

Foot Step Power Generation System Using Electronic Device

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Abstract - Internet of Things plays a vital role in smart agriculture monitoring system. Smart farming is an emerging concept, because IoT sensors are capable of providing information about their fields. Wireless Sensor Networks are performing a key role in different applications such as healthcare, agriculture, environment monitoring, home automation. Monitoring environmental factors is the major factor to improve the yield of the crops. The main feature of this paper is monitoring temperature and humidity in agricultural field. This monitoring is done by using sensors and sending the message to the farmer. The main purpose of paper is to propose a grid system onion storage methodology which will help to reduce onion degradation due to temperature and humidity. If in the storage of onions, one of the onion starts degradation then this system will send the message to the farmer. This will help to improve yield better quality onion and save the farmers from the major economic loss.

Keywords: Wireless Sensors Network, Sensors, Climate, Agricultural Productivity, Internet of Things.

I. INTRODUCTION

Energy is nothing but the ability to do the work. In day to day life, Electricity is most commonly used energy resource. Now-a-days energy demand is increasing and which is life-line for people. Due to this number of energy resources are generated and wasted. Electricity can be generated from resources like water, wind etc. to generate the electricity from these resources development of big plants are needed having high maintenance cost. Some other energy resources are also costly and cause pollution. They are not affordable to common people. Electricity has become important resources for human being hence, it is needed that wasted energy must have to utilize, walking is the most common activity done by human being while walking energy is wasted in the form of vibration to the surface. And this wasted energy can be converted into electricity. Using the principle called piezoelectric effect. Piezoelectric effect is the effect in which mechanical vibrations. Pressure or strain applied to piezoelectric material

is converted into electrical form. This project gives idea about how energy is used on stepping on stairs. The use of stairs in every building is increasing day by day even small building has some floors when we are stepping amount of this wasted energy is utilized and converted to electricity by Piezoelectric effect. Piezoelectric effect is the effect of specific materials to generate an electric charge in response to applied mechanical stress wasted from total production. These are big loss to our farmer and our nations. To overcome from this problem and save the money of our farmers and nation, we are working on this project.

II. METHODOLOGY

The system consists of blocks that depress slightly under pressure of human steps and which will depress the mechanical setup placed immediately after it inside the system. This consists of immovable bottom platform and compressible top platform. System also consist of four primary spring a lever assembly, large pulley, small pulley, power generator, shaft with two free wheel bearing and break arrangement.

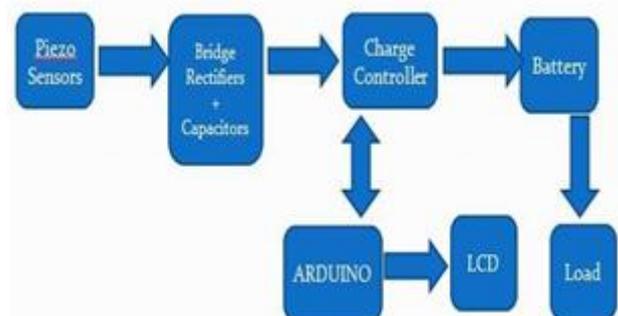


Figure 1: System Architecture

When people walk on the floor, the floor pressed on the mechanical setup. The setup pressed due to the spring action and pulls the lever assembly which rotates one of the freewheel bearing fitted to the shaft. The shaft then rotates the large pulley which is connected to the smaller pulley through a V-belt. This smaller pulley acts as a reducer this provides

more rotations corresponding to one rotation of the large pulley. This smaller pulley coupled with the dynamo (or Sanyo coil), a device that converts the energy of rotary motion into electric current and power is obtained. This process depends on two factors, primary spring tension and type of generator used. When the pressure is applied through a foot step, ninety-five percent of the pressure applied is converted into energy in this method.

Piezoelectric material converts pressure into electrical energy. The pressure can be either from weight of moving vehicles or from the weight of people walking on it. The produced output is in the variable form. So bridge circuit is used to convert variable voltage into linear voltage. An AC filter is used to filter out this output voltage and it is stored in rechargeable battery. Two possible connections were tested- parallel and series connections for producing 40v output. Inverter is connected to battery and battery connection provide AC load. The voltage produce across the time can be displayed on LCD. A piezo tile capable of generating 40v. The weight applied on tile and corresponding produced voltage is referred and linear relations found.

III. EXPECTED RESULT

The piezoelectric transducer output is in AC waveform. The output of the transducer needs to be rectify and filtered before being used to the storage or to the DC loads. Figure 3 shows the output of the piezoelectric transducer before being inserted to the full bridge rectifier.

IV. CONCLUSION

A piezoelectric plate capable of generating 1V has been devised. Comparison between various piezoelectric material shows that PZT its generate how many piezoelectric placed into tiles. Also, by comparison it was found that series parallel combination connection is more useful. The force applied on the tiles and corresponding voltage generated in piezoelectric design tiles. It is mainly installed in crowded areas. This can be used in domestic without use of any power lines. It can also be used as mobile charging, street light etc.

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