IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Review On Propeller Shaft Generating Electricity

Prof.Husain Shaikh[1],Keval Palan[2],Nikesh Awhad[3], Sagar Mandale[4], Sumit Bidkar[5]

[1]Asst.Professor Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology ,Lonavala

[2]Student Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology ,Lonavala

[3]Student Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology ,Lonavala

[4]Student Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology ,Lonavala

[5]Student Mechanical Engineering Vidya Prasarini Sabha's College of Engineering and Technology ,Lonavala

Abstract

A vehicle such as a large truck can generate electricity for operating a hybrid engine or recharging batteries by use of an electricity generating driveshaft. The electricity generating driveshaft is comprised of a magnetized driveshaft which acts as a rotor, and a series of copper wire coils surrounding the magnetized driveshaft which acts as a stator in an electrical generator. As the magnetized driveshaft spins as a result of power from the hybrid engine, an electrical field is created which is captured by the copper wire coils and used to power the hybrid engine or recharge a super capacitor.

Keywords: Driveshaft,Ethanol and Gasoline, OPEC nations, propeller shaft, physical reliability

1.Introduction

The project is revealed in a piece of writing for designing and generation of electricity by rotating shaft of an automobile and using a drive shaft to lower the speed of the vehicle.

As the market is taken by the combustion vehicles which work on fuels like gasoline, diesel oil, and natural gas which leads to a big issue of their availability. For solving these types of problems, the vehicles are converted to hybrid ones or the vehicles get power by electric motor. As the solution is made there is a difficulty for charging the vehicles due to their less availability of charging stations. So, the vehicle has less efficiency because of the load on the motor which leads to heat and frictional losses.

So, a solution is made for these types of problems where an electricity generating driveshaft is used. This typically comprises a magnetized driveshaft which acts as a rotor, and a series of copper wire coils surrounding the magnetized driveshaft which acts as a stator in the electrical generator. One of the main components of this research is the propellershaft which is also known as the driving shaft. The purpose is to transmit power via rotation which may lead to various types of stresses such as torsional or shear stresses. To transmit more power the propeller shaft must be strong enough so it can withstand such stress so the design concern is also taken into consideration so the transmission must be smooth.

2.Objective of the project

i. To understand the basic principal of the our project
ii. Describe the construction and working of various parts of our project
iii. Development of the working model of the our project

3.Problem Definition

In current vehicles following are the Concern,

By using chain and belt mechanisms with the alternator with engine these are the problems

- Loss of power
- More friction
- Wastage of energy
- Less quantity of fuel on earth

Detailed Problem Description:

- **Loss of power:**

must be needed. In other system there are the various losses. Which include heat loss, friction loss etc. Which causes major loss of energy for this frictionless energy

- **More friction:**

Due to the friction more amount of heat is generated in the system and also it causes wear and tear of the material, also this heat causes the deflection of material. Due to the friction we have to exert more power to the machine it

opposes the motion due to friction noise also produce in the machine. Due to friction engine consumed more fuel so there is wastage of energy. So we cannot convert all input power to the output energy.

- **Wastage of energy:**

When energy is transfer between two bodies this total energy usually results in maximum loss of the system.

- **Less quantity of fuel on earth***:*

There is a limited amount of fossil fuel. Which found in rare places each of those regions contains less than 15 percent of the world's proven reserves worldwide. In 2020, it is anticipated that non- OPEC and OPEC nations will produce about 120 million barrels of oil per day. Compare that to today where about 75 million barrels of oil are produced today.

4.Literature Review

The field of the invention disclosed here in is an article of manufacture and method for generating electricity from the rotating driveshaft of a motor vehicle and using the driveshaft to slow the vehicle to a stop. Vehicles have been powered by a variety of sources over the years. Before the invention of the internal combustion engine, vehicles were powered by animals, wind, and manpower. Since the abuse of the internal combustion engine, vehicles have been fuelled by gasoline, diesel oil, natural gas, ethanol and combinations of ethanol and gasoline. These fuels are expensive to use, difficult to obtain and transport and are becoming increasingly scarce. In response to these problems with the so called “fossil fuels, vehicles are being powered by all electric motors or hybrid combinations of electric/gasoline or electric/diesel fuel engines. The use of electric motors or electric/fossil fuel hybrid engines is hindered by the difficulty of providing electricity to power the electric motor or the electric portion of the hybrid engine. Electric engines receive energy from batteries. However, the batteries are heavy decreasing the efficiency of the electric motor. The batteries also have limited storage capacity thereby decreasing the range of the vehicle driven by an electric motor. Moreover, stations to recharge the batteries are few limiting the usefulness of electric vehicles.

Electrical generators have been in use for many years in different applications. The general definition of a generator is a device that converts mechanical energy into electrical energy. This is possible due to principle of electromagnetism. As this electrical energy is produced, the generator will cause electric current to flow through an external circuit. Typically, generators are made up of an arrangement of magnets, copper winding and a rotor, which ultimately produce electricity from mechanical power. In a generator powered by a diesel engine, the mechanical energy is provided from the chemical energy that stems from the combustion of diesel fuel by the engine This mechanical energy provided to the generator is eventually converted into electrical power based on the principle of electromagnetic induction. As the magnetic field is changed, a current is produced through the conductor within the generator.

5.**Proposed Methodology**

When the propeller shaft is rotating at high speeds, the disc magnets also rotates with its axis when the magnet spins, the magnetic field around the top and bottom of the coil constantly changes between a north and a south pole.

This rotational movement of the magnetic field results in an alternating EMF being induced into the coil as defined by Faraday's law of electromagnetic inductions.

Copper coils generates 10 to 30 AC Volt, by using AC to DC Converter circuit, we can convert it to Dc and charge the batteries.

Further By using the power we run the vehicle in hybrid vehicles or electric vehicles

- **Design consideration of the project**

Project design may be defined as the iterative decision making activity to create a plan or plans by which the available resources are converted, preferably optimally, into systems, processes or devices to perform the desired functions and to meet human needs.In fact project design has been defined in many ways but the simplest ways to define project design as

"An iterative decision making process to conceive and implement optimum systems to solve society's problems and needs."

Project design is practical in nature and must be concerned with physical reliability, or economic and financial feasibility Design is essentially a decision-making process. If we have a problem, we need to design a solution. In other words, to design is to formulate a plan to satisfy a particular need and to create something with a physical reality.

- **Basic concept of project design:**

Decision making comes in every stage of design. Consider two cars of different makes. They may both be reasonable cars and serve the same purpose but the designs are different. The designers consider different factors and come to certain conclusions leading to an optimum design. Market survey gives an indication of what people want. Existing norms play an important role. Once a critical decision is made, the rest of the design features follow. For example,once we decide the engine capacity, the shape and size, then the subsequent course of the design would follow. A bad decision leads to a bad design and a bad product.

Design may be for different products and with the present specialization and knowledge bank, we have a long list of design disciplines e.g. ship design, building design, process design, bridge design, clothing or fashion design and so

- **Types of project design:**

There may be several types of design such as

Adaptive design

This is based on existing design, for example, standard products or systems adopted for a new application. Conveyor belts, control system of projects and mechanisms or haulage systems are some of the examples where existing design systems are adapted for a particular use.

Developmental designs

Here we start with an existing design but finally a modified design is obtained. A new model of a car is a typical example of a developmental design.

New design

This type of design is an entirely new one but based on existing scientific principles. No scientific invention is involved but requires creative thinking to solve a problem. Examples of this type of design may include designing a small vehicle for transportation of men and material on board a ship or in a desert. Some research activity may be necessary.

- **Types of design based on methods**

Rational design:

This is based on determining the stresses and strains of components and thereby deciding their dimensions.

Empirical design:

This is based on empirical formulae which in turn are based on experience and experiments. For example, when we tighten a nut on a bolt the force exerted or the stresses induced cannot be determined exactly but experience shows that the tightening force may be given by P=284d where, d is the bolt diameter in mm and P is the applied force in kg. There is no mathematical backing of this equation but it is based on observations and experience.

Industrial design:

These are based on industrial considerations and norms viz. market survey, external look, production facilities, low cost, use of existing standard products.

- **Advantages**

i. No conventional grid electricity required
ii. Long operating life
iii. Highly reliable and durable
iv. Easy to operate and maintain
v. Eco-friendly

- **Disadvantages**
    i. High installation cost
    ii. Maintenance cost high
    iii. Operating cost is high

Conclusion

The presented work aims to reduce the fuel consumption of the automobile in the particular or any machine, which employs drive shafts, in general it is achieved by using light weight composites. The battery is charged with the help of the vehicle's alternator, but due to the alternating current being in direct contact with the engine with a transmission, the engine will experience a certain degree of resistance. Therefore, in order to reduce this resistance and improve the efficiency of the engine, we modified the design of the drive shaft so that while transmitting the driving force from the engine to the differential, it also generates electrical energy to charge the battery, so it will not utilize engine power. Therefore, increasing the efficiency of the engine.

Reference

1) R.S. Khurmi and Gupta, “Machine Design” 14th edition, S. Chand
2) V.B. Bhandari, “Machine Design” 3rd edition, Tata McGraw Hill
3) U. C. Jindal, “Machine Design”.2 reprint edition, Pearson Education India
4) Richard G. Budynas and J. Keith Nisbett “Mechanical Engineering Design” 9th edition, Tata McGraw Hill
5) Hall, Holowenko, Laughlin “Theory and problems of Machine Design” Reprint 2005 edition, McGraw Hill
6) PSG, “Design Data Book” 8th edition, PSG College of Technology Coimbatore
7) Robert C. Juvinall and Kurt M Marshek, “Fundamentals of Machine Components Design” 3rd edition, Wiley India Edition
8) K.Ganesh Babu and K. Sridhar “Design of machine elements” Tata McGraw Hill
9) Theraja B. L, “Fundamentals of Electrical and Electronics Engineering” S. Chand and company LTD
10) K. Sawney, “Electrical and Electronic Measuring Instruments”, DhanpatRai and sons.
11) Thomas Malvino, “Electronic Principles”, Tata McGraw hill Publishing Company Ltd
12) V. K. Mehta, “Principles of Electrical and Electronics Engineering” S. Chand and company Ltd.
13) R. Savan Kymar, K.V. Inoth Kumar and V. Jegathesan “Basic Electrical and Electronics” Wiley Precise publisher