

Combined Transmission System for Hybrid Vehicles

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Abstract

Combined Transmission System for hybrid vehicle is the concept of meshing the dual power source - Electrical and Fuel Engine Power. This system based on the chain drives, simple mechanism makes the good operation and it has less maintenance. Normally hybrid vehicle have dual power but alignment of the sources are one in the front another one in the rear respectively. This system fully differ from that, here dual power will act the same side drive.

Keywords: Dual Power Source, Global Warming, Transmission System

I. INTRODUCTION

The Global Energy consumption continues to increase, while the oil resources depleted with time; it was accompanied by worsening air pollution, causing governments and companies worldwide to consider energy conservation as the main consideration in future development of vehicle technologies. The development of electric vehicles and related critical technologies is one of the most efficient approaches to realize energy conservation and environmental protection. The new-energy vehicles include hybrid vehicles, all-electric vehicles, and fuel cell vehicles; the development of such vehicles is essential for realizing national energy safety and environmental protection as well as the healthy and sustainable development of the automotive industry. In all-electric cars, batteries are used to store energy and electric motors are used for propulsion. Unlike hybrid cars, all-electric cars have the advantages of zero emission, reduced noise, and simple structure this promises a bright future for industries and, hence, has received much attention from governments and auto companies around the world.

II. PROBLEM IDENTIFICATION

The pollution has been mostly created by the vehicles. BS3 type of vehicles were created the exhaust air consist hydro carbon, carbon monoxide, nitrogen oxides. The greatest contributor to air pollution in our atmosphere is the industrial and vehicle smoke.

By considering the capita consumption of various fuels requirements from the year of 1820 to 2000 as Shown in Fig.3.1. Most of the required fuels are coal, oil and natural gas. The natural gas has need widely in most of the Vehicles, so most of the pollutants are emitting in the atmosphere this is so harmful to all the living organisms in World.

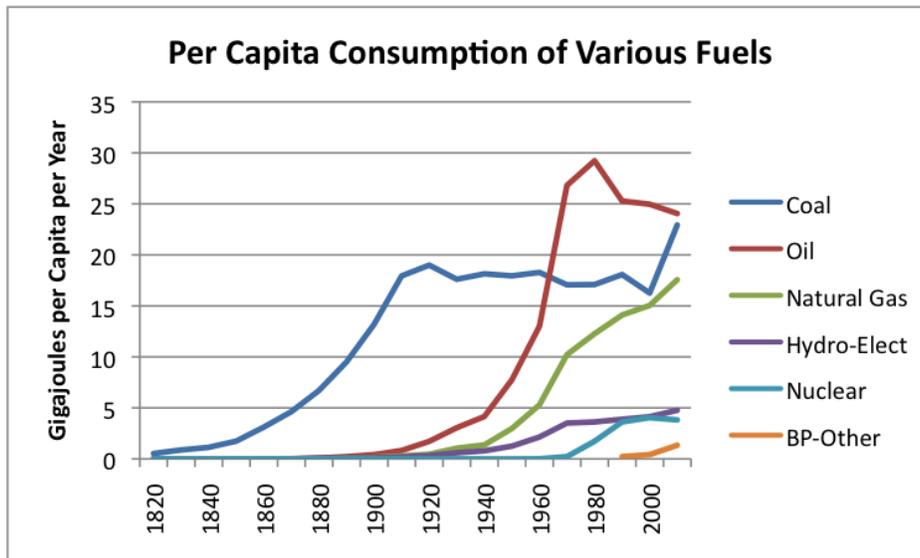


Fig. 3.1: Fuel Consumption of various fuel

Today's vehicles consuming more energy and the maintenance cost is so high because they are using highly sensitive mechanisms and equipments.

III. METHODOLOGY

Power transferred through the chain drives and centrifugal clutch to the rear wheels, when running the vehicle run by petrol engine the electrical energy will generate by the dynamo and saved to batteries then stored the powers in the batteries helps to run the vehicle.

The electrical motor controlled by controller and by the acceleration pedal.

This mechanism is very eco-friendly and easy to keep up, all mechanism is open mechanism, so it no need to any lubrication it will auto cooled by the atmospheric air.

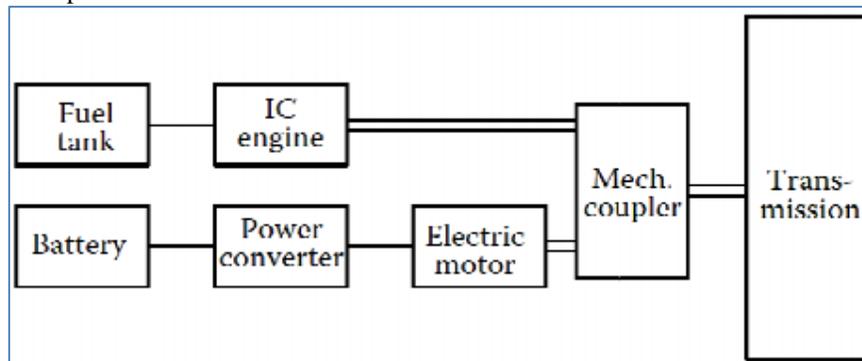


Fig. 5.1: Layout of Transmission system for hybrid vehicle

IV. ENGINE AND MOTOR PROPERTIES

Four-stroke petrol Engine have 200 CC, 3200 rpm, 2.5 HP used for the power, and Electrical Power done by brushless DC Motor 48V, 50A.

V. TRANSMISSION SYSTEM

Transmission System has some drives, they are

- 1) chain drives
- 2) bearings
- 3) drive shafts
- 4) differentials
- 5) belt drives

A. Chain Drives

Power from engine was transferred to the middle shaft by using the main chain drive. This power moves to differential by using another chain drive and finally this energy goes to the wheels from differential. The middle shaft connected with the DC motor and Dynamo to the electrical power circuit.

B. Bearings

Power from engine was transferred There are four type of bearings used for different specific purpose. These types of bearings are normal ball bearings.

The bearings consist of several spherical shaped iron balls which makes the shaft to rotate smoothly without any friction.

C. Drive shaft

The chain drive was used to transmit power from the crank shaft to drive shaft. The axis intersects and rotation of one shaft about its own axis results is rotation of other shaft about its axis. Chain drive transmits the power using the drive shaft which made by cast iron Shafts exceptionally tough and light to improve the overall performance of the vehicle. Automobile industries are exploring composite materials to get reduction of weight without significant decrease in vehicle quality and reliability.

D. Differential

The differential was used to change direction of the energy flow according to direction of the vehicle. Differential connected to the middle shaft by chain drives.

Without differential the rotation of the wheels cannot be controlled so it is one of the major mechanisms in transmission system.

E. Belt drives

With the help of belt drive Mechanical Energy transfers from motor to the dynamo. Here V type belt drive is suitable for this process.

VI. ELECTRICAL CIRCUIT

Electrical circuit is the main control and power transferring unit; it has DC motor controllers, speed regulators, acceleration pedals, batteries, dynamo, starter motor and the switches.

When the main shaft rotates the dynamo generates the power and the energy was stored in batteries. When the vehicle run by the electrical power, the stored energy from batteries flows into the motor and to run the vehicle.

The acceleration pedal works as the speed regulator it control response power to the motors. Kill switch was used to stop all the function in the emergency times.

VII. PERFORMANCE TEST

Based on the performance test efficiency will be differ from these two power sources. The petrol engine gives mileage of 40 km/l when using the both motor and engine the output mileage will increase two times. The variation in the performance is shown in figure 8.1.



Fig. 8.1: performance test

VIII. APPLICATIONS

A. Eco-friendly

One of the most applications of the hybrid vehicle is when the motor runs with the help of electric power; pollution will not be created released in the atmosphere.

B. Financial benefits

They are having the lower annual taxes and low amount of fuel cost was used in our vehicles.

C. Higher resale value

Now a day the gasoline price has increased so the people are turning towards hybrid vehicles. So we can sell our vehicles at a premium price to buyers looking for it.

D. Less dependence on fossil fuels

The hybrid vehicle runs with a less amount of fuel because the low emission and less dependence on fossil flues. It helps to cut the price of gasoline in market.

E. Built from light materials

The hybrid vehicles are built with the lighter materials. Its means less energy was required to the run the engine also in small sizes and lighter which helps to save much more energy of the vehicle.

IX. CONCLUSION

In order to decrease the pollution in our atmosphere these types of vehicles will be the alternative, mechanism used in this vehicle is quite simple and the materials used in this vehicles are also cheap so we can save lot of money.

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