



Design And Manufacturing Of Electricity Generation Using Drive Shaft

¹SANKET PATIL, ²TEJAS KESKAR, ³SHREYAS SALVE

¹⁻³UG Student, Department of Mechanical Engineering JSPM's RSCOE, Pune, Maharashtra, India

¹Dr.P.S. PATIL

¹Assistant Professor, Department of Mechanical Engineering JSPM's RSCOE, Pune, Maharashtra, India

Abstract: A vehicle 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 nano-coils surrounding the magnetized driveshaft which acts as a stator in an electrical generator. As the magnetized driveshaft spins because 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. This rotational movement creates a magnetic field and generates EMF into the coil as defined by Faraday's law of electromagnetic inductions.

Index Terms – Electricity, Manufacturing, Generation

I. INTRODUCTION

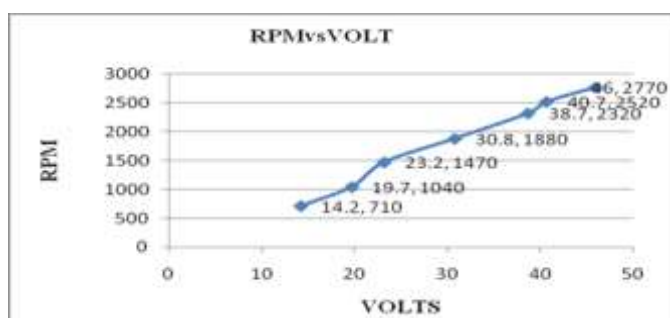
A vehicle's rotating driveshaft can be used to generate electricity and to slow the vehicle down to a stop. This is the area of invention covered by the method and article of manufacture disclosed herein. Over time, different types of fuel have been used to power vehicles. Vehicles were propelled by people, the wind, and animals before the internal combustion engine was developed. Fuel for vehicles has included gasoline, diesel oil, natural gas, ethanol, and blends of gasoline and ethanol since the misuse of internal combustion engines. Utilizing these fuels is costly, getting them and transporting them is challenging, and they are getting harder to find. Automobiles are now powered exclusively by electric motors due to issues with so-called "fossil fuels.". The challenge of supplying electricity to run the electric motor or the electric component of the hybrid engine limits the use of electric motors and electric/fossil fuel hybrid engines. Batteries provide the energy for electric engines. Nevertheless, the weight of the batteries reduces the electric motor's efficiency. The vehicle's range when powered by an electric motor is reduced due to the batteries' limited storage capacity. Furthermore, there aren't many battery-recharging stations, which reduces the utility of electric cars. Electrical generators have been around for a long time and are used for many purposes. The electromagnetic principle makes this possible. The generator will induce electric current to flow through an external circuit in order to produce this electrical energy. Usually, generators are manufactured.

The market is being dominated by combustion vehicles, which run on fuels like natural gas, diesel, and gasoline. This creates a significant problem with their availability. These kinds of issues are resolved by either converting the vehicles to hybrid models or providing them with electric motor power. Despite the solution, there is still a problem with vehicle charging because there aren't enough charging stations. Because of the load on the motor, which causes heat and frictional losses, the vehicle is less efficient.

II. LITERATURE REVIEW

- 1) The Sam Anvari and colleagues, Denton, TX, With the use of an electricity-generating driveshaft, a car like a big truck can produce enough electricity to run a hybrid engine or recharge batteries. The magnetized driveshaft, which functions as a rotor in an electrical generator, and the coils of copper wire that encircle it, which functions as a stator, make up the electricity-generating driveshaft. An electrical field is produced when the hybrid engine powers the magnetized driveshaft, and this electrical field is caught by copper wire coils and utilized to power the hybrid engine or replenish a supercapacitor. Activating magnets surrounding the driveshaft selectively can also slow down a truck's speed by reducing the spinning of the driveshaft.
- 2) with an existing SHG system. Compared to the traditional SPSSG design frequently employed in similar settings, the recommended PMSG design offers a 40% improvement in torque ripple, a 37% improvement in stator voltage THD, and an 8% improvement in overall losses at nominal operation. A specific power converter controller has been created to enhance the machine's performance in both steady-state and transient scenarios by taking into account its nonlinearities. Complete control over both active and reactive power flows has been made possible by the machine's linkage through this power converter, allowing the system to: 1) to provide grid voltage by operating as a STATCOM in place of conventional static capacitor banks; 2) to accommodate critical ship loads, resulting in a significant reduction of fuel usage; and 3) to function as a motor in the event ME fails. Together with the ship's DGs, the system has shown stable operation in all taken care of operating situations. It was demonstrated that scheduling the power generation to maximize fuel savings is possible by taking use of the optimized design and flexibility of the suggested system. On a real voyage, a 3% decrease in the SFOC was attained; hence, we think that by implementing the suggested remedy in ship energy management systems, excellent services can be gained in terms of both fuel consumption and operating characteristics.
- 3) Ravi Vattipalli, P.S. Naga Sri talked about the facts Substituting composite structures for conventional metallic structures has many advantages because of higher specific stiffness and strength of composite materials. This work deals with the replacement of conventional steel propeller shafts with Kevlar and high modulus carbon/epoxy composite propeller shafts for an automotive application. The design parameters were optimized with the objective of minimizing the weight of composite propeller shaft. The design optimization also showed significant potential improvement in the performance of propeller shaft
- 4) Mayur M. Umbare, Sujay S. Udawant, Rohan B. Gujar, Sahil G. Urkunde talked about in recent times, energy storage systems, or ESSs, have become increasingly significant. One of the earliest energy storage technologies is the flywheel, which has number of benefits. The enhanced flywheel storage system is known as FESS. It increases power generation efficiency. Because there is less wear and tear during production, frictionless power generation is both environmentally beneficial and has a longer lifespan. Faraday's law of induced emf serves as the foundation for the system's power generation principle.
- 5) Nizam S Sakeer, Thoufeek, Vyshak O, Hallaj, Mathew Thariyan based on them we'll talk about how to use a motor vehicle's rotating driveshaft to generate energy and slow down or stop the car. Over the years, vehicles have been fueled by a multitude of sources. Animals, the wind, and human labor were used to power vehicles prior to the development of the internal combustion engine. Vehicles have been powered by gasoline, diesel oil, natural gas, ethanol, and blends of ethanol and gasoline ever since the internal combustion engine was created. These fuels are expensive to use, hard to get by, hard to transport, and getting harder to find. All-electric motors or hybrid combinations of electric/diesel or gasoline fuel engines are being used to power vehicles in response to these issues with so-called "fossil fuels."

MEASUREMENT AND GRAPHS



RPM	VOLTS
710	14.2
1040	19.7
1470	23.2
1880	30.8
2320	38.7
2520	40.7
2770	46

III. PROBLEM STATEMENT

In current vehicles following are the concern, By using chain and belt mechanisms with the alternator with engine these are the problems

- 1) Loss of power
- 2) More friction
- 3) Wastage of energy
- 4) Less quantity of fuel on earth

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V. OBJECTIVE

- 1) To design and manufacture electricity generator using drive shaft.
 - 2) Describe the construction and working of various parts of our project.
- To take trails on electricity generator

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VII. METHODOLOGY

Designing and manufacturing an electricity generation system using a drive shaft involves several steps. Initially, identify requirements and constraints such as power output, type of drive shaft, and design constraints like space and budget. Conduct preliminary research to study existing systems and select appropriate technologies. Develop multiple design concepts focusing on the integration of the drive shaft with the generator and energy storage options. Proceed with detailed mechanical and electrical design, ensuring proper coupling, alignment, and selection of generator type. Create control systems for efficient energy conversion and use simulation tools for validation. Fabricate a prototype, conduct thorough testing, and iterate the design based on feedback.



VIII. CONSTRUCTION AND WORKING

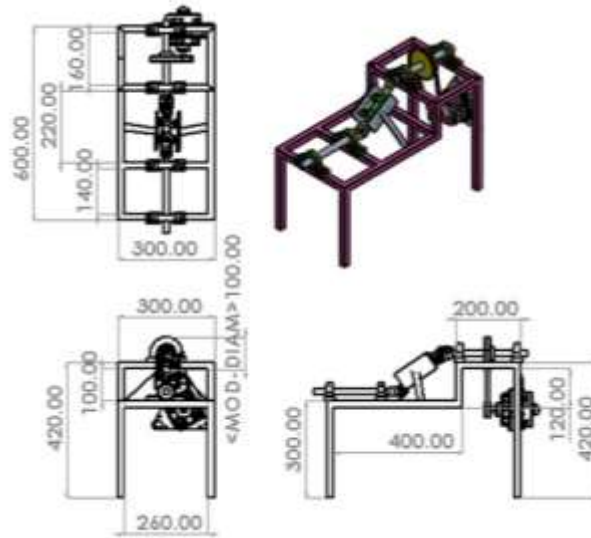


Fig.No.3 Rough Sketch

This project focuses on reducing the harmful effort involved in using a manual spraying pump. In the newly developed sprayer, the pump is wheel-mounted and consists of various parts such as bearings, spray and its handle, and water tank. In the new modified injector, the pump mount is attached to the frame and between two bearings to the support wheel and the front wheel frame. Then the wheel starts to rotate, the pump arms start to rotate, as the pressure builds up in the nozzle. Now the project is mainly focused on designing a suitable operating system. To maintain simplicity and economy, the design used locally produced equipment. With our

IX.DESIGN MODEL

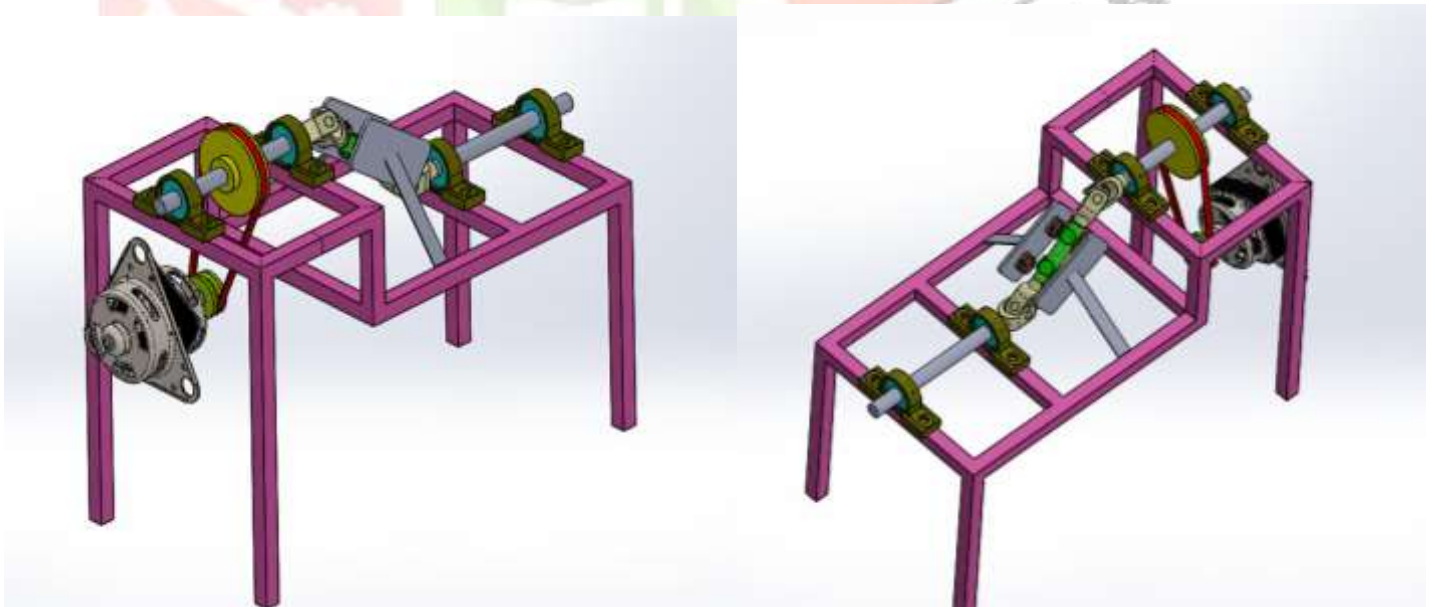


Fig.No.3 Front View and Side View

Software's Used: Solidworks

IX. PROJECT COST

Table No.1 Cost Estimation

SR NO	PART NAME	MAT	QTY	COST
1	SQUARE TUBE	MS	10KG	900
2	MOTOR	STD	1 NO	1800
3	HOOK JOINT	STD	2 NOS	350
4	SHAFT	STD	5 KG	500
5	BEARING	STD	4 NOS	1600
6	NUT BOLT	STD	1 DOZEN	200
7	NEODYNUM MAGNETS	STD	8 NOS	800
8	COPPER COIL	COPPER	8 NOS	8000
9	MISCELLINOUS	-	-	1000
	TOTAL			15150

X. FUTURE SCOPE

Spraying machine is a device which helps in the Spraying fertilizer in a desired position hence assisting the farmers in saving time and money. So, considering these points related to spraying an attempt is made to design and fabricate such equipment which will able to perform both the operations more efficiently and will results in low cost. Decrease the operational cost by using new mechanism.

- Work reliably under different working conditions.
- Decrease the cost of machine.
- Decrease labor cost by advancing the spraying method.
- Operation can be done in small scale farm land (1 acre)
- For performing the both operations we fabricate the machine

XI. RESULTS AND CONCLUSION

Our project electricity generators have been around for a long time and are used for many purposes. A generator is generally defined as a machine that transforms mechanical energy into electrical energy. The electromagnetic principle makes this possible the generator will induce electric current to flow through an external circuit in order to produce this electrical energy. Generators are typically composed of a rotor, copper winding, and a set of magnets that work together to generate electricity from mechanical power. When a diesel engine powers a generator, the chemical energy produced when the engine burns diesel fuel provides the mechanical energy. Based on the electromagnetic induction principle, the generator finally transforms this mechanical energy into electrical power. As the magnetic field is changed, a current is produced through the conductor within the generator.

XII. ACKNOWLEDGEMENT

We want to sincerely thank everyone who helped us to successfully finish the creation of this Electricity generation using drive shaft. First and foremost, we are grateful to the Department of Mechanical Engineering at JSPM'S RSCOE for lending us the tools and facilities required for this study. Regarding our project, the faculty and staff's help was vital. We would like to express our gratitude to Dr. P.S. PATIL, our research adviser, whose expertise, direction, and support were invaluable to our effort. Our advisor's astute recommendations and steadfast support motivate us to pursue excellence.

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