HYBRID VEHICLES

WebQuest Description:
Grade Level: 0
Curriculum: Social Studies
Keywords:
Published On: 2013-03-11 07:28:11
Last Modified: 2012-04-06 17:25:44
WebQuest URL: http://zunal.com/webquest.php?w=145092

Introduction

1. What is a hybrid electric vehicle? A hybrid vehicle is a vehicle of propulsion alternative to combining an engine powered by electrical energy from batteries and an internal combustion engine.

Tasks

2. What are the advantages of HEVs as compared to conventional vehicles? The practical advantages of the HEV include a much greater fuel economy and a notable reduction in emissions compared to the conventional vehicle.

They allow a 30% of the energy they generate, while a conventional gasoline vehicle only uses 19%. This improvement in efficiency is achieved through the batteries that store energy in conventional propulsion systems is lost, such as kinetic energy, which escapes as heat to the curb. Many hybrid systems allow to collect and reuse this energy into electricity thanks to the so-called regenerative braking efficiency is that they last longer, they are cleaner. Its efficacy or performance is outstanding.

Also as the decrease of emissions into the atmosphere. And the reduction in dependence on fossil fuels.

The combination of a combustion engine always operating at its maximum efficiency and braking energy recovery makes these vehicles to achieve a better performance than conventional vehicles or certain time, especially on very busy roads.

- By what percentage to HVE can reduce emissions as compared to conventional vehicle?

The HEV reduce gas emissions that produce a conventional vehicle between 25% and 35%.

Advantages of hybrid cars

- Reduction of the emission of gaseous pollutants and a better efficiency in fossil fuel consumption.
- Less noise pollution that the hybrid car is much quieter than conventional.
- Greater autonomy than simple electric cars and much faster reloading.
- The electric motor of the hybrid car is very powerful and dynamic and batteries to leave something connected are not discharged.
- This environmentally friendly vehicle is smooth and easy to use. Its engine is more efficient and more elastic than the conventional, as well as faster response.
The hybrid car can work for short tours with only with the electric motor, for example in the city, which is where the largest expenditure of fuel occurs.

4.- What are the components of a HEV?

COMPONENTS OF THE HEV

1. Gasoline Engine: This is similar to cars which have conventional. However, the engine in a hybrid is smaller and accounts with advanced technology that reduces emissions and increases the efficiency of the same.

2. Fuel tank: the hybrid fuel tank is the source of energy for the gasoline engine. Gasoline has much greater density energy than batteries. For example, takes about 500 Kg of batteries to store energy equivalent to one gallon (3.5 Kg) of gasoline.

3. Electric Engine: the electric engine of a hybrid car is very sophisticated. Advanced Electronics allows it to act correctly as engine and generator. For example, when needed, can take energy from the batteries to accelerate the car. But as a generator, can reduce the speed for recharging the batteries.

4. Generator: it is similar to an electric motor, but this only works for producing electricity. It is used more in hybrid vehicles that have configuration in series.

5. Batteries: Hybrid car batteries are the power source of the electric motor. Unlike gasoline in the fuel tank, it can only provide power to the electric motor, gasoline engine in the hybrid car can supply energy to the batteries, as well as get it from these.

6. Transmission: transmission in a hybrid car fulfills the same Basic function as in a conventional car. Some hybrids, such as the Honda Insight has a conventional transmission, unlike system of others such as the Toyota Prius, which has a transmission completely different.

5. Name three types of energy storage systems in HEVs. A hybrid propulsion system changes over the operation of the generator when the brakes are activated, the output of the electric current is temporarily stored in a battery and is precisely this which is used when the electric motor is started,
producing a huge savings, especially in city traffic.

Charge high voltage battery and starts the combustion engine

Internal combustion engine that operates when the electric battery is over, or alternatively work to improve the functioning.

Name three types of power units in HEVs. Hybrid electric vehicles (HEVs) combine the benefits of high fuel economy and low emissions with the power, reach and convenience of diesel and gasoline fuel. Also have potential HEV technologies to be combined with alternative fuels and fuel cells to provide additional benefits. HEV technologies also have potential to be combined with alternative fuels and fuel cells to provide additional benefits. Offerings might include future plug-in hybrid electric vehicles. Future deals could also include plug-in hybrid electric vehicles.

6. Name three types of power units in HEVs. Hybrid electric vehicles (HEVs) combine the benefits of high fuel economy and low emissions with the power, reach and convenience of diesel and gasoline fuel. Also have potential HEV technologies to be combined with alternative fuels and fuel cells to provide additional benefits. Offerings might include future plug-in hybrid electric vehicles. Future deals could also include plug-in hybrid electric vehicles.

7. Name two types of propulsion in HEVs. In the parallel system, the heat engine is the main source of energy and the electric motor acts providing more power in the system. Electric motor delivers its power output and acceleration, when the heat engine consumes more. This system stands out for its simplicity, which opens the door to the possibility of implementing it in models of existing vehicles, without the need for specific designs and facilitates the comparability of the cost of a conventional vehicle. This is the system that uses the Honda Insight.

In the combined, more complex system, the electric motor works solo at low speed, while at high speed, the heat engine and the electrical work at the same time. The heat engine combines the features of propulsion of the vehicle and power of the generator, which provides energy to the electric motor, which tends to increase the efficiency of the system, as the energy generated by the heat engine, which in certain circumstances can be in excess, can be harnessed and instead of wasting her, use it to recharge the batteries of the electric system. Toyota Prius uses this system.

8. Configuration in HEVs. Under what circumstances should a HEV with series configuration be used? In the configuration in series, the hybrid vehicle is driven by one or more electric motors whose electricity is supplied by the electric battery. However, in both cases the driving force comes from electric or electric motor. The series configuration tends to be used only in specific applications. Its main disadvantage is that the electrical energy must pass through the generator and electric motors, which increases the costs.

9. Describes the parallel configuration in HEVs. Under what circumstances should a HEV with parallel configuration be used? In the configuration in parallel, the hybrid vehicle can be driven by the direct combustion engine through the transmission system to the wheels, or by one or more electric motors, or by both methods simultaneously. Toyota Prius uses this system.

10. What type of configuration is used in the HEVs available in the U.S. today? Currently, the United States using parallel system because it can operate with internal combustion engine or running on electric power.