



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 Issue: X Month of publication: October 2017

DOI: <http://doi.org/10.22214/ijraset.2017.10147>

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Foot Step Power Generation

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Abstract: The importance of the electricity is more in our life, so through this project we are generating electricity in natural way. This is an electric as well as embedded based concept. In this system we are going to generate DC power by using piezo electric matrix. This system can be implemented in public places such as Railway stations, Hospitals etc. When people will walk on the piezo electric matrix an Dc power will be generated and stored in battery and then transmitted to Inverter. The inverter will convert the DC energy into the AC and various load can be operated on this ac energy such as Fan, Lights etc.

Keywords: Piezoelectric sensor, ARM, Inverter, loads and Battery.

I. INTRODUCTION

In earlier days Man needed and used energy to sustain on the Earth, they generated energy through various activities such as fire. As walking is the most common activity done by human so this idea can be implemented anywhere. When a Person walks, He wastes his energy to the road surface, so this energy can be saved and converted into the usable form, basically it is a reusable energy. This is one of the method to generate energy as there are numerous energies present. Here Mechanical energy is converted into Electrical energy by creating pressure on the Piezo electric mat. The energy is created through the force and then into electrical energy which can drive all DC as well as AC loads. The foot step Power generation, includes various components which are Piezoelectric sensor, Battery, Inverter, AC Load, DC Load and LCD. Piezoelectric Sensors are connected in the form of Matrix, then this matrix is connected to the battery which stores the DC power as well as It is give to the DC Load. Then inverter converts the DC energy to AC energy which is then given to the ARM controller is used to control every operation which is to be done. LCD is Used to display the Power generated through the piezoelectric mat.

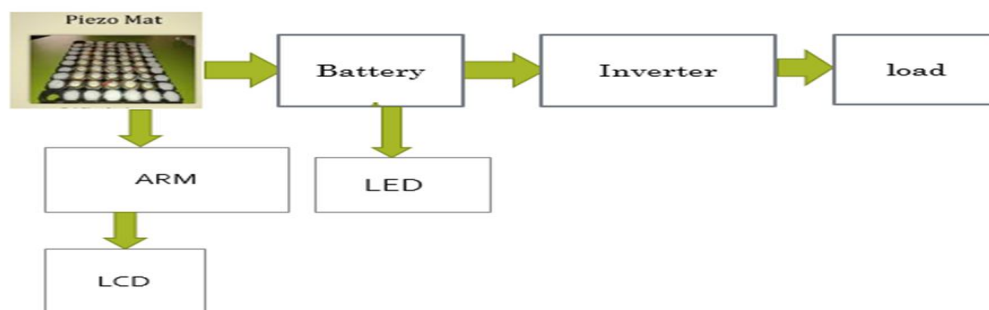
As the energy produced by the coal, gas etc. are Conventional energy sources. Whereas Biomass, Wind and solar are known as Non-Conventional energy source. So, this is one of the idea to generate the natural energy and save the conventional energy source.

II. OBJECTIVES OF THE WORK

- A. It is very much important to utilise the energy
- B. It has to be implemented in highly populated countries.
- C. Here the generation of power is done by creating the pressure on the piezoelectric mat.

III.METHODOLOGY

When a human is walking, jumping or dancing on the surface which contain the piezoelectric sensor, the energy is generated in DC form which is then stored in battery. The loads are directly connected to the battery, further the power is transferred to inverter which converts the signal from DC to AC so that we can sun the AC loads as well. Then ARM controller is used to calculate the power generated through the sensors and Displayed on LCD. This system is very suitable applied at the public spotted area with many people such as school, bus stairs, malls, dance floor and others.



. 1 Block diagram of Foot Step Power generation.



IV. ADVANTAGES

- A. Reliable to use, Economical and Eco-Friendly.
- B. Less consumption of energy.
- C. No moving parts, so it is a stationary system
- D. \long service life of the system.
- E. Self-generating power so no external power is required.

V. APPLICATIONS

- A. can be used on the platforms of Railway stations.
- B. On College Stairs.
- C. At the Hospitals.
- D. In Emergency power failure situation.

VI. CONCLUSIONS

A piezoelectric tile can generate amount energy. By comparing it was found that the series and parallel combination connections are more suitable.

The weight on the tile and corresponding voltages generated is studied and they are found to have linear relation. It is especially suited for implementation in crowded areas. The idea can be implemented in street lighting without using power lines. It would also be implemented as charging ports, lighting in society.

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