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POWER UTILISATION OF HUMAN EFFORT TO GENERATE ELETRICITY

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Abstract

The objective of power work out project is to design a renewable energy source best around a piece of exercise equipments intension of this project is to harness the energy expanded in typical work out at gym is is to convert into electric energy. The energy expanded in typical work out at gym is usually wasted in the mechanics of the equipment. This project harnessed the mechanical energy of the machines and convert it to electric energy by using a generator base system. In this project we are generating electrical power as non-conventional method by simply pull up and pull down. Non conventional energy system is very essential at this time to the word. Non conventional energy using pull up and pull down is converting mechanical energy into electrical energy. In this project, the conversion of human effort during exercise into electric energy pull up pull down power is an excellent source of energy, 95% percentage of the extraction put into pull up pull down power converted into electric energy. In this project the shaft of exercise equipments is connect to generator which generate the electric power which is used to power small appliances like cellphone, lightbulbs,

Key Words: Prime mover, Generator, Gym pull up machine, Inverter, Battery, etc.

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1.INTRODUCTION

The field of energy conservation is becoming an increasingly notable subject of reasearch among the scientific community today over the past decade, scientist and engineers around the word have been designing a renewable energy source for drawing power from human effort we know that one of the most creative and unlimited sources available is the kinetic energy produce from human exercise .

The world's energy consumption is at an all-time high with the demand continuously increasing. This situation brings up several challenges that need to be addressed. Increasing population, especially in developing countries

which lack resources for clean energy. Global warming with the related climate changes and adverse implications. These challenges have been reason for much controversy in the developed world; however, recent investigations have also shown a much more basic challenge of availability in the less developed parts of the world.

2. Literature Review

A Brief History Of Human Power Generation In 1817 Baron von Drais invented a walking machine that would help him get around the royal gardens faster: two same-size in-line wheels, the front one steerable, mounted in a frame which you straddled. The device was propelled by pushing your feet against the ground, thus rolling yourself and the device forward in a sort of gliding walk. The machine became known as the Draisienne or hobby horse

The next appearance of a two-wheeled riding machine was in 1865, when pedals were applied directly to the front wheel. This machine was known as the velocipede ("fast foot"), but was popularly known as the bone shaker, since it was also made entirely of wood, then later with metal tires, and the combination of these with the cobblestone roads of the day made for an extremely uncomfortable ride.[2] [3] [4]

3. Proposed Design

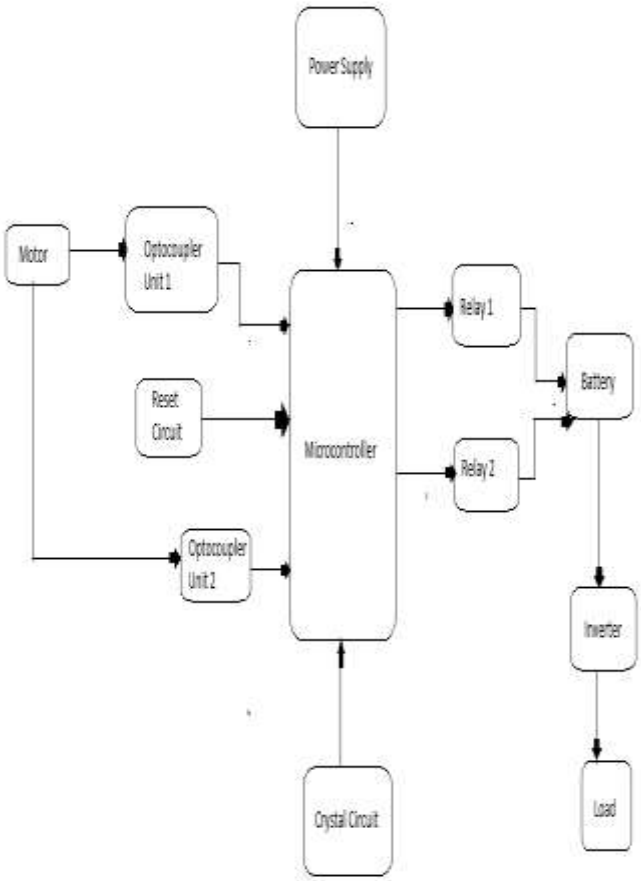

Fig:1 Proposed Design of Overall Project Design [2] [3] [4]

In this project electricity is generated through gym exercise. For generating the electricity motor always move in forward side. But sometimes motor will rotate in reverse side so that voltage is generated so that we can overcome this system by using polarity changer and checker circuit. In this project when motor will move in forward direction the opt couplers give signal to the microcontroller. According to that microcontroller given signal to the relay1 which is attached to the battery terminal and charge the battery. Inverter is connected to the battery which gives dc to ac conversion. And that ac supply is given to the load. [2] [3] [4]

But when motor will move in reverse direction then optocoupler2 gives signal to the microcontroller. According to that relay2 which is attached to the battery terminal and charge the battery. In these system then motor will move in reverse direction it gives positive voltage to the battery through relay2.

4. CONSTRUCTION

The gym power station turning workout into electricity it consists of prime mover connected to motor as generator, battery, inverter, transformer, load etc.

The prime mover is a part of gym equipment. The motor is used here is the 250W, 24V, 2650RPM motor. The working principle of motor is same as DC generator. To store DC voltage 12V, 7.5Ah, battery is used. To convert DC voltage to AC voltage inverter circuit is used. The transformer is used to step up the voltage to 230 V. The load can be bulbs, laptop charger, mobile charger, musical system etc. [12]

5. WORKING

A gym powered electric generator provides a method of generating electricity by means of a modified stationary bike equipment in electrical energy storage and it use for the home purpose. human/mechanical energy is convet into electrical by means of electric generator that is connected to an exercise equipment. As result is declared that energy created by the generator can be stored in battey which may then light or cellphone charger is running condition, for example, when the energy is needed to power light sources If AC appliances are in place then an inverter must be used to transfer the DC current into the standard 230volts of AC current for usage by these appliances

We hereby make use of an energy harvester system that moves in response to movement of the motion of a gym exercise machine for converting kinetic energy of the exercise equipment into electrical power. Our system makes use of the gripping rod connected to spring based motorized mechanism having rack pinion arrangement and multiple motors to power the system and generate power. The system aims to provide resistance to exercise movement while generating power from the same thus serving dual purpose. The machine makes use of 1-3 motor arrangement to provide 3 levels of generation capability. The machine aims to generating electricity through horizontal motion created while workout. [12]

6. ADVANTAGES

- Efficient Generation
- Smart amount of power is obtained.
- Dual Purpose Machine.
- Fuel supply not needed.
- Battery is used to store the generated power. [5]

7. DISADVANTAGES

- Only applicable for the particular place
- Mechanical moving parts are is more
- Intial cost is high
- Care should be taken for batteries. [5]

8. FUTURE SCOPE

The fitness is important factor in human life and people are interesting in gym exercise for shaping our body. This system is first implant on gym bicycle. The other equipments are available Leg Extension, Later Pull down, Adjustable Cable Crossover in the gym. This equipments can be used to generate electricity .Hence gym can automate by using gym equipments.

9. CONCLUSION

We have conclude that India planned for smart cities; the number of gym may be increases in the smart cities. And the today's generation is attracting towards the gym exercise. So the energy generated from the gym bicycle, leg extension push pull down runiing in stationary bike will contribute the big role. As number of gym equipment increases the total power generation will increase. It will definitely helpful in reducing today's energy demand. [12]

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