# Foot Step Operated Energy Generation System

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**Abstract - In this modern world energy and power are the basic necessities. As the demand of energy is increasing day by day, therefore the ultimate solution to affect these kinds of problems is simply to implement the renewable sources of energy. The aim of this work is to generate the power by utilizing the energy of footsteps .This is achieve by certain arrangements like footpaths, stairs, plate forms and these systems are often install elsewhere specially within the dense populated areas.**

***Keywords —Rack and Pinion, DC Generator, Inverter, Battery, Frame.***

## I. INTRODUCTION

In the life of normal man electric energy plays a very important role. Electricity is an important aspect of human life. A man cannot do any work without help of electricity. Now a day we do many things with the help of electric energy.

So I and my team are trying to find the ultimate solution to generate the electricity by utilizing the force of human foot. So many people have thought about this mechanism, and also they have expressed their views on this mechanism.

After that if we think about the invention of electricity then we have only one name which is next to us that is Thomas Edison.

so the conclude that we can do many things with electric energy such as we drive the machine in industry ,we can run our buses and trains, we can run the home appliances with electric energy and so many more things. Electricity has completely transformed the method of living of human being.

## II. PROBLEM STATEMENT

We plan to capture energy from the everyday motion of people travelling up and down on a staircase. We can modify a normal stairs tread to move a small distance and the vibration energy will be converted to electric energy.

## III. OBJECTIVE

To design the mechanism of Stair case power generation system and also develop the working model without polluting our environment. The waste energy supplied by human is utilized in this mechanism

## IV. METHODOLOGY

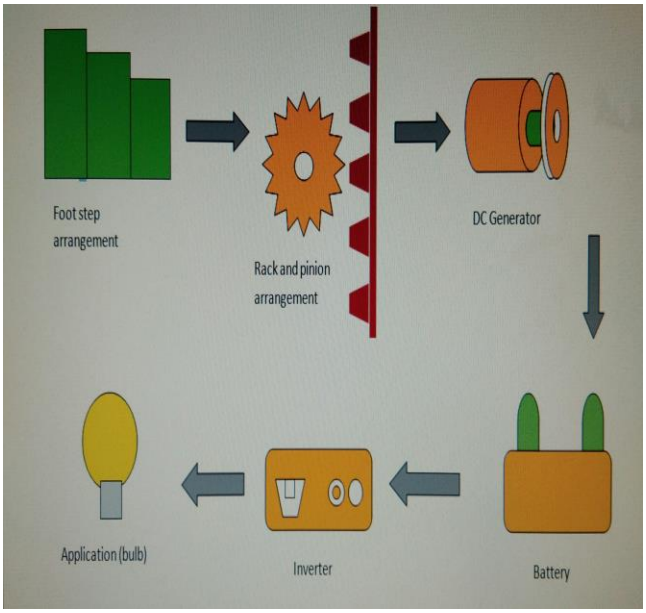


**Fig:1 Methodology**

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## V. LITERATURE REVIEW

[1] " Power Generation in Automobile Suspension System " by C. Nithiyesh Kumar, K. Gowtham, M. Manikandan, P. Bharathkanna, T. Manoj Kumar

In this paper the overview of power generation methods are described, the way to generate an influence in several manner. The renewable energy sources are often generated aside from the non-polluting environment. This review paper concerned about the country economical level on the road side. The piezoelectric mechanism, rack and pinion mechanism, piston arrangement and roller arrangement are gives unique results about power generation on the vehicle.

On considering the varied parameter involved altogether power generation mechanism.

[2] "Generation of electricity from Foot Step Using Rack and Pinion Mechanism" by Md. Azhar, Zitender

Rajpurohit, Abdul Saif, Nalla Abhinay, P.Sai Chandu

This research paper authors they used the regulated 5V power, 500mA power supply. Bridge type full wave rectifier is employed to Rectify the ac output of secondary of 230/12V step down transformer. The "pinion" engages teeth on the rack. In this Paper, since the facility generation using foot step get its energy requirements from Non-renewable source of energy. There is no need of power from external sources (mains) and there's less pollution during this source of energy. It is very useful to the Places like all roads and also as all quite foot step which is employed to get the non-conventional energy like Electricity.

[3]"Power Generation Footstep" by Shiraz Afzal, Farrukh hafeez This paper is all about generating electricity when people walk on rock bottom if we are ready to design an influence generating Floor which will produce 100W on just 12 steps, then for 240 steps we will produce 2000 Watt and if we install such sort of 100 floors with this technique then it can produce 1Mega Watt As a fact only 11% of renewable energy Contributes to our primary energy.

## VI. WORKING

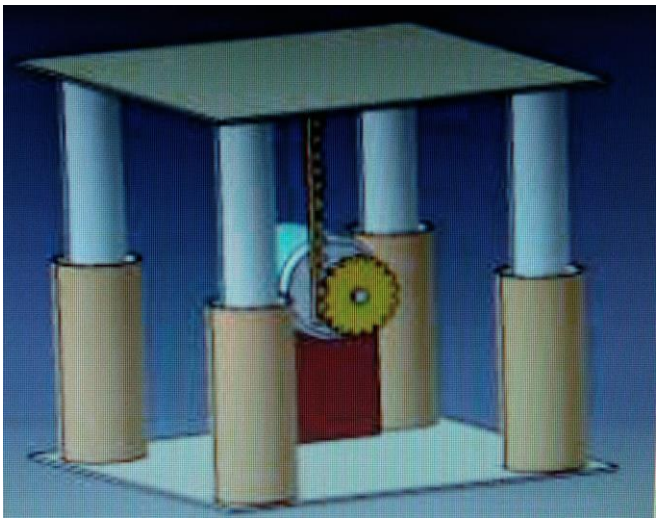

**Fig-2: Foot Power Generation Machine**

Above diagram shows the complete working of footstep energy generation system. In which the pushing force is converted into the electrical energy by proper Rack and pinion arrangement. The upper plate is welded with the rack and pinion, spring and some other components. a spring is used to return the plate to its original position after releasing the load .the rack and pinion is coupled with the motor shaft of dc generator here we use a permanent magnet DC generator it converts the rotary motion of shaft into electrical energy this energy generated by the generator is further stored in the DC battery. The DC battery is connected to the inverter which convert the direct current into the alternative current because we want the output in alternative current. After that this newly generated AC current is utilized for the further application like ceiling fan, table fan, and bulb.

Following are the main components of system

1) M.S. pipe
2) M.S. plate
3) LED light
4) DC generator
5) Rack and Pinion
6) Frame

## VII. TECHNICAL ANALYSIS

CHARGING TIME

The entire energy that's produced when the load is applied on the footsteps is stored during a particular device called battery. So, it's taken as important criteria to work out the charging time taken by the battery. In this project the battery is used with the battery rating of 1.4AH (ampere hour).

Charging Time=Battery Rating/Charging Current

BATTERY BACKUP TIME - Battery Backup Time=Battery Ratting/Load Applied

## VIII. ADVANTAGES

1) Electric energy is generated by just walking on the steps.
2) Energy also generated by running or exercising. and implementing this mechanism in gym.
3) No need of input fuel for the energy generation.
4) This is renewable energy source.

## IX. DISADVANTAGES

1) High set up cost
2) Installation applicable only for specified places

## X. APPLICATION

1) This can be implemented on Railway Station, bus stop, airport to generate the electric energy by human physical activity.
2) It can be implemented in parking area.
3) In shopping malls it can be implemented.
4) This can be implemented in gyms in the instruments like cardio machine for energy generation.

## XI. CONCLUSION

In concluding the words of our project .There is no requirement of electricity and any fuel to run our project. It is especially suited for implementation in crowded areas. This will be utilized in street lighting without use of long power lines. It can also be used as charging ports, lighting of pavement side buildings. It completely works on human efforts and most important thing is, it's very harmless to the environment. It is a pollution free energy generation source. It is very useful to the crowded areas like Railway Station, bus stop, airport, shopping malls etc. Electric energy is generated by just walking on the steps.

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