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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 gym there is doesn't type of device in which exercise is being done and electricity is generated electricity is stored in battery and this DC power is transform into AC power by the transformer. For a generate a more electricity we required much more effort and from the calculation from our project if we paddling 1 hr. then we generate 24 hr. electricity like bulb and other one. The intension of this project is to design a renewable energy source based around a piece of exercise equipment. The energy expanded 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 lamp or a computer while exercise 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 on 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 of use bicycle and to use it to power light bulb blenders cell phones laptop 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 scientist and engineer around the world have been designing of president energy harvesting systems drawing power from a variety of sources one of the most creative and unlimited source available in the kinetic energy product from human exercise also recent design a design of energy harvesting exercise equipment have been introduced into the market this is things are costly and do not produce a noticeable output of our this is team need to be improved and design of maximum power output cost efficient and marketability engineer to be used to treat fitting and existing exercise machine this project includes an efficient yet control a 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 shaft connected to motor as generator, battery, inverter, transformer, and load.

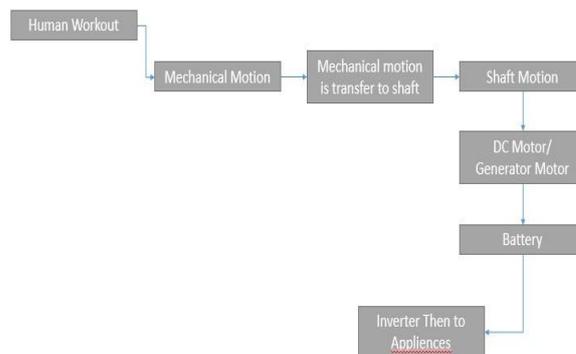


Figure: 1



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.

## REFERENCES

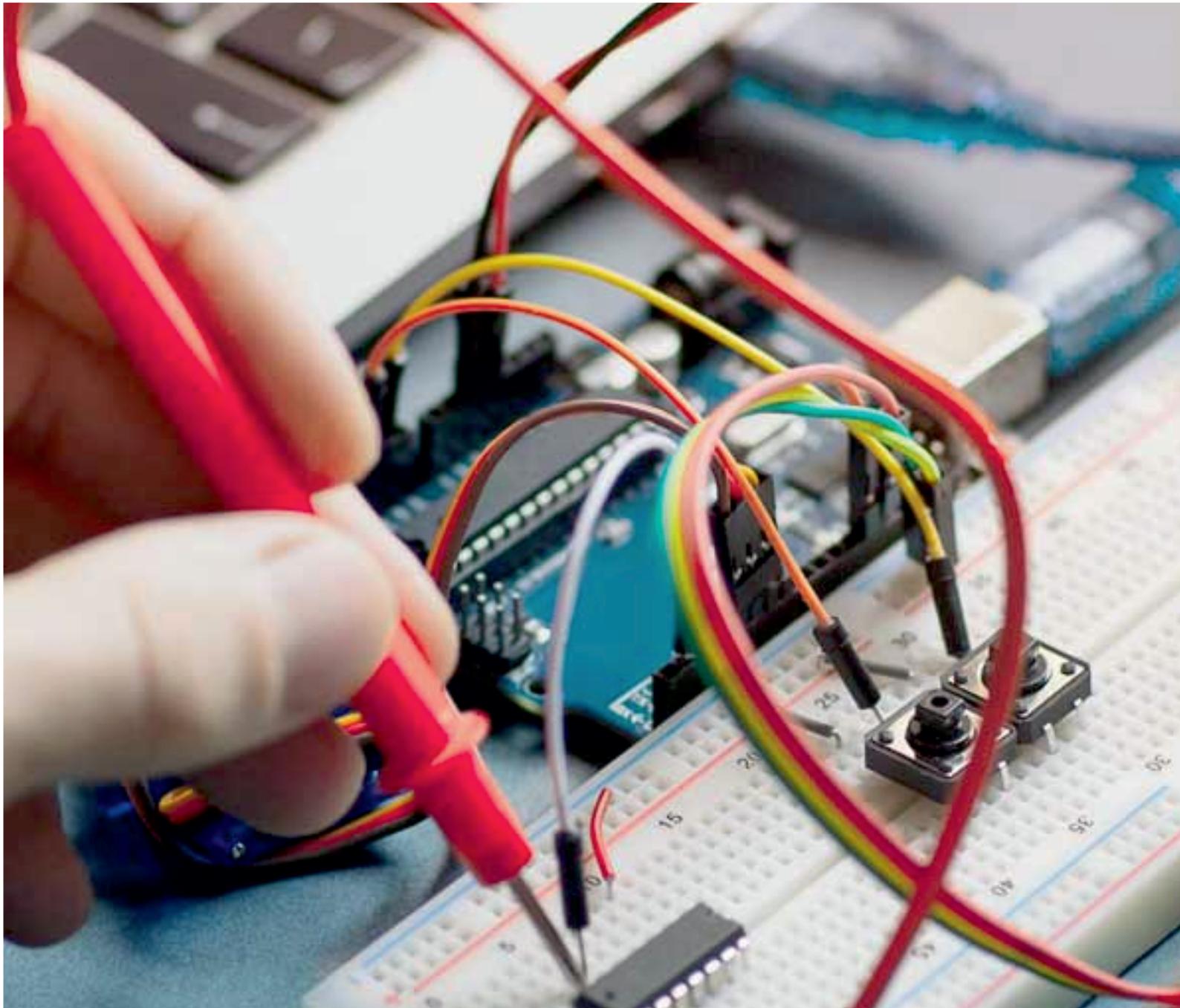
1. C.R. Bhattacharjee, “Wanted an Aggressive Outlook of Renewable Energy”, Electrical India,vol. 4 No.11, Nov. 2005, pp. 112-116.
2. Rashid M. H. (Editor): Power electronics handbook, Academic Press, 2007.
3. Human –powered Gyms: For a Healthier you-and a Healthier Earth Friday, 17 February, Written by Victoria Cho Article.
4. Nancy Owano : Human energy to bring power by pedal,2015 <https://techxplore.com/news/2015-12-humanenergy-power.htmlhttps://billionsinchange.com/solution/free-electric>
5. Arakaki, Justin, P. Lawrence and A. Nakamura, "Energy Harvesting from Exercise Machines Cal Poly Recreation Center Implementation ", unpublished.
6. Harsh Mankodi, “Analysis of a Treadmill Based Human Power Electricity Generator”, submitted to The University of Minnesota-Twin Cities, June 30, 2012.
7. “Human Powered Vehicle Challenge (HPVC) - Engineering Competitions - ASME -69 ASME,” *American*



*Society of Mechanical Engineers (ASME).* [Online]. Available:

[http://www.asme.org/events/competitions/human-powered-vehicle-challenge-\(hpvc\)](http://www.asme.org/events/competitions/human-powered-vehicle-challenge-(hpvc)). [Accessed: 21-Jun2012]

8. “Free Plans To Build your own Bicycle Generator Pedal Power Station,” *MNS Power*.
9. [Online]. Available: <http://www.pedalpowergenerator.com/>. [Accessed: 7-Jun-2012].
10. Mittle & Mittal, “Basic Electrical Engineering”, 2nd ed., 2004.
11. D. Bayerlein, V. Emons, and N. Oblamski, “POWER GENERATING MANUALLY OPERATED



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