
Fan Mobility by Generated Electricity Harnessed from Dynamo

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Abstract: Fans are the most popular products despite the broad accessibility to air conditioners and coolers. There's a chance that using air conditioners more frequently to cool indoor areas will be a major contributor to greenhouse gas emissions worldwide. Using home fans to move indoor air can increase the temperature at which air conditioning must be turned on to keep building occupants comfortable (Malik et al, 2022).

Household fans are a great way of helping improve your home feel better because they reduce interior temperature, manage humidity, and offer energy-saving advantages. Programmers begin by using the Dynamo to create robotic outputs and other electronic and programming creations. Dynamo produces direct current electric power using electromagnetism. It is also known as a generator; however, the term generator usually refers to an alternator; which produces AC (alternating current). The rotating shaft rotates electromagnets surrounded by heavy copper coils wire inside generators. This creates a magnetic field which causes the electrons of the copper wire to move away from atom to atom that generates electricity. The voltage produced by a generator depends on the number of windings magnetic force and magnetic velocity turns. There are several steps involved in creating a fan with generated electricity harnessed from Dynamo. The first is to create a program that uses Dynamo to provide instructions that are programmed on the Dynamo board to facilitate user interaction.

Keywords: Generator, Dynamo, Electricity, Fan, Harnessed, Robotic.

1. INTRODUCTION

Background of the Study

Ceiling fans are common items found in practically every home and commercial facility. A dynamo is an electric generator that can transform the rotating motion of the fan's base (kinetic energy) into electrical energy that can be used to power small items such as mobile chargers through USB or stored in a battery (Rohit Barve et al, 2021). As everyone knows, energy is a substance that may change forms but cannot be created or destroyed. However, we are squandering energy-producing resources as though they were endless. Reusing and renewing the energy we waste would help address the issue of energy scarcity, which is currently the world's biggest challenge. Mechanical energy can be converted to electrical energy with the Dynamo. Normally, the dynamo can produce alternating current. This current can be utilized to bottom charge AC/DC gadgets straightforwardly as opposed to putting away it in at battery and utilizing something very similar. On the off chance that guess the gadgets are not being used, the power created can be put away in a battery. How much power produced from a dynamo is adequate to control the gadgets, which require low power (Gadkari et al, 2014). Power is a fundamental need of the modern world. Without electricity, the economy cannot continue to function. Pakistan, notwithstanding having the gigantic energy assets, is confronting intense deficiency of power (Awan et al, 2012).

The pricey lithium-ion batteries used in electric vehicles make them expensive. The globe has only recently begun to move in. There are not many charging stations available due to electricity. The current electric cycle is limited to using a single power source to recharge the battery, so if the battery runs out of power, we must pedal manually or charge the battery for hours (Dilip, 2020). There is minimal use of a clean power plant in modern E-bikes to recharge the tank since the new electric cycle requires just one power supply cap to charge the batteries, requiring mechanical control for pedaling or charging of the system for several hours if the device falls off the voltage.

The dynamo is connected to a power- generating turbine. The turbine is affixed to a sealed duct. The amount of energy produced varies with airflow through the exhaust system. The dynamo begins circumnavigating utilizing a turbine and converts motor energy into electrical energy. Energy is saved by the battery. For the equipment to be used, the voltage needs to be changed. The stored energy can be put to good use for us (Jagtap et al, 2022).

Statement of the Problem: This study aims to provide a sustainable ceiling fan design that can generate a meaningful and significant output voltage from its rotatory motion. Specifically, it sought to answer the following questions:

1. How does the integration of a dynamo in an electric fan impact its functionality and Energy efficiency?
2. Is the energy harnessed from the dynamo enough to supply the electricity needed?

Significance of the Study: This study will contribute much to the people in the urban, rural and multi-scale industrial sectors where power problems are their greatest issues. Furthermore, this will help to make it more efficient and less cost reduction.

People: The people would have an alternative source of energy that is cheap and could save electricity bills. They can be set up to best suit the cooling requirements of your house. Environment. It helps save up to 50% on electricity costs and is better for the environment.

This allows electricity to be produced without external energy sources. It is environmentally friendly. Dynamo does not use toxic chemicals for disposal.

Electronic Engineers: The research result and its existing prototype will be useful for electronic engineers because this research will give them an idea and deep understanding about these robotics and electron and how they might be applied to resolve issues in the actual world.

Future Researchers: The outcome of this study is beneficial to either current or future researchers. This study may serve as one of the foundations for a future new learning theory. By solving these challenges, they can develop strong problem-solving skills that can be applied to many different fields. By studying robotics and electronics, future researchers can increase their career prospects and open up new opportunities for themselves.

Theoretical Framework: Geophysical theory known as "dynamo theory" describes how the Earth's dominant magnetic field was created as a self-exciting (or self-sustaining) dynamo. To be able to create an electric current, conducting material (liquid iron) must travel through an existing weak magnetic field in a dynamo process. Convective motion is hypothesized to be caused by heat from radioactive decay in the core. The magnetic field created by the electric current, in turn, interacts with the fluid motion to produce a secondary magnetic field. The two fields basically lie along the axis of the Earth's rotation and are stronger together than the original field.

In the middle of the 20th century, the British geophysicist Edward Bullard and the American physicist Walter M. Elsasser proposed the dynamo theory. Only the dynamo hypothesis is currently given significant consideration, even though numerous other methods for producing the geomagnetic field have been suggested.

2. RELATED WORK

This chapter consists of related studies, works and research made by the other authors. Each study you can read or view below has been cited by its correct owner. Nevertheless, all the related works we copied were consistent with studies published or written on the internet.

Study of Dynamo: Dynamo power that saddles the energies in bike pedals to produce power is presented. In this work, a dynamo mounted on the back tire of a grown-up size bike, is impelled through accelerating the bike. The dynamo changes over the mechanical power produced by the seller to electrical power. The electric power delivered is handled for voltage correction and voltage guideline to charge a battery which would supply the utilities for cell phone re-energizing and light (Adejumobi et al, 2017).

Conservation of Energy from the Dynamo: Conservation of pedal energy is a machine power source regenerative. In addition to charging the battery, thus expanding its length, dynamo the energy used for pedaling into electric power. It also works when the battery charge drains out and we can charge a battery even if there is no power supply available (Ayushi et al, 2020).

A Ceiling fan that Produces Energy: Although we are only employing followers in this situation to provide cooling, we can still do a lot even though the power consumption is low. This paper's theoretical goal is to reuse this priceless electricity rather than wasting it. For this specific experiment, Dynamo played a significant role, giving us additional strength through the rotational movement of the fan. The electromagnetic induction concept is used by dynamos to convert mechanical energy into electrical force. In this experiment, a different material, the Step-up high voltage, also plays a significant role (Kumar et al, 2020).

3. METHODOLOGY

This chapter of the research, the researchers used dynamo to make an alternative source of energy and the energy harnessed by dynamo will be tested through the fan mobility. This chapter shows the research method and procedures of the study, which includes the research instrument, sampling technique, and statistical tools used by the researcher's for conducting the study. It focuses on how researchers are going to produce an alternative energy source for operating the dynamo.

Materials

Fan: A fan is the device on which the system will be mounted, and it will consist of an assembly Of gears to couple the rotating element of the fan and the dynamo.

Dynamo: The fan moves in rotary motion. It is necessary to transform this motion's kinetic energy into electrical energy. A dynamo, an electrical generator that produces direct current using a commutator, is used to do this.

DC Generator: A power generating equipment which is used for powering and operating the wall fan.

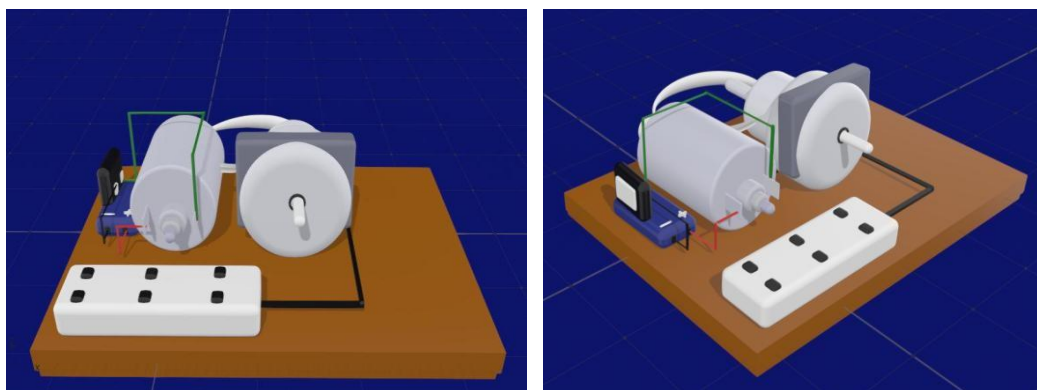
Battery: A battery is used for generating the dynamo and for storage of the energy. It allows storing energy when production is high.

Wire Harness: An equipment responsible for controlling and managing the motor. The direction, start, speed, and stopping of fan.

Outlet: A connection point device to mains ability to supply them with electrical power.

Switch: A gadget for making and breaking the connection in an electric circuit.

3D Diagram of the Dynamo as the Power Generator





Research Instrument

In this study, the researchers will be conducting a test. The test is a procedure in which they will construct and have their result for their research purpose. The first part of the test is making their own dynamo as the source of energy of the fan. The second part is the assembling of the fan to specify the result of the fan using the dynamo that provides further power supply through the rotational movement of the fan.

4. RESULTS AND DISCUSSIONS

The following data shows the results and discussions of the research. The results can be observed from the conclusions of related literature and will serve as great advantages for future research studies.

Electric Generator

The electric generator is created by burning fuel and turning this energy into electricity. The purpose of the generator is to convert chemical or mechanical energy into electrical energy. They achieve this by using an electric circuit to force electrons from an external source through it to capture the power of motion and convert it into electrical energy. It works based on electromagnetic induction, which is the process of moving a wire near a magnet to create an electric current. Instead of using a conventional magnet, electromagnetic generators use an electromagnet, which is a magnet created by electricity.

An electromagnetic shaft known as a rotor is encircled by a stationary cylinder known as a stator, which is made up of a sequence of insulated wire coils in a basic electromagnetic generator. Every segment of the wire coil became a distinct electric conductor when the rotor is turned, causing an electric current to flow through each section. One massive current is created when the

Currents in the various sections combine. The electricity that travels from generators to consumers via power lines is known as this current. Nearly all electricity generated in the United States is produced by electromagnetic generators powered by kinetic (mechanical) prime movers.

Table 1. Dynamo Output

| Output | Capacity (Volts) | Conclusion |
|---------------|-------------------------|---|
| Dynamo | 220 Volts | The dynamo has the highest voltage since it is more effective if researchers are going to use the one with highest voltage for effectively run the fan. |

Table 2. Dc Generator Output

| Output | Capacity (Volts) | Conclusion |
|--------------|------------------|--|
| DC Generator | 24 Volts | The voltage of the DC Generator is 24 voltages, enough capacity to carry the fan. The higher the voltage the higher the possibilities to operate the fan easily. |

Table 3. Battery Output

| Output | Capacity (Volts) | Conclusion |
|---------|------------------|---|
| Battery | 9 Volts | The 9 voltage of the battery is enough to carry the materials and help fan operate. |

Electric Generator

Dynamo after setting up and generating the whole process. The plug of the electric fan will plug in to the outlet, and it will relay a message to the dynamo, and the dynamo will be the source of energy to operate the fan for it to provide air. After that, the dynamo will then operate together with other materials and then the fan will rotate its blades and release air. In controlling and monitoring the whole set-up, the switch will serve as the controller as an on and off indicator.

Harnessing Dynamo

To test the capability and capacity of the dynamo to operate, the researchers conducted a trial and error for the process of harnessing energy. To prevent problems in the process while operating, all materials in the system have to be checked every time-to-time to see if it is generating well and if it is functioning accordingly. And if it's low in harnessing energy, it has A possibility that it won't run in a long time which is why there's a battery to support the dynamo and the generator while in the process to avoid huge issues and malfunctioning.

Summary, Conclusion and Recommendation

Summary of the Problems, Methods and Finding

The purpose of electronic generated fan mobility arising from the dynamo is to create a transformed energy, it can help in some way to the problem of scarcity of energy, which is the major threat of present world.



The mobility of an electric fan applied by a dynamo is a useful help for people who are in a situation where electricity production and import are not enough to cover electricity consumption, when a dynamo or charging energy is developed by researchers.

An extensive literature review was conducted prior to the significance of the dynamo as an AC generator. Fan Mobility by Generated Electricity Harnessed from Dynamo integrated with a fan was designed and prototypes to demonstrate its feasibility and functionality. To demonstrate the viability and functionality of the device, a prototype generator was created using a Dynamo device with a battery and a socket.

1. Determined and refined the materials needed to create the current prototype of the electric generator, using the materials used appropriately. After the prototype is created, Dynamo features are tested through trial and error.
2. In creating the existing prototype for the electric generator, materials are assembled orderly to avoid errors. The final power of the prototype electric generator was correct and well placed in its individual locations, as well as the power source.
3. It uses the mechanical energy given to it to force electrical charges in the wire of its coils to move through an external electrical circuit. This flow of electric charges forms the electric current supplied by the generator.
4. Individual materials are identified before building a prototype electrical generator for power equipment such as a fan. The final prototype specified the exact materials used, which are accurate when assembling a real and existing electric generator prototype.
5. The Bayugan National Comprehensive High School students evaluated the electric generator prototype's effectiveness and usefulness. During and after utilizing the electric generator prototype, the students show that there is a good chance of successfully implementing and promoting the partnered electric generator as an energy source.

5. CONCLUSIONS

To sum it up, this study aims to make energy efficiency harnessed through Dynamo. The goal of this study is to achieve based on the materials used to make an alternative source of energy to make this effective, we use working prototype. The researcher concludes that the generated electricity harnessed by Dynamo is a way to help more people who seek alternative energy sources that can be used in their everyday lives.

Based on the results of the research, this enables either poor or rich people to practice methods or other ways on how to convert energy with the use of less expensive materials. This study is efficient, specifically for people who don't have a source of energy.

Recommendations

It is essential to keep in mind that inventing and creating this kind of alternative source of energy can be time consuming, thus, a fantastic way to save energy. Let's observe what is happening in our environment and how electricity affects our lives and our society that can lead to unnecessary outcomes that might harm us. For a project like this, consulting with electricians and professionals regarding with this; for them, this invention was an immense idea because it can help a lot, to our environment and especially for us and for those researchers who has interest in this kind of study. Saving electricity can also save money. Using a dynamo,

you can create a new energy source by combining several different components for effective use of it. Here are some recommendations to consider: Alternative source of energy: This can serve as another source of energy while using fan. Dynamo: The energy alternator in which the kinetic energy transforms into mechanical-electrical energy as a substitute to electricity. Budget-friendly: Using this alternator can save money and electricity, since it is operated using battery and a dynamo.

Dynamo: The energy alternator in which the kinetic energy transforms into mechanical-electrical energy as a substitute for electricity.

Budget-friendly: Using this alternator can save money and electricity, since it is operated using a battery and a dynamo.

Harnessing Energy: The energy harnessed from dynamo is a great source of energy instead of electricity.

Generating Electricity: It generates electricity to supply the amount of energy needed to power the fan.

Environmentally Friendly: It is environmentally friendly since we used renewable materials for this. Add to that, it doesn't need electricity to power a fan that is why we can consider it environmentally friendly.

DC Generator: The motor that connects to the generator which helps the energy convert and run to power the fan.

Persistence of Usage: We can use this alternative source of energy in the long run because of its durability.

Environmental Impact: Focus on supportability and consider the framework's consequences for the climate, including electricity and energy effectiveness.

Testing and Emphasis: Take a thorough look at the system, ask and listen to feedback from the people who use it, and alertness is important for releasing updates, comments and improvements when there is need.

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