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RESEARCH ARTICLE

OVERVIEW OF GREEN VEHICLES

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ABSTRACT

With the exploding human population on the Earth, consumption of resources is increasing day by day. Thus, increasing the pressure on the natural resources. Therefore, harnessing energy and production of non-toxic substances has become a priority. Green Technology is the way out to overcome these problems. This paper provides a brief description of the green vehicle and its types. Green Vehicle is a part of green technology which produces less harmful impacts to the environment than the other engine vehicles.

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INTRODUCTION

What is green technology?

As the name implies green technology is one that has a "green" purpose. It is the technology which is environmentally friendly, developed and used in such a way so that it doesn't disturb our environment and conserves natural resources. You may also hear green technology being referred to as environmental technology or clean technology. Relying on the availability of alternative sources of energy, the purpose of this technology is to reduce global warming as well as the greenhouse effect. Its main objective is to find ways to create new technologies in such a way that they do not damage or deplete the planets natural resources. It also expresses less harm to human, animal, and plant health, as well as damage to the world, in general. Our environment needs immediate recoup from pollution. With the help of green technology, one can reduce pollution and improve the cleanliness as well. Today developed as well as developing countries are turning to green technology to secure the environment from negative impacts. The types of green technology range from very simple tasks that can be performed in your home to highly specialized systems; one of them is Green Vehicle.

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What is green vehicle?

A green vehicle or environmentally friendly vehicle is a road motor vehicle that produces less harmful impacts to the environment than comparable conventional internal combustion engine vehicles running on gasoline or diesel, or one that uses certain alternative fuels. . Green cars are usually much more environmentally friendly as they have less pollutant emissions and use sustainable fuel resources. Key interests have been attracted to discuss future trends in green vehicles. Major car manufacturers seek leadership in future green vehicle markets. 'Green vehicles', as will be shown, directly use renewable energy sources.

Why green vehicle?

Every year millions of tons of fossil fuels are burned by power plants to make electricity, and it seems that these heavy polluters are always making headlines in the news. A conventional car works using an internal combustion engine which burns fuel to create motion. Fuel is a fossil fuel which means it is non-renewable and will one day run out. The burning of fossil fuel results in the emission of greenhouse gases into the atmosphere. Greenhouse gases have been proven to contribute to the effect of global warming. On top of this, fuel is created from crude oil. Crude oil is not only a non-renewable resource which will one day run out; the production of oil is also highly dangerous for the natural environment. Oil spills, such as the BP Deepwater Horizon Disaster oil spill in

2010, destroys natural habitats and kills wildlife. These factors have led to the development of 'green' cars, which cause less damage to the environment.

What are the different types of green vehicles?

There are many types of green carsavailable;some of them are illustrated below:

- Hybrid Vehicle
- Electric Vehicle
- Hydrogen Fuel Cell Vehicle
- Biodiesel Vehicle
- Compressed Air Vehicle

Hybrid Vehicle

Hybrids combine a gas motor with an electric engine that can recharge on its own, offering a great way to extend the miles per gallon of gas your car uses to travel further distances. The best thing about them is that they are so similar to traditional cars that they don't require you to change your everyday behaviors and activities.

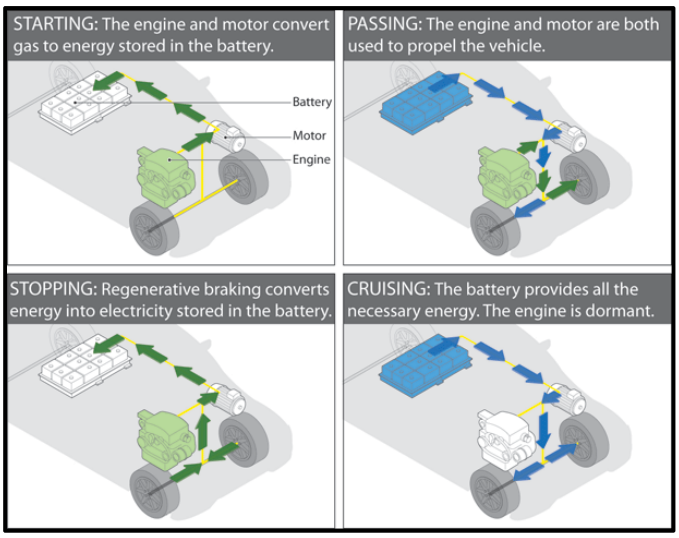
The hybrid vehicle typically achieves greater fuel economy and lower emissions than conventional internal combustion engine vehicles (ICEVs), resulting in fewer emissions being generated. These savings are primarily achieved by three elements of a typical hybrid design:

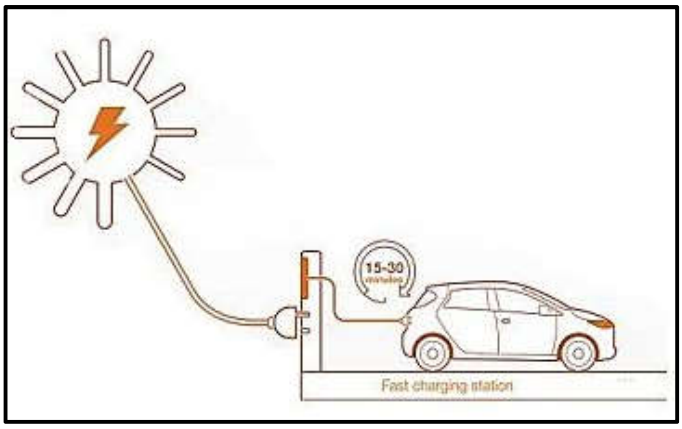
1. Relying on both the engine and the electric motors for peak power needs, resulting in a smaller engine sized more for average usage rather than peak power usage. A smaller engine can have less internal losses and lower weight.
2. Having significant battery storage capacity to store and reuse recaptured energy, especially in stop-and-go traffic typical of the city driving cycle.
3. Recapturing significant amounts of energy during braking that are normally wasted as heat. This regenerative braking reduces vehicle speed by converting some of its kinetic energy into electricity, depending upon the power rating of the motor/generator;

Electric Vehicle

An electric vehicle (EV), also referred to as an electric drive vehicle, uses one or more electricmotors or tractionmotors for propulsion. Three main types of electric vehicles exist, those that are directly powered from an external power station, those that are powered by stored electricity originally from an external power source, and those that are powered by an on-board electrical generator, such as an internal combustion engine (hybrid electric vehicles).

Charging Stations: EVs typically charge from conventional power outlets or dedicated charging stations, a process that typically takes hours, but can be done overnight and often gives a charge that is sufficient for normal everyday usage. EVs differ from fossil fuel powered vehicles in that the electricity they consume can be generated from a wide range of sources, including fossil fuels, nuclear power, and renewable sources such as tidal power, solar power, and wind power or any combination of those.



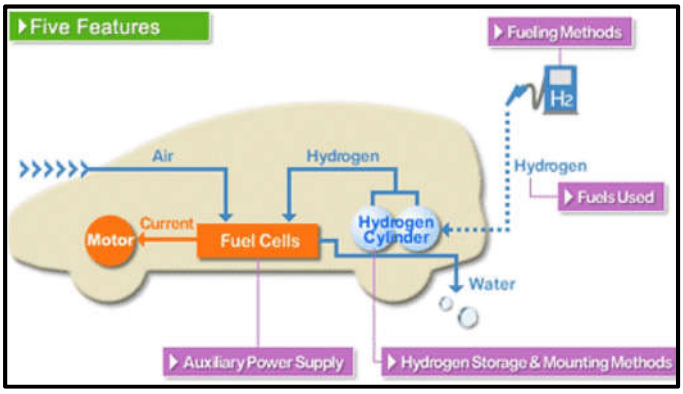


The electricity may then be stored on board the vehicle using a battery, flywheel, or super capacitors. Vehicles making use of engines working on the principle of combustion can usually only derive their energy from a single or a few sources, usually non-renewable fossil fuels. A key advantage of plug-in electric vehicles is regenerative braking due to their capability to recover energy normally lost during braking as electricity is stored in the on-board battery. Electric motors often achieve 90% energy conversion efficiency over the full range of speeds and power output and can be precisely controlled.

Hydrogen Fuel Cell Vehicle

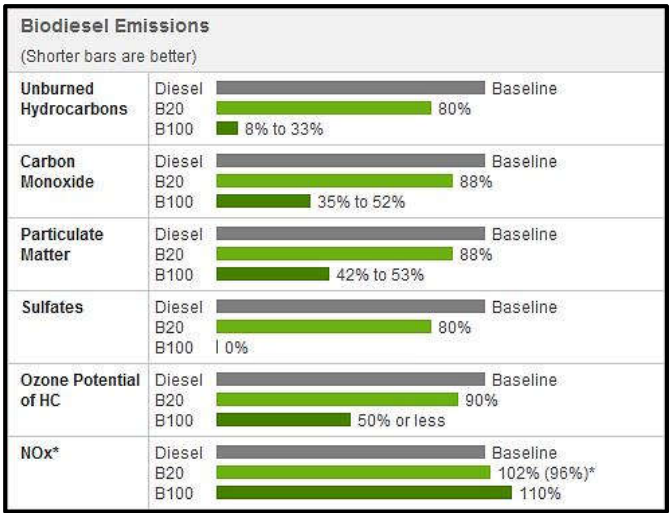
A Hydrogen vehicle is a vehicle that uses Hydrogen as it's on board fuel for motive power. Hydrogen vehicles include hydrogen fuelled space rockets, as well as automobiles and other transportation vehicles. The power plants of such vehicles convert the chemical energy of hydrogen to mechanical energy either by burning hydrogen in an internal combustion engine, or by reacting hydrogen with oxygen in a fuel cell to run electric motors. Widespread use of hydrogen for fuelling transportation is a key element of a proposed hydrogen economy. Hydrogen fuel does not occur

naturally on Earth and thus is not an energy source; rather it is an energy carrier. It is most frequently made from methane or other fossil fuels, but it can be produced using sources (such as wind, solar, or nuclear) that are intermittent, too diffuse or too cumbersome to directly propel vehicles. Integrated wind-to-hydrogen (power to gas) plants, using electrolysis of water, are exploring technologies to deliver costs low enough, and quantities great enough, to compete with traditional energy sources.



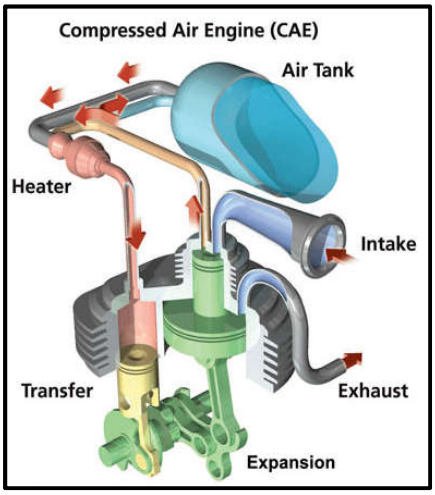
Biodiesel Vehicle

Biodiesel is made from vegetable oils and animal fats. Biodiesel can be used as a fuel for vehicles in its pure form, but it is usually used as a diesel additive to reduce levels of particulates, carbon monoxide, and hydrocarbons from diesel-powered vehicles. Biodiesel is produced from oils or fats using Trans esterification and is the most common biofuel in Europe. Biodiesel is also safe to handle and transport because it is as biodegradable as sugar, one-tenth as toxic as table salt, and has a high flash point of about 300°F (148°C) compared to petroleum diesel fuel, which has a flash point of 125°F (52°C).See how pure biodiesel (B100) and biodiesel blend (B20) compare to conventional petroleum diesel in keeping our air breathable:



Compressed Air Vehicle

A compressed-air vehicle (CAV) is powered by an air engine, using compressed air, which is stored in a tank. Instead of mixing fuel with air and burning it in the engine to drive pistons with hot expanding gases, compressed-air vehicles use the expansion of compressed air to drive their pistons. One manufacturer claims to have designed an engine that is 90 percent efficient.



Typical compressed air engines use one or more expander pistons or rotary expanders. It is necessary to heat the air or the engine during expansion. Compressed-air technology reduces the cost of vehicle production by about 20%, because there is no need to build a cooling system, fuel tank, Ignition Systems or silencers.

Conclusion

Understanding the problems facing, helps us to evaluate the need of Green Technology. Through this paper we understand the most common types of Green Vehicles and their purposes. Thus, the Green vehicles are usually much more environmentally friendly than conventional vehicles as they have less pollutant emissions and use sustainable fuel resources. The environment is an ongoing issue and new technologies are always being developed and tested. One day we will have many more green technologies than those listed here.

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