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GYM POWER GENERATION

[*]Naimeesh CHM

[**]Shreedhar Kamatar

Abstract

As energy across the world continues to rise, there is a strong need to develop new methods for energy conversation and power generation, particularly approaches that have less environmental impacts. Although human power is not ideal in terms of life cycle costs, there are promising application areas for human power in emerging regions where electric power is either not available or not affordable.There is also the untapped potential for harnessing human power at most fitness facilities. Nowadays spin bike was commonly used in the gym as well as a home for fitness purpose. The motivation for gyms across the nation to harness this energy to create usable electricity that can be fed back into the electric grid.

The man has needed and used energy at an increasing rate for his sustenance and well-being ever since he came on earth for few million years ago. Due to this lot of energy resources have been exhausted and wasted. Proposal for the utilisation of waste energy of power generation by gym pulley is very much relevant and important for highly populated countries like India and china the people are crazy about the gym. In this project, we are generating electrical power as a non-conventional method by simply pull up and pull down. The non-conventional energy system is very essential at this time to our nation. Non-conventional energy using pull up pull down is converting mechanical energy into electrical energy. In this project the conversion of force energy into electrical energy. The use of human power in a more efficient manner for a generation has been possible due to modern technology. Pull up pull down power is an excellent source of energy, 95 percentage of the exertion put into a pull up pull down power converted into energy. Aa human-powered electricity generation has been unveiled by the company. In this apparatus, the user has to pull up pull down the gym equipment for generating power. Another one is a foot- powered device that allows individuals to pump out power at a 40-watt clip to charge its own internal battery. Then this battery can be used for powering AC and dc devices, car batteries etc.

Keywords:

Haptics;
human-machine interaction system;
robotic arm control;
robot;
Transceiver module.

[*] Mechanical Engineer, Bangalore-India.

[**] Mechanical Engineer, Hubli-India

1. Introduction

The field of energy conversation is becoming an increasingly notable subject of research among the scientific community today. The intention of this project is to build a straight forward human powered generator from a used 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 unprecedented 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. Although recent designs of energy-harvesting exercise equipment have been introduced into the market, these systems are costly and do not produce a noticeable output of power. These systems need to be improved and designed for maximum power output, cost efficiently, and marketability. Engineered to be used for retrofitting an existing exercise machine, this project includes an efficient yet controllable power storage and distribution system. The objective of this project is to design a renewable energy source based on a piece of exercise equipment. Also, people who are interested in minimising environmental impacts and those who want to preserve the environment will use this type of electrical energy generation thereby reducing the emission of CO2 to the atmosphere. The energy expanded in a typical workout at the gym is usually wasted in the mechanics of the equipment.This project harnessed the mechanical energy of the machine and converted it to electrical energy using a generator based system.The exercise equipment will be attached to the shaft of the generator. Thus produced electrical energy is used in powering a piece of equipment such as a lamp or a computer while exercising. Pull up pull down power is the transfer of energy from a human source through the use of rack and pinion system. This technology is most commonly used for gym center or house .less commonly gym power is used to power agricultural and hand tools and even to generateElectricity. Some application includes battery charge home appliance. The articles on this page are about the many wonderful application for power generation by gym pulley technology. Whenever the person is allowed to pass over the gym pull up pull down. As the spring are attached to gym equipment, they get compressed and the rack, which is attached to, the bottom of the rod moves down reciprocating motion of rack into rotary with certain RPM these shafts are connected through a chain drive to the dynamos, which converts the mechanical energy into electrical energy. Now made to rotate a wheel in one

direction by supplying power to the shaft, while other made to rotate freely on the shaft, as the freewheel is inserted in the gears.

RACK- Material- Mild steel Function- To change the translator motion into rotary motion Properties- strength, Rigidity, Resistance to shock loads, less wear tear

2. Research Method

A. Literature study

- The potential of human power
- Calories to watts

B. Design of overall project

- Rack and Pinion arrangement
- Sprocket and chain drive
- Flywheel
- Permanent magnet DC generator
- Bearings
- Spur gear
- Battery
- Rectifier
- Inverter
- LED light

C. Fabrication of the model

- Fabrication details
- Working on the model

D. Project methods

E. Summery

F. Documentation

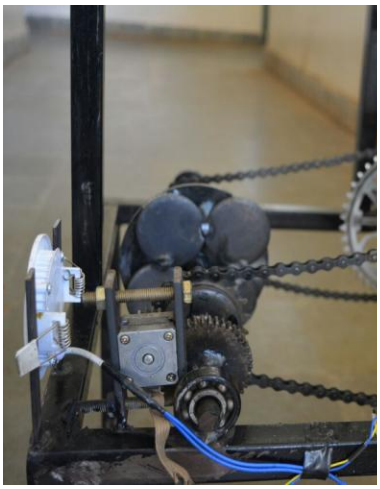

Figure 1. *Model of Gym Power Generation*

3. Literature Review

As energy usage across the world continues to rise, there is a strong need to develop a new method for energy conservation and power generation, particularly approaches that have less environmental impacts. Although human power is not ideal in terms of life cycle costs, there is also the untapped potential for harnessing human power at most fitness facilities. The now-a-day spin bike was commonly used in the gym as well as a home for fitness purpose. The motivation for gyms across the nation to harness this energy to create usable electricity that can be fed back into the electric grid

MANUFACTURING PROCESS Required square rod is cut from the bar fit in the vice of milling machine id to cut on teeth according to dimensions of the drawing. Gears at aninfinite number of Teeth are called RACK. With the help of rack and pinion, we can convert reciprocating motion into rotary motion and vice versa.

SPUR GEAR-In precision machine, in which a definite velocity ratio is of importance, the only positive drive is by gears or toothed wheels. A gear drive is also provided when the distance between the driver and follower is very small.

CLASSIFICATION OF GEARS

1. According to the position of the axis of the shaft.

a) Parallel b) Interesting c) Non-intersecting

2. According to the peripheral velocity of gears.

a) Low-velocity b) Medium velocity c) High velocity

3. According to the type of gearing.

a) External gearing b) Internalgearing c) Rack and Pinion

4. According to theposition of teeth.

a) Straight b) Inclined c) curve

SPRINGS-A spring is defined as an elastic body whose function is to distort when loaded and to recover its original shape when the load is removed.

ELECTRIC DYNAMO-It is well known that whenever electric current flow through the conductor a magnetic flux is immediately brought 10 existences in the space surrounding the conductor. We say that when the electrons are under motion they produce a magnetic field. The converse is also true, i.e., when magnetic field embracing a conductor moves relative to the conductor, it produces a flow of electrons.

ADVANTAGES

- Eco-friendly.
- Economically feasible.
- Easy implementation.

- Maintenance cost is low.
- Portable.
- User-friendly.
- Improves the physical fitness.
- Power generation is simply walking on the step
- Power is also generated by running or exercising on the step
- No need of fuel input
- This is a Non-conventional system
- Battery is used to store the generated power

DISADVANTAGES

- Power generation depends on the length of the rack.
- Discontinuous of power generation
- Only applicable for the particular place
- Mechanical moving parts are is more
- the initial cost of this arrangement is high
- care should be taken for batteries

APPLICATIONS

- Hammer strength machine
- Lat pull down machine
- Leg extension machine
- Spin bicycle
- Power generation using gym pulling can be used most of the places such as Colleges Schools Gym centre

4. Conclusion

The project ‘power generation by gym pulley’ has been successfully designed and tested. It has been developed by integrating features of all the hardware components used. The presence of every module has been reasoned out and placed carefully thus contributing to the best working of

the unit. Calories to Kilowatts succeeded as an educational and energy efficient exercise facility at Albion College. Its benefits toward the sustainability of people, prosperity, and the planet were achieved by striving to exceed its objectives. The survey data demonstrated the significant improvement that Calories to Kilowatts had on peoples' understandings of renewable energy sources. They also showed that the program increased percentages of participants engaging in the positive environmental behaviour. Thus, C2K contributed to the building of a sustainable society. The long-termlifecycle of the machines remains to be seen, but it is predicted that because the machines were constructed from recycled equipment and utilised clean energy, the life cycle would reduce negative impacts on the environment. The exercise component of the program also contributed to general human health.

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