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Exercise E Bicycle

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ABSTRACT: Presently days, an electric bike is standing out for additional people all over the planet since it is one of the harmless to the ecosystem vehicles just as zero outflows from the vehicle. To foster an elite exhibition electric bike, different working attributes are thought of as, for example, riders mass, wind speed and incline. Fundamental parts of this bike are Dynamometer; Battery. The fundamental utilization of Dynamometer is to ingest the power created. Regenerative dynamometers, in which the main player drives a DC engine as a generator to make load, make overabundance DC power. At the point when the bike begins running then the energy through chain and sprocket given to dynamometer and afterward to the battery which stores the energy. This put away energy is utilized to drive the bike which decreases the human endeavors and expands the solace level of human.

KEYWORDS: Travelling Electric Bicycle, Electric Energy, Fuel Economy, pollution, noise.

I.INTRODUCTION

As of late, the world is looking with enormous difficulties including consumption of petroleum derivatives and an unnatural weather change brought about by fumes discharges from customary vehicles fuelled with gas or diesel. In the present circumstance, electric vehicles (EVs) have an extraordinary potential to defeat these difficulties. As we probably are aware petroleum product produce destructive gasses which are unsafe for individual and this gas produce contamination in air because of which consumption of ozone layer occurred, to lessen this we make an electric vehicle. An Earth-wide temperature boost is becoming serious issues in the current situation. Subsequently, individuals attempt to move towards clean energy. transportation is one of the wellspring of contamination or a worldwide temperature alteration since bicycle or any kind of vehicle work on fuel (petroleum, diesel) it consume and produce destructive gases in air because of that contamination is increments and this wellspring of energy is emulating subsequently the present need to move other clean wellspring of energy for transportation. that liberated from contamination and it effectively accessible. . Electrical bicycle is one of the methods for decreasing this sort of issue. Electrical bike called as e- bicycle. During the 1890s, electrical bikes were archived inside U.S. Licenses. On 31 December 1895, Ogden Bolton was conceded u. spate 552,271foe battery power bike with "6-post brush – and commutator direct current (dc) centre point engine mounted in the back tire". There were no pinion wheels and the engine up to 100 amperes from a 10-volt battery. This kind of e-bicycle is adjusted step by step yet this is additionally having some impediment actually like it having charging by remotely. in case the battery release in voyaging it make issue that implies it use for little distance as it were. So some change needed in the plan of e-bicycle. This adjusted plan is modest for the ordinary citizens in our nation stood to get it.

II. PROPOSED SYSTEM DEVELOPMENT

A. IC 4047

CD4047 is a 14 pin IC that operates on logic techniques with an ability to allow negative or positive edge-triggered monostable multivibrator action layered with retriggering and external counting options .The 4000 series facilitates simpler circuit design through relatively low power consumption, a wide range of supply voltages, and vastly increased load-driving capability (fan-out) compared to TTL. This makes the series ideal for use in prototyping LSI designs. While TTL based design is similarly modular, it requires meticulous planning of a circuit's electrical load characteristics. Buffered models can accommodate higher electrical currents, but have a greater risk of introducing unwanted feedback.

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Fig 2(a) Microcontroller 8051

B. Battery

FG10451 is a general purpose application battery. Within the FG range offer 6V and 12V at various amp hour capacities enable the right battery selection for each requirement. FIAMM Sealed Power is a Manufacturer of VRLA battery; and is supported by a dedicated sales network with market knowledge and experience of small sealed lead acid battery applications.

Fig 2(b) Battery

C. Dynamo

A dynamo is an electrical generator that creates direct current using a commutator. Dynamos were the first electrical generators capable of delivering power for industry, and the foundation upon which many other later electric-power conversion devices were based, including the electric motor, the alternating-current alternator, and the rotary converter.

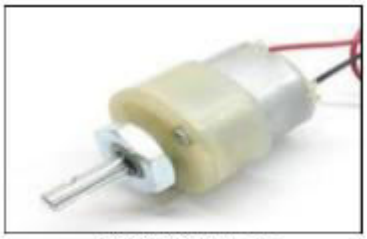

Fig 2(c) Dynamo

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D. Digital Volt Meter

Digital Voltmeter abbreviated as DVM is an instrument used to measure the electrical potential difference between two points in a circuit. The voltage could be an alternating current (AC) or direct current (DC). It measures the input voltage after converting the analog voltage to digital voltage and displays it in number format using a convertor. The usage of digital voltmeter has increased the speed and accuracy with which the readings are noted.

Fig 2(d) Digital Voltmeter

E. Cycle frame

Here we have used frame the of actual cycle for the structure of exercise E-bicycle on which we have mounted our wheel, Dynamo & The chain connected to our wheel and is further transferred to our dynamo

Fig 2(e) Cycle frame

III. PRINCIPLE OF OPERATION

Principle of Dynamo is a device that converts mechanical energy to electrical energy, generally using electromagnetic induction. The source of mechanical energy may be a reciprocating or turbine steam engine, water falling through a turbine or waterwheel, an internal combustion engine, a wind turbine, a hand crank, or any other source of mechanical energy. The Dynamo was the first electrical generator capable of delivering power for industry. The dynamo uses electromagnetic principles to convert mechanical rotation into an alternating electric current. A dynamo machine consists of a stationary structure which generates a strong magnetic field, and a set of rotating windings which turn within that field. On small machines the magnetic field may be provided by a permanent magnet; larger machines have the magnetic field created by electromagnets. The energy conversion in generator is based on the principle of the production of dynamically induced emf. Whenever a conductor cuts magnetic flux, dynamically induced emf is

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produced in it according to Faraday's Laws of Electromagnetic induction. This emf causes a current to flow if the conductor circuit is closed.
Hence, two basic essential parts of an electrical generator are (i) a magnetic field and (ii) a conductor or conductors

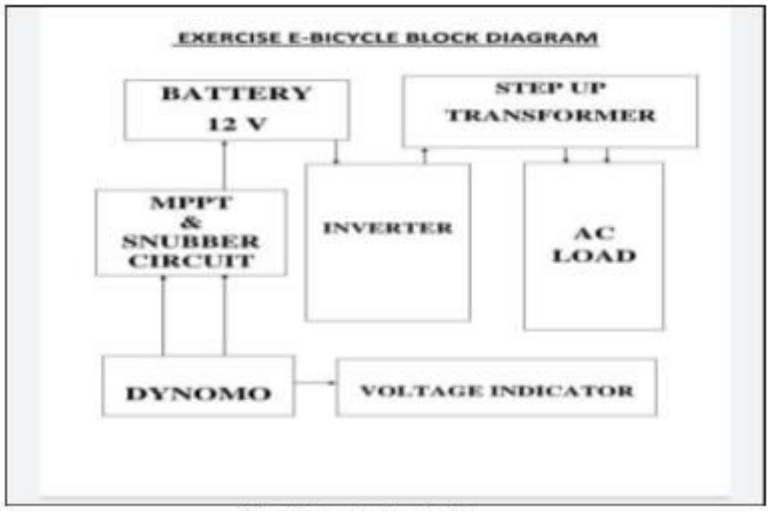

Fig 3 Actual circuit diagram

IV. FUTURE SCOPE

The analysis of bicycle power generation was done successfully. Even though there is something need to improve in our project, so we encourage and motivate the students and juniors of our college to build up the bicycle generator with more efficiency, like adding flywheel for increase the rate of power production and provide some mechanism for continuous pedaling..

V. RESULT AND DISCUSSION

The following images show the working scenario and outcomes of this system.

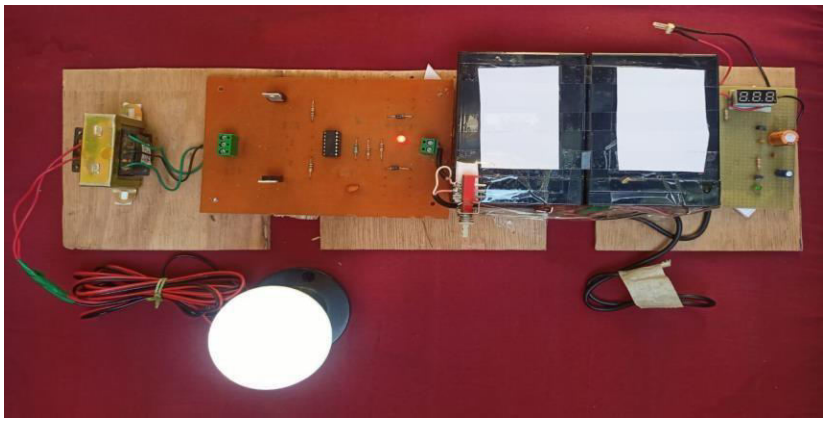

Fig 5 (a) Circuit of the system

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Fig 5 (b) Overview of the system

Table 1. Power output of DC generator

Bicycle usage	Time(hrs)	Power(Watts-hr)
1	1	12.3
3	1	36.9
5	5	307.5

Table 2. Speed vs. Voltage output

Speed (RPM)	Voltage (V)
420	4.3
563	5.3
621	5.5
652	6
666	6.2
680	6.4
705	6.8
728	7.3
729	7
741	7.5
783	7.8
808	9.1
840	9.4
894	10.2
905	10.4
945	10.9
999	11.6

VI. CONCLUSION

We came to know more about the dynamo and we studied more about energy creation by dynamo. In conclusion, this project was designed to serve as a model/prototype to meet specific need in our locality. The device can also serve as

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an alternative power source in extreme case scenario even in urban centers. Since the device is manually operated, it can be used in areas where there is no power supply and would always be readily available. The device is environmentally friendly as it produces no waste in the process of its operation, and the device work with little or no noise.

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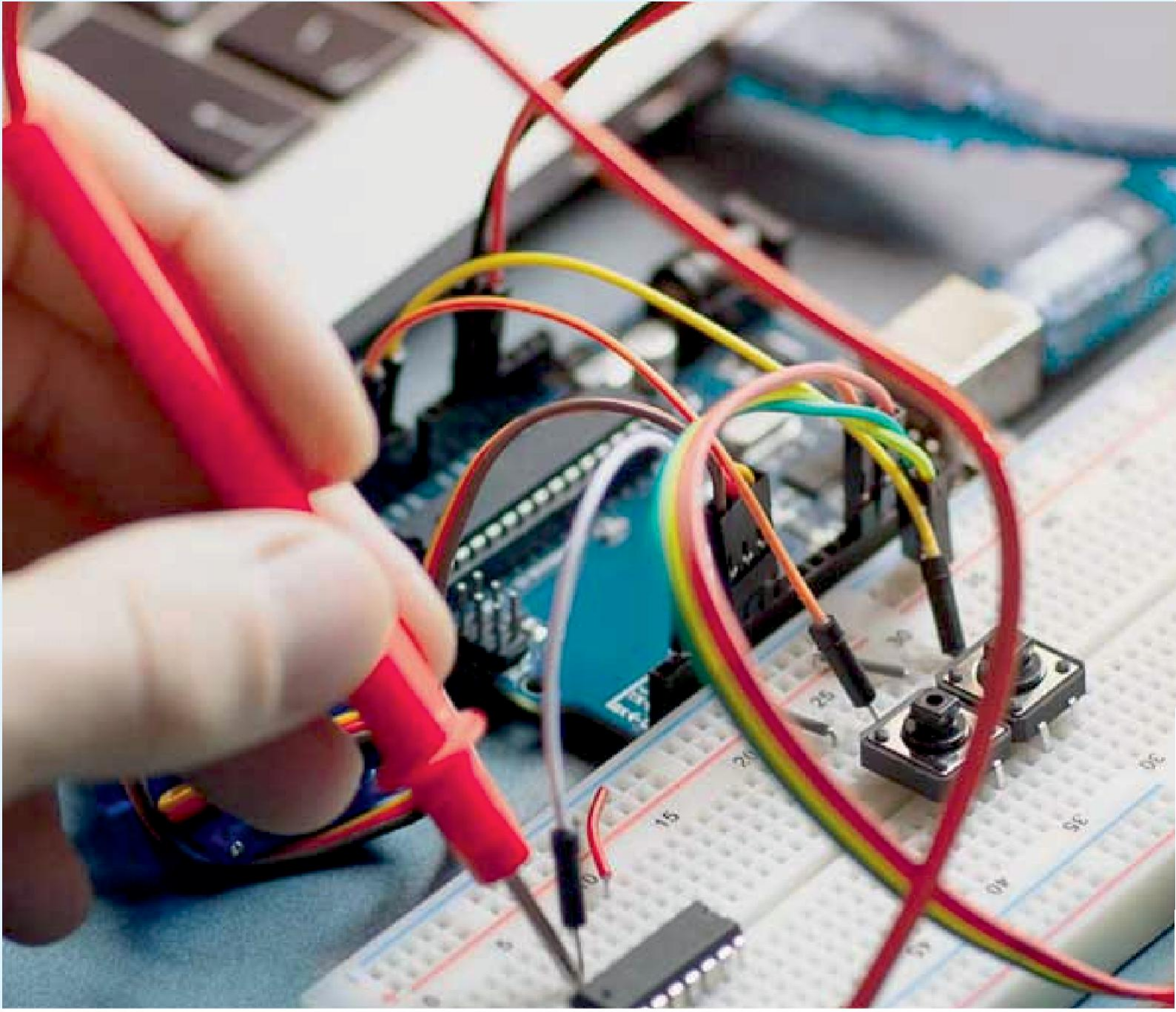

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