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POWER GENERATING SHOES FOR MOBILE CHARGING

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Abstract: *The method of generating electrical voltage for charging an electronic gadget from the piezoelectric sensor that is fixed to the sole of footwear is illustrated in this paper. The increase in energy consumption of portable electronic devices and the concept of harvesting renewable energy in human surrounding arouses a renewed interest. This technical paper focuses on one such advanced method of energy harvesting using piezoelectric material. Piezoelectric materials can be used as mechanisms to transfer mechanical energy, usually ambient vibration, into electrical energy that can be stored and used to power other devices. A piezoelectric substance is one that produces an electric charge when a mechanical stress is applied. Piezo-film can generate enough electrical density that can be stored in a rechargeable battery for later use. The use of piezoelectric devices installed in terminals will enable the capturing of kinetic energy from foot traffic. Electrical energy can also be generated from traffic vibrations (vibrations in the road surface) using piezoelectric material.*

Keywords: *Semisolid, Infant's, Steeping, Kilning, Malt, Alpha-Amylase, Yield.*

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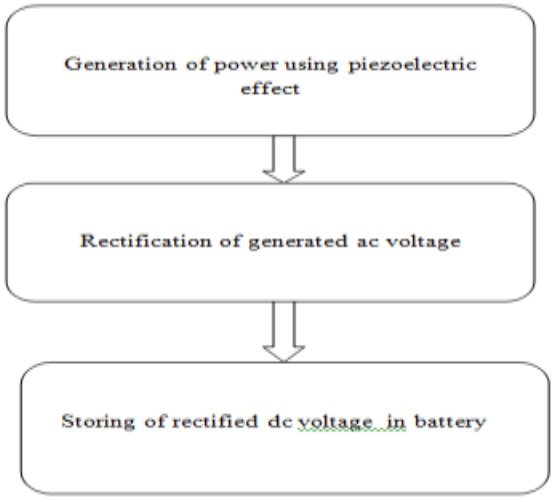
INTRODUCTION

One of the novel ways to accomplish this is through energy harvesting. Energy harvesting, or energy scavenging, is a process that captures small amounts of energy that would otherwise be lost as heat, light, sound, vibration or movement. It uses this captured energy to improve efficiency and to enable new technology, like wireless sensor networks. Energy har- vesting also has the potential to replace batteries for small, low power electronic devices.

energy harvesting has become one of the fascinating subjects of interest to provide portable electrical power. The commonly used sources are: solar power, wind energy and piezoelectricity. This study is focussed on Piezoelectricity as it depends on the mechanical pressure or strains to obtain electrical energy, while the other sources are not reliable at all times.

Piezoelectric materials can be used as a means of transforming ambient vibrations into electrical energy that can then be stored and used to power other devices. With the recent surge of micro scale devices, piezoelectric power generation can provide a convenient alternative to traditional power sources used to operate certain types of sensors/actuators, telemetry. Much of the research into power harvesting has focused on methods of accumulating the energy until a sufficient amount is present, allowing the intended electronics to be powered. We have cited implementation of piezoelectric materials in harvesting energy from tapping of keys of keyboard and use it for various application like charging the mobile phones.

Flow chart



This flow chart is divided into three main block:

1. Generation of power from the piezoelectric material .This is the starting point of our project ,here the power is generated by striking the piezoelectric keys

2. Rectification of generated AC voltage. As the power generated from the piezo material is AC is needed to be rectified.

3. Storage of rectified voltage.

Circuit Diagram

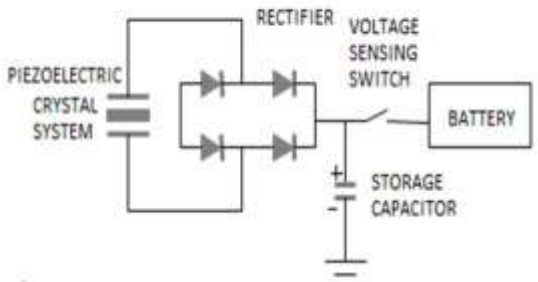


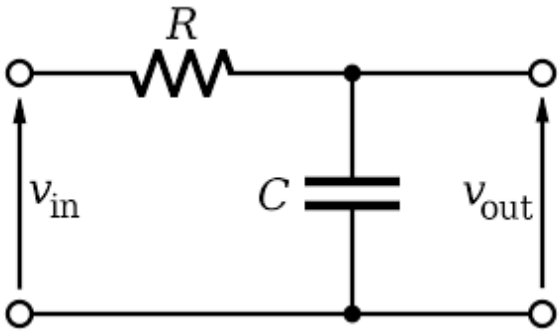
Fig. 2. Illustrates the overall circuit diagram of the entire process.

The rectifier shown in the Fig may be either a full wave rectification circuit or a half wave rectification circuit. Since a diode is being used in the rectifier, a p-n junction diode or a Schottky diode can be used.

The bridge rectifier section provides rectification of the AC voltage generated by the piezoelectric . A full-wave rectifier is able to rectify an alternating current without blocking any part of it.

The output signal produced by the full-wave rectifier is a DC voltage, but it pulsates. To be useful, this signal must be smoothed out to produce a constant voltage at the output. A simple

circuit for filtering the signal is one in which a capacitor is in parallel with the output.



Once the power is generated it can be used to charge a cell phone. We can either directly connect the cell phone to the main circuit or first charge a rechargeable battery or then use that battery to charge the mobile phone.

Final circuit diagram

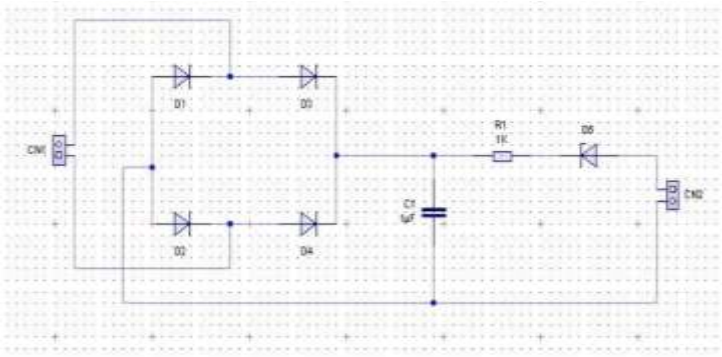


Fig.3. Circuit diagram

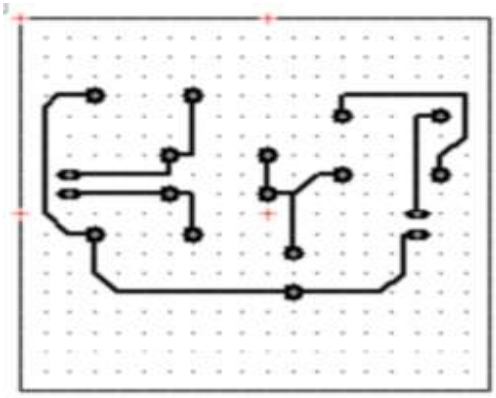


Fig.4. P.C.B. layout

Fig. 5 Experimental Output

CONCLUSION

The necessary voltage required for charging a mobile phone battery is successfully generated. The output current that is generated from the piezoelectric sensor may be less, which may increase the time taken for charging a battery. But it can be used for charging a mobile phone for emergency purpose where there is no direct source of electricity. This can be used as an efficient source for portable electric power.

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