International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 10 Issue: 03 | March - 2026 SJIF Rating: 8.659 ISSN: 2582-3930

Foot Step Power Generation by Using Gears Mechanism

Sandep asude[1], Shubham Mhaske [2], Arjun Shinde[3] ,Tushar Kadam[4] ,Samadhan Lekurvale[5]

[1]*Assistant Professor of Department of Mechanical, Santosh N Darade Polytechnic, Yeola*
[2]*Student of Department of Mechanical, Santosh N Darade Polytechnic, Yeola*
[3]*Student of Department of Mechanical, Santosh N Darade Polytechnic, Yeola*
[4] *Student of Department of Mechanical, Santosh N Darade Polytechnic, Yeola*
[5]*Student of Department of Mechanical, Santosh N Darade Polytechnic, Yeola*

Abstract - The demand for electricity is increasing highly due to advancement of present lifestyle of the human being. As the arising technology demand more electricity and the population is also increasing rapidly, so the energy demand is also increasing. This system generates power using a footstep force. This power generation system serves as a medium to generate electricity using non-conventional sources i.e. force, it will be stored and used. This project is useful at public places like railway stations, bridges, at every point of entry and exit. In this mechanical project, the rack is attached to the top plate where a person can press the plate and down. At the top shaft, the pinion is attached which is a mate to rack. When a person presses the plate, the pinion starts rotating at the other end of the shaft. Another gear is attached which is connected to the bottom shaft by chain drive. The chain rotates the freewheel attached to a bottom shaft, In the middle of the shaft the flywheel is attached which stores the energy in it at the other end gear is mate with generator motor which generates the energy. This project will be cost effective and easy to installed in a populated area like railway station, bus stands and in shopping malls. Our project is cost effective and easy to implement.

***KeyWords*:** RenewableEnergy, Foot step, Electricity,Generator.

1.INTRODUCTION

In this project the weight which acts on the foot step is used to generate electrical energy. When a person walks over the foot step, a force acts on the step. One can simply be amazed by knowing how much energy a person can have just by walking on the floor with normal speed. Whenever a person walks, manages to lose energy towards the floor by means excess weight to the floor. Therefore, here we will explain a new technique for electricity generation. This new technique works on the law of conservation of energy “energy neither created or nor destroyed it can change its form”. Foot step power generation system is designed to be very useful at public places like railway station, bus stand, shopping malls where lot of people keep walking through all day. This entire human vitality being squandered if can be made workable for usage it will incredible development and group vitality ranches will be extremely helpful vitality sources in packed nations.

1.1 Objective

- To generate the electricity through the human foot
- To provide electricity in rural area
- To promote the non-conventional energy source
- To save conventional energy sources
- To store the electricity for further use
- To produce electricity at cheapest cost
- To produce electricity while rack moves in upward direction

Fig.1: Final Model

2.Working Model of the system

The working of the Foot Step Electric Converter (FSEC) is demonstrated:

I. When force is applied on the plate by standing on plate the spring gets compressed.

II. The rack here moves vertically down.

III. The pinion meshed with the rack gear results in circular motion of the pinion gear.

IV. For one full compression the pinion moves 1 full circle.

V. When the force is released from the plate pinion reverses and moves another circle and cause rotation of gear pairs.

VI. The generator attached to the last gear hence results in the dc power generation.

The power generated by the foot step generator can be stored in an energy storing device. The output of the generator was fed to a 12 V lead acid battery, through an ac-dc converter bridge. Initially, the battery was completely discharged. Then, the FSEC was operated by applying foot load and energy was stored in the battery. A 100 W, 230V bulb was connected to the battery through an inverter. The arrangement is shown in

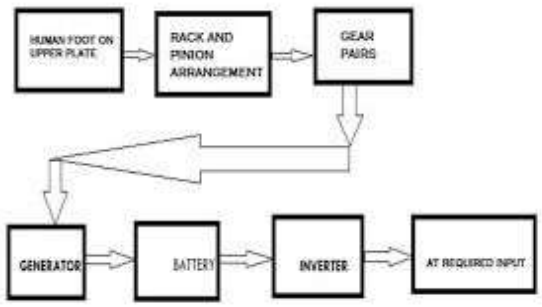
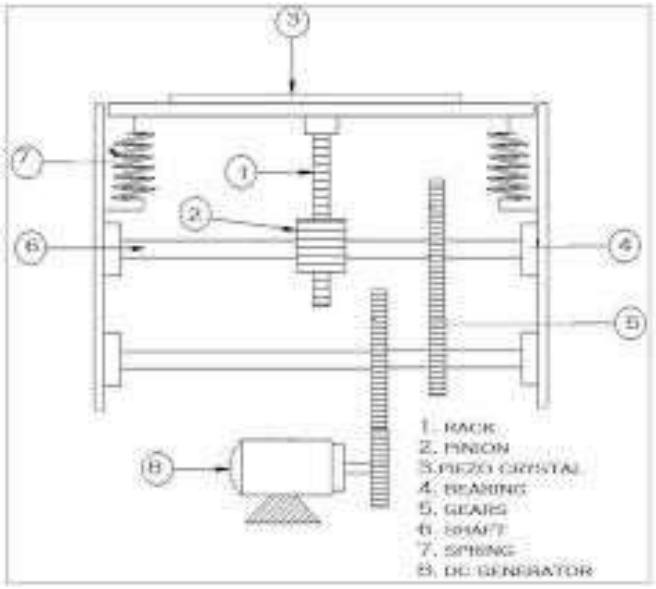


Fig.2: Block Diagram

Line Diagram of Foot Step Power Generation



This is the line diagram of foot step power generator. It describes different components of the system in proper manner. In which rack moves downward as human weight applied which cause rotation of pinion on first shaft. A big gear is mounted with pinion on shaft one which is attached to the small gear of shaft two. Another big gear is mounted with small gear on shaft two which is in contact with gear of dc generator.

3.Need for the system

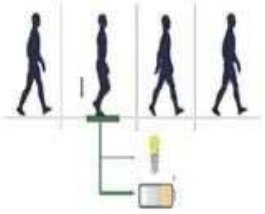


Fig.3 Need for the system

Proposal for the utilization of waste energy of foot power with human locomotion is very much relevant and important for highly populated countries like India and China where the roads, railway stations, bus stands, temples, etc. are all over crowded and millions of people move around the clock. This whole human/bioenergy being wasted if can be made possible for utilization it will be great invention and crowd energy farms will be very useful energy sources in crowded countries. Walking across a "Crowd Farm," floor, then, will be a fun for idle people who can improve their health by exercising in such farms with earning. The electrical energy generated at such farms will be useful for nearby applications.

4.CONCLUSIONS

The project "POWER GENERATION USING FOOT STEP" is successfully tested and implemented which is the best economical, affordable energy solution to common people. This can be used for many applications in rural areas where power availability is less or totally absence. Since India is an developing country where energy management is a big challenge for huge population. By using this project, we can drive D.C loads It is especially suited for implementation in crowded areas. This can be used in street lighting without use of long power lines. It can also be used as charging ports, lighting of pavement side buildings. As a fact only 11% of renewable energy contributes to our primary energy. If this project is deployed then not only, we can overcome the energy crises problem but this also contributes to create a healthy global environmental change.

- Smart system.
- Produces 2000W of electricity
- Durable.
- Have a life of approx. 5 yrs.

ACKNOWLEDGEMENT

The authors would like to thank the Department of Mechanical Engineering and the project guide for their guidance and support during the completion of this project.

REFERENCES

[1] T.R.Deshmukh. Design and analysis of a Mechanical Device to harvest energy from human footstep motion Volume 3, Special Issue 1,ICSTSD 2016M. Young, The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.

[2] "Power generation through step" by Vipin Kumar Yadav, Vivek Kumar Yadav, Rajat Kumar, Ajay Yadav

[3] "Power Generation Footstep" by Shiraz Afzal, Farrukhhafeez

[4] Sasankshekhar Panda. An Investigation on Generation of Electricity Using Foot Step ISSN: 2277-9655 Scientific Journal Impact Factor: 3.449 (ISRA), Impact Factor: 1.852 K. Elissa, "Title of paper if known," unpublished. [5] Jose Ananth Vino. Power Generation Using Foot Step, International Journal of Engineering Trends and Technology (IJETT) Volume1 Issue2 May 2011.