



HYBRID CITY COMMUTER

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ABSTRACT

As we are going to face energy crisis in next few decades we better hurry and search for new energy resources that can fulfil our needs for power and help us to sustain in future energy crisis. Hybrid vehicles are one of the ways that can help us to achieve that. Using hybrid vehicles we can reduce the consumption of gasoline fuels and also the emission level of hybrid vehicles are less that will reduce the impact on the environment. In future hybrid vehicles look like a promising way to sustain in fuel crisis. Many subsidies are given away by governments for users of the HEV to increase the number and increase the awareness about the HEV's in people. A compact hybrid two wheeler (hybrid city commuter) will surely help to commute mid-range distances in cities by avoiding traffic as well as reducing the use of petroleum fuels. We have to look after how to maximize the use of the HEV to help ourselves and to save the environment.

Keywords: Hybrid city commuter, hybrid electric vehicle (HEV), energy crisis, emission, energy sources.

1 INTRODUCTION

A hybrid vehicle combines any two power (energy) sources. Possible combinations include diesel/electric, gasoline/fly wheel, and fuel cell (FC)/battery. Typically, one energy source is storage, and the other is conversion of a fuel to energy. The combination of two power sources may support two separate propulsion systems. Thus to be a True hybrid, the vehicle must have at least two modes of propulsion.

For example, a truck that uses a diesel to drive a generator, which in turn drives several electrical motors for all-wheel drive, is not a hybrid. But if the truck has electrical energy storage to provide a second mode, which is electrical assists, then it is a hybrid Vehicle.

These two power sources may be paired in series, meaning that the gas engine charges the batteries of an electric motor that powers the car, or in parallel, with both mechanisms driving the car directly.

Dr. Ferdinand Porsche who built the first car to combine an internal-combustion engine with electric motors.

The car, which was constructed in 1898.

The closest correlating model to Dr. Porsche's original hybrid would be the Chevrolet Volt. The Volt is an electric car that can be recharged using a household outlet. When the car's rechargeable battery reaches a minimum state of charge, a gasoline engine starts and serves as a power source for a generator, which is then used to power the front wheels with electricity.



II PROBLEM STATEMENT

- i. To find an alternative for conventional petroleum powered vehicles.
 - a. Depletion of petroleum based fuel and their rising prices.
 - b. Depletion of fuel sources can cause the world to standstill.
- ii. In urban areas there is so much wastage of time and fuel due to the traffic Conditions

III PROJECT OBJECTIVES

- i. To introduce a vehicle which will run on both petrol and electricity.
- ii. Easy to use and handle in traffic situations.
- iii. To create awareness among the people to go green.
- iv. Easy to commute to the daily office and other mid-range travel.
- v. To control rate of depletion of non-renewable fuels.
- vi. Creation and encouragement of safe and hazard-free work conditions.
- vii. Better utilization of time and equipment

IV MAJOR ACTIVITIES AND SCHEDULES

1.4.1 Proposed work

- i. Design of the new compact and easy to handle hybrid electric two wheeler.
- ii. Vehicles to be designed which will be helpful for commuting to daily works and office in urban as well as rural areas.
- iii. Vehicle should be helpful in overcoming the limited range problem of electric vehicles.

1.4.2 Proposed solution

- i. Detailed study about different hybrid system, power storage sources, power producing system and product design procedure
- ii. Study of parts regarding its sequence in assembling unit and orientation of parts in assembly
- iii. Different proposals of orientation of parts in drive train of vehicle, their merits and demerits
- iv. According to the selected orientation of parts, different proposals of drives.
- v. Selection of drive train among different proposals by considering ergonomics consideration, cost and economy and working principle.
- vi. Design of vehicle.
- vii. Preparation of manufacturing drawing

V OUTCOMES OF THE PROJECT

- i. Vehicle designed will be useful for travelling for all age level of people easily to their respective work places, schools, offices etc.
- ii. Designed vehicle will also consider the ergonomics conditions for the human comfort.



- iii. Vehicle will result in reduction in cost of fuel, reduction in time and pollution, and safe handling.
- iv. A compact city commuter vehicle for all ages.

VI MODELLING

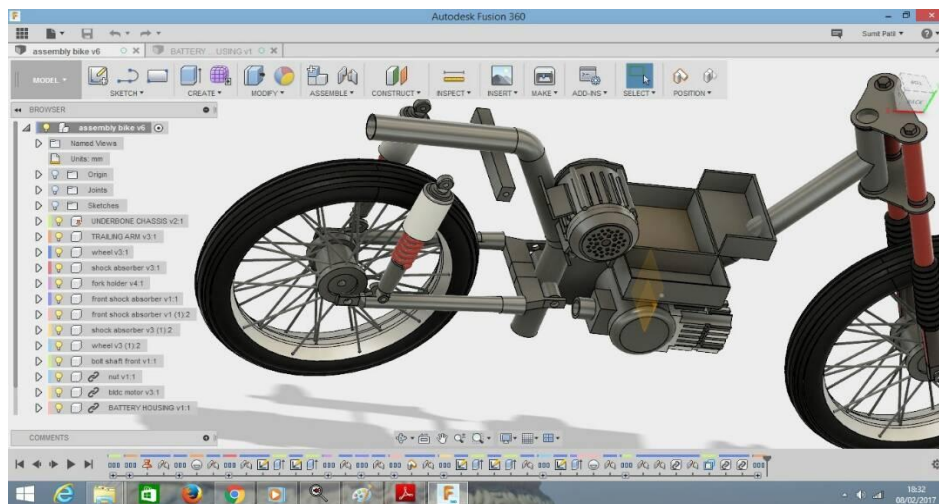


Fig.6.1 Design



Fig.6.2 Actual Model

VII ADVANTAGES OF HEV

1. The current hybrid cars emit fewer pollutants than the market average. For example, Honda Insight has 67% less of annual greenhouse gas emission. Furthermore, car manufacturers are exploring ways to reduce total emission in future hybrid cars.
2. Hybrid vehicles are more efficient than normal Gasoline vehicles since they run on electricity partially.



3. The waste idling power can be saved in to the batteries this increases its economy.
4. Cost spend on the fuel is lesser for HEV as compared to the normal cars.
5. Government has some schemes in the form of less tax incentives to the people who use HEV.

VIII DISADVANTAGES OF HEV

1. Less power as compared to the conventional cars and they are suited for city driving not for speed and acceleration.
2. Presence of dual drive makes HEV expensive in case of maintenance.
3. HEV's can be really expensive than other vehicles but that cost can be compensated with lesser fuel cost.
4. More car batteries have to be made which again arises the problem for disposal of that batteries can be a hazard to the environment.
5. HEV's are very bulky and heavier.

IX FUTURE SCOPES

1. Hybrid city commuter has a bright and varied future. By carefully planning and implementation we can achieve new modes of energy sources and reduce the bad impact on environment.
2. Though there is a need of awareness among the people regarding the usage of HEV.
3. Once the people will know how beneficial this hybrid is there will be a new market for this kind of vehicle and these kinds of vehicles are ideal for short city level travelling.
4. By help of government and campaigns we can contribute in a big way towards usage of these vehicles which will make our future well and will help us in sustaining in future fuel crisis.

X RESULTS

Bikes	Hybrid City Commuter	Hero Splendor+
Powerplant	Brushless Dc Motor and 2-stroke single cylinder	Air cooled, 4-stroke single cylinder
Power	Electrical Drive- 750w Mechanical Drive- 3.5bhp@5000rpm	6.15KW@8000rpm
Torque	Electrical Drive-29.49Nm Mechanical Drive-5Nm@3750rpm	8.05Nm@5000rpm
Transmission	Single Speed	4-speed constant mesh
Top Speed	Electrical Drive- 27km/hr Mechanical Drive-74.8km/hr	87kph



Weight	105kg	112kg
Range	Electrical Drive-40km per charge Mechanical Drive-66km per litre	80.6kpl Fuel tank capacity is 11litres. That translates to approximately 886.6km per tankful.
Running Cost	Electrical Drive-It takes Rs.28 for 40km. Mechanical drive-It takes Rs.80 for 66km.	Consider the price of petrol per litre to be Rs.80. That means it takes 1.5 litres of petrol to cover 100km and that'd cost Rs.120 per 100km.

XI CONCLUSION

World is looking for new energy sources to fight fuel crisis and Hybrid city commuter look like a promise able way to face fuel crisis in future. After studying the various parameters regarding hybrid vehicles we can understand that by carefully planning implementation of hybrid vehicles can be increased.

We have problems like high initial cost, charging time cycles, conversion that can be solved by recycling older spent batteries, providing charging stations publically and using dual drive mode. More ways to improve hybrid vehicles will emerge more people will turn towards hybrid vehicles.

The environment also needs our attention as we are polluting the environment heavily since last century it will be bad impact on ourselves as the global warming will create in rising the sea level. So more than just for saving fuels we must alter ourselves to hybrid vehicles to save the environment.

By practical implantation carried out with the help of government we can succeed in that. At last we can say that Hybrid Vehicles are really a emerging source as a alternating power source and we should use it wisely for betterment of ourselves.

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