

TO STUDY OF HUMAN ENERGY HARVESTING SYSTEM FOR HEALTH AND ENVIRONMENTAL BENEFIT

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Abstract : -Now days supply of fossil fuel are limited. In addition world population increases the energy demand is also increasing day by day. The basic need of human life is power and it can manipulate major development in any country. Bicycle are known as rich source of kinetic energy. It is the main mode of transportation for many Indian villagers. It helps to improve physical fitness and also helpful for restraining environment pollution. Electrical energy harvested by using bicycle will be clean, renewable and sustainable. This will be very beneficial for the countries that are facing serve energy crisis.

Keywords: Bicycle, Pedal, Dynamo.

I. INTRODUCTION

India is the second popular country in the world. In life, the human body comprises matter and energy. That energy is both electrical and chemical, with on growing population the need of people and their usage is also growing. Demand of electricity also increases. We are currently watching so many people are working from home. People can't get out because of the curfew. 7 to 8 hours for people sitting in front of laptop. It caused a lot of physical trouble for the people. This bicycle exercise is useful for that. In recent year, there have been many interesting developments in the field of human power conversion. Exercise through power generator is used to produce electricity for charging a battery. People in villages mainly use bicycle as their means of transport for small distance. In such place this technique is successfully used, Energy produced by exercise can be used for driving small appliances. Battery is charged easily by connecting battery to the output of dynamo which is connected to pedal of bicycle. It also helps in lowering their energy bills. In recent year, there have been many interesting developments in the field of human power conversion. Bicycle pedal powered generator is a device that uses human energy to produce electricity for charging a battery. Dynamo is used to electricity generators. The aim of this project is to build a straight forward human powered generator from a used bicycle and it uses to power light bulbs, cell phones, laptop charger and other small application. As more people spend more and more of their days in front of computer or any other equipment without any movements, for that people this project idea is useful. The user will be helping to stay fit. The typical adult will burn around 300 to 700 calories for a 30minute workout. amount of energy created the time is surprising.

LITERATURE REVIEW

Throughout human history, energy has generally been applied through the use of the arms, hands, legs and back. With minor exceptions, it was only with the invention of the sliding-seat rowing shell, and particularly of the bicycle, that legs also began to be considered as a "normal" means of developing power from human muscles (Wilson, 1986). Over the centuries, the treadle has been the most common method of using the legs to produce power. Treadles are still common in the low-power range, especially for sewing machines. Historically, two treadles were used for some tasks, but even then the maximum output would have been quite small, perhaps only 0-15 percent of what an individual using pedal operated cranks can produce under optimum conditions. However, the combination of pedals and cranks, which today seems an obvious way to produce power, was not used for that purpose until quite recently.

It was almost 50 years after Karl von Kraiss invented the steerable foot-propelled bicycle in 1817 that Pierre Michaud added pedals and cranks, and started the enormous wave of enthusiasm for bicycling that has lasted to the present. Ever since the arrival of fossil fuels and electricity, human powered tools and machines have been viewed as an obsolete technology. This makes it easy to forget that there has been a great deal of progress in their design, largely improving their productivity.

The most efficient mechanism to harvest human energy appeared in the late 19th century: pedaling. Stationary pedal powered machines went through a boom in the turn of the 20th century, but the arrival of cheap electricity and fossil fuel abruptly stopped all further development (Kris, 2011). Otto Von Guericke is credited with building the first electrical machine in 1660. The landscape for today's electricity usage practices bloomed from 1831 to 1846 with theoretical and experimental work from Faraday, Weber and Gauss in the relationship of current, magnetic fields and force. These theories enabled the design modern motors and generators. From 1880 to 1900, there was a period of rapid development in electrical machines. Thus this section reviews the works that has been done on human power generation.

II METODOLOGY PROPOSED SYSTEM

It is dual purpose bicycle. here we fitting adjustable handle. we can move it up and down at our convenience. Bicycle is mounted On stand. Figure (A) shows below Firstly, remove the back tire and tube. Part of the bicycle that needs to work is the chain and pedals. The bicycle dynamo is a type of generator attached to the wheel of bicycle with the help of coupling to produce electricity. The top of dynamo touches the tires rim, which spins when the bicycle starts moving. The exerciser will pedal like a jerk, it will become an energy generate. The chemical energy in the person's body is converted into mechanical energy. This generated energy in form of mechanical type. Dynamo can be used to convert mechanical energy into electrical energy. Signal from the dynamo to AT MEGA328P-PU must be limited in between 0V to 5V. This is Analog to Digital converter. MOSFET prevents battery damage. It also enables the device to support high current and voltage switching. battery used to store electrical energy. To store Dc voltage 12V, 7.5A battery is used. To convert DC to AC voltage we can connect inverter circuit. LCD used to computer display with low information content. Which can be displayed, such as Preset words, digits, and seven segment displays.

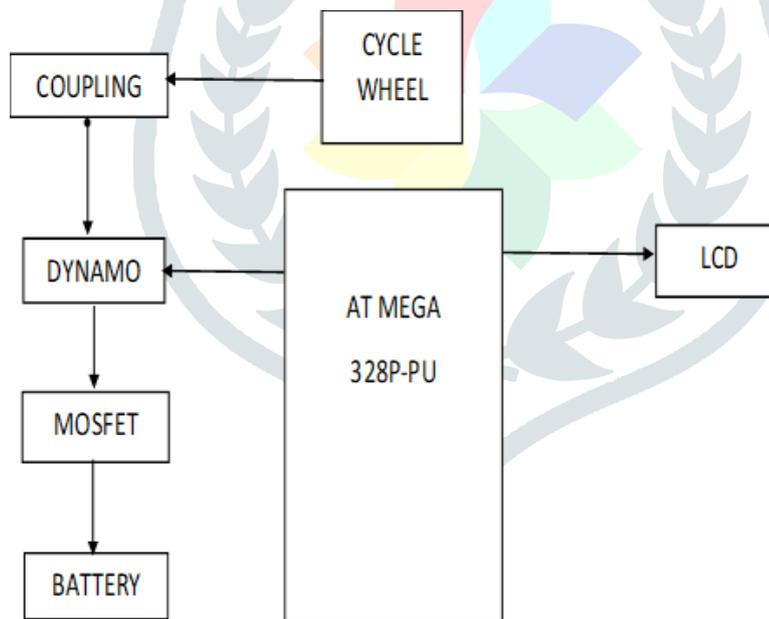


FIG (A)- BICYCLE TO BATTERY CHARGER

The below fig(B) is a parameter monitoring unit. This is going to put on the handle on the front of the bicycle. They will detect the changes in body during exercise. This signal is Analog form. AT mega328 P-Pu used to convert Analog to digital signal. detected information display on LCD.

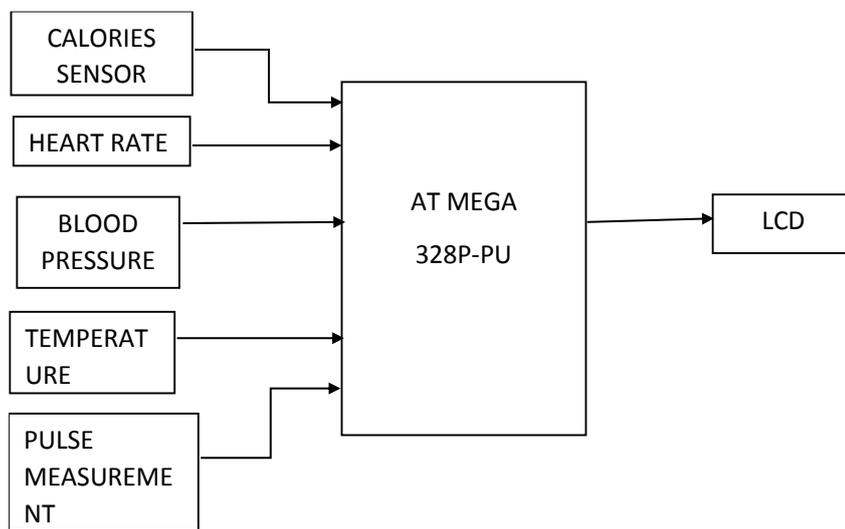


FIG (B)- PATIENT / PARAMETER MONITOR

In below fig(C) shows inverter unit. Generating energy is stored in the battery. Battery output is connected to H-Bridge MOSFET. H- Bridge is an electronic circuit configuration used to control the speed and direction of a Dc motor. output of MOSFET is connected to transformer. Step up transformer used to convert low voltage, high current to high voltage low current. filter capacitor are capacitors used for filtering of undesirable frequencies. Capacitor used for smooth DC power supplies. PIC microcontroller connected to battery. PIC provide reset signal, clock signal and power consumption is very less. The PIC itself will control all the feedback circuit that need to be control current, temperature and voltage. Clock is used to produce proper interval between two inputs and outputs.

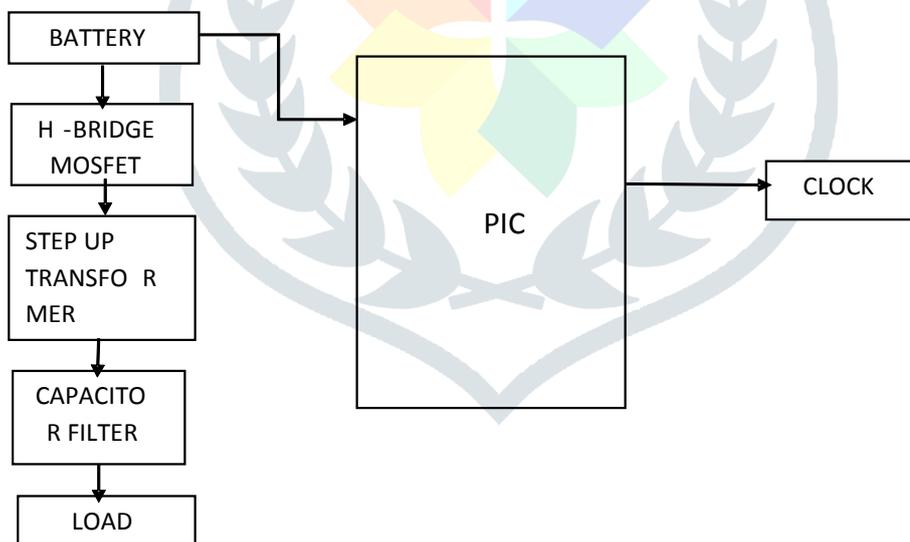


FIG (C)- INVERTER

III CONCLUSION

The project is focused on the non-conventional energy resources.it is a good exercise of pedalling which makes us fit. At the time when there is energy crisis, it’s shadow all over the world. Without any extra efforts we can do our most of the work and by using this we can save our money and time. There is a lot of future scope to extend this model to bikes and other vehicle like cars.

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