

HYBRID AND ELECTRIC VEHICLES

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Анотація

Стаття присвячена гібридним автомобілям, їх характеристикам, перевагам та відмінностям від електромобілів.

Ключові слова: *гібридні електричні транспортні засоби, автомобільна промисловість, двигун внутрішнього згорання, ефективність використання палива, викиди забруднюючих речовин./*

Abstract

The article is devoted to hybrid vehicles, their characteristics, differences and advantages of electric vehicles.

Keywords: *automobile industry, internal combustion engine, hybrid electrical vehicle, fuel efficiency, polluting emissions/*

Introduction

There are millions of cars on the roads today. With the increase of vehicles on roads there will be an increasing demand for fuel or alternative energies to run these vehicles.

The internal combustion engine is the predominant power source for road going vehicles nowadays. Conventional vehicles use gasoline or diesel to power an internal combustion engine, but the situation is changing.

Internal combustion vehicles produce polluting emissions. There is the move toward electrification of vehicles. The list of cars powered by electricity is growing.

Of all possible new sources of vehicle propulsion, the electric vehicle is becoming more and more popular.

There are also hybrid electrical vehicles. The similarity between pure electric vehicles and hybrid electrical vehicles is that both employ some means of storing electric energy, typically batteries, and use electric motors to drive or assist in driving vehicle's wheels, either directly or indirectly.

As for differences, pure electric vehicles use only electrical energy, typically supplied from an external source of energy such as the electric grid and stored onboard in batteries, and they are powered by one or more motors.

Hybrid electrical vehicles employ two or more forms of power generation and energy storage, typically an internal combustion engine and gasoline or diesel fuel plus one or more electric motors or battery storage. They may work either in combination or independently from each other.

Hybrids also use an internal combustion engine—and can be fueled like normal cars—but have an electric motor and battery, and can be partially or wholly powered by electricity.

By using both a conventional engine and electric motor, the best hybrids achieve significantly better fuel efficiency than their non-hybrid counterparts. They also pollute less and save drivers money through fuel savings.

The most advanced hybrids have larger batteries and can recharge their batteries from an outlet, allowing them to drive extended distances on electricity before switching to gasoline or diesel.

Now there are four types of electric cars: battery electric vehicles (BEV), plug-in hybrid electric vehicles (PHEV), conventional hybrids and hydrogen fuel-cell powered. While each has its advantages and disadvantages, all of them save on fuel and emit fewer greenhouse gases.

Hybrid Electric Vehicles (HEVs) on the road today have two complementary drive systems: a gasoline engine and fuel tank and an electric motor, battery and controls. The engine and the motor can simultaneously turn the transmission, which powers the wheels. HEVs cannot be recharged from the power grid. Their energy comes entirely from gasoline and regenerative braking...

Battery Electric Vehicle (BEV) runs entirely on a battery and electric drive train, without a conventional internal combustion engine. These vehicles must be plugged into an external source of electricity to recharge their batteries. Like all electric vehicles, BEVs can also recharge their batteries through regenerative braking. In this process, the vehicle's electric motor assists in slowing the vehicle

and recovers some of the energy normally converted to heat by the brakes.

Plug-in Hybrid Electric Vehicles (PHEVs) run mostly on batteries that are recharged by plugging into the power grid. They are also equipped with an internal combustion engine that can recharge the battery and/or to replace the electric drive train when the battery is low and more power is required. Because PHEVs can be recharged on the public network, they are often cheaper to run than traditional hybrids though the amount of savings depends on the distance driven on the electric motor alone.

Fuel-cell Electric Vehicles

The fuel-cell is another type of electric vehicle expected to be widespread on the market in the next years.

Instead of storing and releasing energy like a battery, fuel-cell electric vehicles create electricity from hydrogen and oxygen. Because of these vehicles' efficiency and water-only emissions, some experts consider these cars to be the best electric vehicles, even though they are still in development phases. However, fuel-cell technology is not yet problem free. Extracting hydrogen from a water molecule is an energy-intensive process that generates greenhouse gas emissions if renewable energies are not used. The transportation and infrastructure required to bring this fuel to stations must also be taken into account,

CONCLUSIONS

Hybrids can offer much-improved environmental performance and increased fuel savings.

Consumers, the climate, and our environment may be protected from the growing costs and risks of oil use, but what is needed is the developing science-based solutions for a healthy, safe, and sustainable future.

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