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Longest Hybrid Bike

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ABSTRACT: *The impact of today's vehicle on the global environment landscape is undeniable. In hopes the automobile industry is investing large amounts into technology research and development. A prominent element of this effort is the development of powertrain alternatives to the omnipresent internal combustion engine (ICE). While a number of these alternatives show great promise toward improved energy efficiency or reduced airborne effluent, some early prototypes lack the power density of ICEs. This deficiency implies that either performance must be compromise. Proper selection from several technology combinations requires knowledge of the customer's value function, but the first step is to quantify the decision characteristics. This thesis examines the resulting cost and environmental performance trade-off implicit in selecting between these two complementary fuel efficiency strategies.*

*Focus is given to reducing weight through the use of light body structures. In particular, this thesis quantifies the relationship between environmental performance and one element of cost, the cost of producing lightweight body structures. For these powertrain and body combinations the environmental performance is modelled. Finally, implications of fuel price policy and increasing fuel economy standards for adoption of these alternative technologies are analys*ed.

KEYWORDS : *High Grade MS Material, Hub motor, IC Engine, Lead Acid Silcon Gel Battery, TIG Welding.*

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I. Introduction

Now a days the usage of vehicle is increased as the population increased. So fulfilling the vehicle's need with the fuel is not possible because the fuel product is non-renewable source. As raw material availability of fuel product for the conventional engine is too low for future. As the environmental pollution and energy crises are getting more and more remarkable, hybrid electric vehicles (HEV) have taken on an accelerated pace in the world. A hybrid vehicle uses two or more distinct types of power, such as internal combustion engine to drive an electric generator that powers an electric motor, e.g. in diesel-electric trains using diesel engines to drive an electric generator that powers an electric motor, and submarines that use diesels when surfaced and batteries when submerged. Other means to store energy include pressurized fluid in hydraulic hybrids. To fabricate an eco-friendly vehicle with increased in efficiency than the convention internal combustion engine powered vehicle. To archive higher efficiency by combining renewable and non-renewable sources. To make a vehicle with two sources of power. To reduce the fuel consumption.

II. Components Of Hybrid

Basic components of a hybrid vehicle

- Conventional IC engine
- Fuel Tank
- Electric Motor
- Generator
- Batteries

2.1.IC Engine:

An internal combustion engine is a heat engine where the combustion of a fuel occurs with an oxidizer in a combustion chamber that is an integral part of the working fluid flow circuit. In an internal combustion engine, the expansion of the high-temperature and high-pressure gases produced by combustion applies direct force to some component of the engine.

2.2.Fuel Tank:

A fuel tank (or petrol tank) is a safe container for flammable fluids. Though any storage tank for fuel may be so called, the term is typically applied to part of an engine system in which the fuel is stored and propelled (fuel pump) or released (pressurized gas) into an engine

2.2.1.Automotive Fuel Tanks:

Two technologies are used to make fuel tanks for automobiles

- Metal (steel or aluminium) fuel tanks welded from stamped sheets. Although this technology is very good in limiting fuel emissions, it tends to be less competitive and thus less on the market, although until recent times automotive fuel tanks were almost exclusively made from sheet metal.
- Plastic high-density polyethylene (HDPE) fuel tanks made by blow moulding. Blow moulded HDPE can take complex shapes, for instance allowing the tank to be mounted directly over the rear axle, saving space and improving crash safety. Concern for safety and long term ability to function should be considered and monitored.

2.3.Electric Motor:

An electric motor is an electrical machine that coverts electrical energy into mechanical energy . The reverse of this is the conversion of mechanical energy into electrical energy and is done by an electric generator, which has much in common with a motor.Most electric motors operate through the interaction between an electric motor's magnetic field and winding currents to generate force. In certain applications, such an regenerative braking with traction motors in the transportation industry.

2.3.1.Induction Motor:

So called because voltage is induced in the rotor, but for this to happen, the rotor must rotate at a lower speed than the magnetic field to allow for the existence of an induced voltage. Therefore a new term is needed to describe the induction motor: the slip.

2.4.Generators:

In electricity generation, a generator is a device that converts motive power into electrical power for use in an external circuit. Sources of mechanical energy include steam turbines gas turbines, water turbines, internal combustion engines and even hand cranks. Generators provide nearly all of the power for electric power grids. The reverse conversion of electrical energy into mechanical energy is done by an electric motor, and motors and generators have many similarities. Many motors can be mechanically driven to generate electricity and frequently make acceptable manual generators. Electromagnetic generators fall into one of two broad categories

- Dynamo generate pulsing direct current through the use of a commutator
- Alternators generate alternating current.

Mechanically a generator consists of a rotating part and a stationary part

Rotor: The rotating part of an electrical machine.

Stator**:** The stationary part of an electrical machine, which surrounds the rotor.

One of these parts generates a magnetic field, the other has a wire winding in which the changing field induces an electric current

Field winding or field magnet: The magnetic field producing component of an electrical machine. The magnetic field of the dynamo or alternator can be provided by either wire windings called field coils or permanent magnets. A generator using permanent magnets is sometimes called a magneto.

Armature: The power-producing component of an electrical machine. In a generator, alternator, or dynamo the armature windings generate the electric current, which provides power to an external circuit.

The armature can be on either the rotor or the stator, depending on the design, with the field coil or magnet on the other part.

2.5.Batteries:

An automotive battery is a rechargeable battery that supplies electrical energy to a motor vehicle. It is also known as an SLI battery (starting-lighting-ignition) and its main purpose is to start the engine. Once the engine is running, power for the vehicle's electrical systems is supplied by the alternator. Typically, starting discharges less than three per cent of the battery capacity. SLI batteries are designed to release a high burst of current and then be quickly recharged. They are not designed for deep discharge, and a full discharge can reduce the battery's lifespan.

2.5.1.Lead-Acid Batteries:

Lead-acid batteries are composed of a Lead-dioxide cathode, a sponge metallic Lead anode and a Sulphuric acid solution electrolyte. This heavy metal element makes them toxic and improper disposal can be hazardous to the environment.The cell voltage is 2 Volts.

3.Components Specification:

Engine	110cc
Battery	24v 12Ah
MS Steel	High Grade
Fuel tank	14 litres
Motor type	Hub motor

III. Conclusion

The longest hybrid bike we designed and fabricated is series hybrid as the front wheel is electrical drive which is energized from the battery. And the rear wheel is energized from the engine which is fuel powered. The main reason for hybrid is to increase the vehicle performance, mileage and to get an answer for renewable power source is attained. Our bike is designed to meet such things but our frame is heavier than the regular bikes. To fabricate an eco-friendly vehicle with increased in efficiency than the convention internal combustion engine powered vehicle. To archive higher efficiency by combining renewable and non-renewable sources. To make a vehicle with two sources of power. Make low emission vehicle.To reduce the fuel consumption and to increase the vehicle efficiency.

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