar, 1998).

However, compared to other vehicles, the gas vehicle produces high amount of wasted energy. For instance, out of the total energy stored in gasoline, only 30 percent of this energy is converted into forward motion. Until it goes up to several thousands of the RPM, the gas engine does not develop the peak torque.

### **Source: Tesla Motors, 2015.**

The natural gas cars are continually gaining popularity in the economy of Canada and United States with over 250, 000 natural gas vehicles already on the road. This represent a percentage of 0. 1 of the total vehicles in these countries. Sedan vehicles have been manufactured to cater for the factor of the fuel economy. This is because of high gas prices that has steadily kept on climbing.

### **Statement of the problem**

Although the technology of electric and hybrid vehicles provide a clean and more efficient vehicles, including these technologies in these vehicles have remained highly expensive. Designing, developing and also marketing the electric and hybrid vehicles has big challenges. That is why the gasoline-

powered vehicles have continued to rule the market. As gasoline prices continue to go soar and the world continue to develop the concern over the harmful emission from the gasoline vehicles, cars that can run on alternative fuel sources will be becoming increasingly important for the roads. The natural-gas vehicles or otherwise known as the NGVs, will be good examples of such vehicles.

The gas fuel are more efficient, they are more environmentally friendly and are ready to offer a low cost for the ownership of the car to individuals.

Although the electric and hybrid vehicles technologies are better because of their efficiency, fuel economy as well as environmentally friendly, most people may not be able to acquire the electric or the hybrid vehicles because they are highly expensive to buy (Harris, n. d.). The comparison of the three vehicle technologies is important because it shows which technology is best in terms of cost and the technology that is more friendly to the environment.

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