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Power Generation through GYM Equipment

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ABSTRACT : In gym while we exercise on cycle we will waste the energy but if we use this energy for generating electricity and also we make a device for generating electricity and we will dissipate the device in rural area and many other areas where electricity is being needed. In many gyms there is no type of device in which exercise is being done and electricity is generated. Electricity is stored in a battery and this DC power is transformed into AC power by the transformer. To generate more electricity we require much more effort and from the calculation from our project if we paddle for 1 hr. then we generate 24 hr. electricity like a bulb and other one. The intention of this project is to design a renewable energy source based around a piece of exercise equipment. The energy expended in a typical workout at the gym is usually wasted in the mechanism energy of the machine and converted into electrical energy using a generator based sales team the exercise equipment attached to the shaft of the generator the product electrical energy is used in powering a piece of equipment such as a lamp or a computer while exercising. In this report we will introduce the project and present all applicable information regarding the design development and the final product.

KEYWORDS: Bicycle, Chain, Pulley, Battery, Inverter...etc.

I. INTRODUCTION

The field of energy conversion is becoming an increasingly notable subject of research among the scientific community today. The intention of this project is to build a straightforward human power generator from use of a bicycle and to use it to power light bulbs, blenders, cell phones, laptops, and other small appliances. This project will help one develop engineering skills while learning about a clean way of generating electricity. Over the past decade, scientists and engineers around the world have been designing of present energy harvesting systems drawing power from a variety of sources. One of the most creative and unlimited sources available is the kinetic energy produced from human exercise. Also, recent designs of energy harvesting exercise equipment have been introduced into the market. These things are costly and do not produce a noticeable output. Our team needs to be improved and design of maximum power output, cost efficient, and marketability. Engineers need to be used to treat fitting and existing exercise machines. This project includes an efficient yet controllable power storage and distribution system.

II. DESIGN

1.1 Design Methodology:

Refers to the block diagram of the gym power station turning workout into electricity which consists of a shaft connected to a motor as a generator, battery, inverter, transformer, and load.

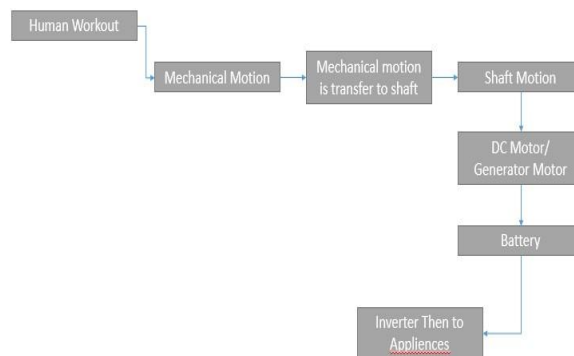


Figure: 1



Designs for the gym power generator is to have a gym cycle on a fixed and then when the bicycle is idle the spinning motion of the rear tire is used to produce mechanical energy directly into a generator the kinetic energy from the exercising machine is given to the alternator to Chain and belt drive the belt is directly coupled to the generator so while exercising generator also rotates. The transformer in inverter is used to step up the voltage to 230 V. The load can be bulbs, laptop charger, mobile charger, musical system etc.

II.WORKING PRINCIPLE

The circuit consists of cycle Power 250 watts DC generator and then when the bicycle is spider the spinning motion of the rear tire is used to produce mechanical energy directly into a generator 24 volt is used to charge battery and the same DC supply is failed to an inverter the inverter is made is with MOSFET and driver circuit the output of the inverter is 12 volt AC supply with a frequency of 50 hertz these AC supply is paper to 230 volt by using step up transformer secondary of transformer is directly connected to the load when the exercise machine is not use the main supply is used to charge the battery for that charging step down transformer and bridge rectifier is used the output of transformer is where volt AC these 12 volt AC is converted to by using diode bridge rectifier circuit also provide for eliminating = the output from the diode rectifier is directly connected to the battery so the battery also charged while the exercise machine is not in use in our project we are using a six fat in candescent lamp as load.

III.ADVANTAGES

- Battery is used to store the generated power.
- No need of fuel.
- Smart Power generation equipment.
- This is non-conventional system.

IV.APPLICATION

This project contributes the role in reducing energy demand. The electricity generated from this project will power the light bulbs, tubes, laptop charging, mobile charging etc. Some villages are facing problem of electricity shortage this system will help in this need. This project also help in mountain areas where electricity difficult to reach. Also at Colleges, Schools, and Gym center.

V.CONCLUSION

We design and implementation an exercise equipment to generate electrical power for the house appliances. Energy storage is demand necessary and important within renewable energy system to ensure stability of the system. Coupling pedal driven generation and storage will increase reliability of the smart system. These models vary in complexity and accuracy and therefore the model chosen must match the application for which it is needed. It will be very helpful for the rural areas.

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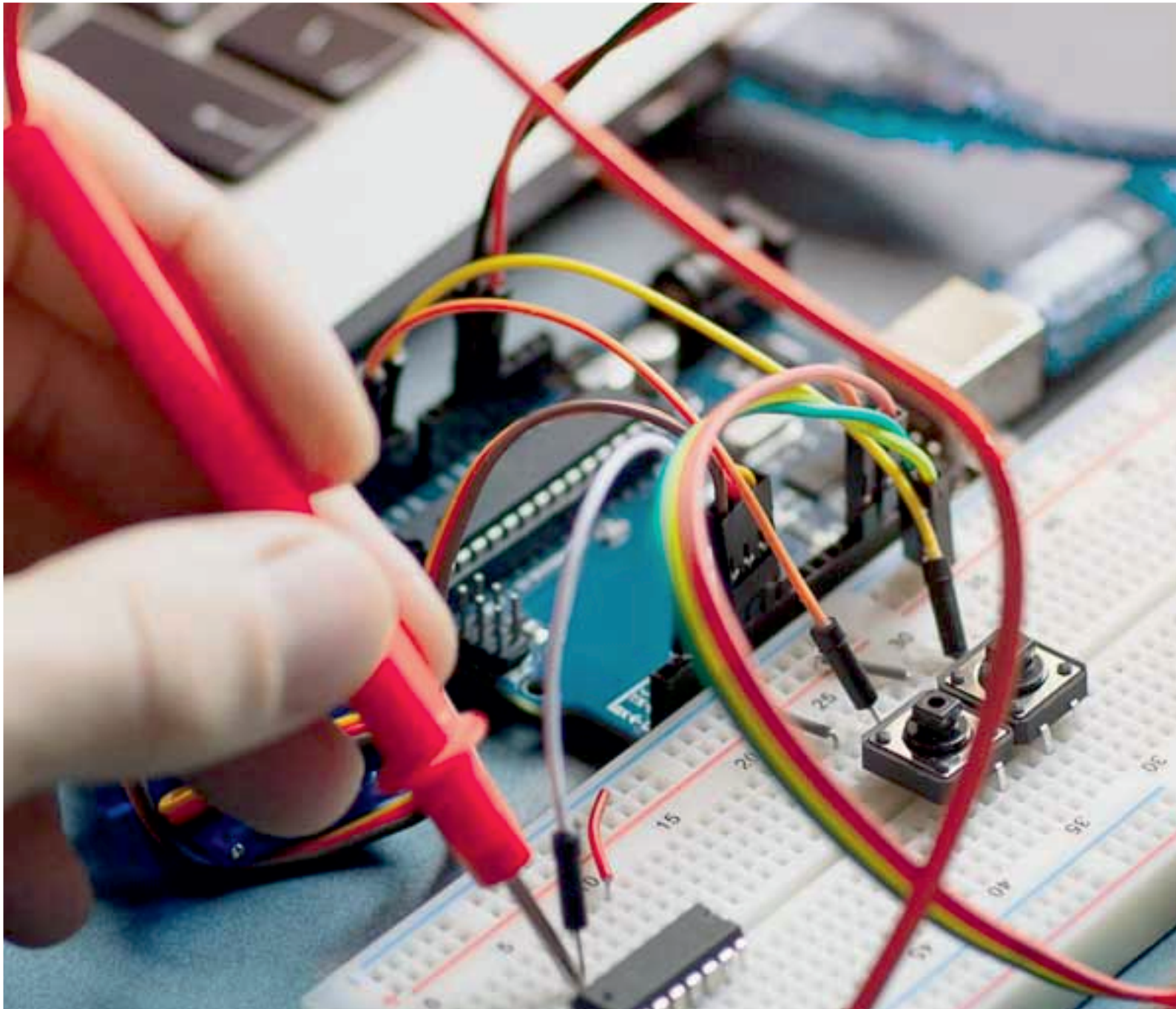
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