

Proprius Energy Generation in Mobile Phones through Tactile Modus

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ABSTRACT: Every electronics devices (mobiles, gadgets etc..) are becoming more portable in the modern era, but humans are still in a situation to charge them via charger in a static place (plug-point charging). The main objective of this paper is to provide a solution which can overcome this problem by proprius generation of energy in mobile phones. A typical mobile user touches his/her mobile phones 2,617 times (Approx..) every day. Taking this into account, the idea of converting mechanical energy into electrical energy is implemented and the stored energy can be used to charge the mobile phone later. This conversion of energy is done using a piezoelectric transducer.

KEYWORDS: proprius ,piezoelectric, transducer.

I.INTRODUCTION

Energy harvesting generally means the conversion of natural energy into usable electrical energy. This harvesting can be done to generate energy from various sources, for example solar panels can be used to harvest energy from the sun, windmills can be used to harvest wind energy etc..We are living in a world where mobile phones have become part of our daily life. In convention these devices are powered by a battery which needs to be charged at times. The charging is done through a charger in a static place (plug-points are used to charge). While the mobile phones which we use are portable but the method to charge them is not very accountable since it done through charger. So, In this paper we seek to overcome this problem by making use of the concept energy harvesting. Here the energy can be harvested from mobile phones with the help of piezoelectric transducers. The piezoelectric transducers convert the mechanical stress applied on the mobile phones into electrical energy. Later this energy can be used to charge the mobile phones. Thus this method can lead to another phase of world where there is no need for chargers.

II.RELATED WORK

The Ambient vibrational energy is converted into electrical energy with the help of piezoelectric transducers. The piezoelectric transducers are already used in various places for generation energy. The generated energy can be used for low power devices[1]. Many researches and experiments are being conducted worldwide to produce energy from these transducers efficiently and they have many applications. The energy produced by a normal harvesting circuit could be increased up to 400% when a dc-dc converter is added to it[2]. Static converters can also be used to increase the power produced from the transducers[3]. These transducers can be employed beneath the keypad in mobile phones to produce sufficient energy to recharge them[4]. All these prove that the piezoelectric transducers could be employed to power low power devices like mobile phones.

III.PROPOSED SYSTEM

The proposed system employs the concept of piezoelectric energy harvesting to power the modern mobile phones (smartphones). A typical mobile phone user touches his/her mobile phone 2,617 times(Approx.) everyday. Taking this into account, the idea of converting mechanical energy (stress) to electrical energy is obtained. When the user touches his/her mobile phone, a stress is applied on it. The piezoelectric transducers is

used to convert this stress into electrical energy. Then the converted energy is stored in a primary battery. The mobile phone is monitored for low battery. When the mobile battery falls below a threshold value (30%) usually set by us, the charge stored in the primary battery is used to charge the mobile phones battery. Thus, the mobiles phones can properly generate energy to charge themselves.

IV.SYSTEM BLOCK DIAGRAM

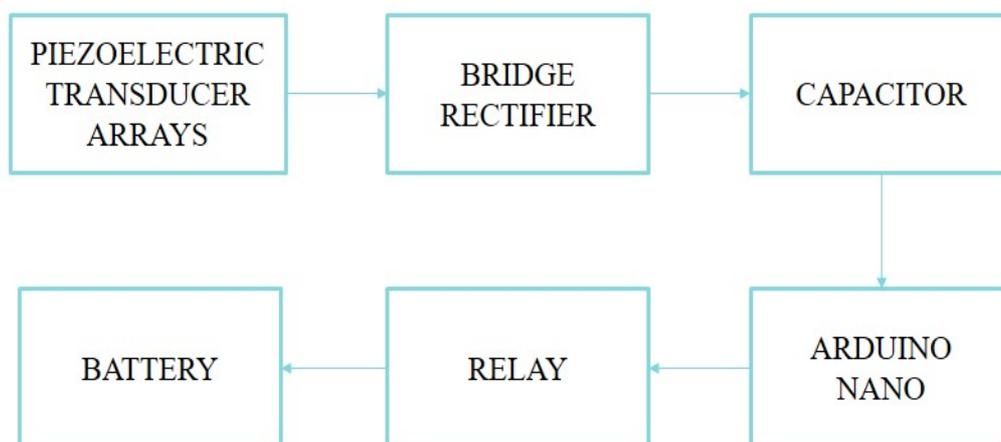


Fig.1. Block diagram

V.WORKING PRINCIPLE

The piezoelectric transducers convert the mechanical energy (stress) into electrical energy which is generally in the form of A.C. Thus a bridge rectifier is used to convert A.C to D.C, as mobile phones are powered by direct current. Then the converted is stored in a capacitor (here considered to be primary battery). Arduinonano microcontroller is programmed and used to monitor the battery percentage of the mobile phones here. It is connected with the capacitor (primary battery) and a relay switch to guide the current direction. Initially the relay is in off condition when the mobiles battery is above a threshold value which is measure by nano. When the battery value falls below the threshold value set then the relay goes to on condition which then establishes connection between the primary battery and mobile phones battery thus leading to the charge of mobile phone. Thus, the mobile phone is charged by self.

VI. HARDWARE AND SOFTWARE USED

Hardware Requirement	Software Requirement
<ul style="list-style-type: none"> ➤ Piezoelectric transducer ➤ Bridge rectifier ➤ Capacitor ➤ Arduino Nano ➤ Relay ➤ Lithium polymer battery 	<ul style="list-style-type: none"> ➤ Arduino

Fig.2. Table of components and software required

VII. PROGRAM

The program is fed into the arduinonano. This program monitors the mobile phones battery percentage continuously whether it is above threshold value or not. Once the value falls below the the threshold value it shows” LOW BATTERY” when checked.

```

Void setup() {
pinMode (A1,OUTPUT);
}
Void loop () {
Serial .begin(9600);
longpreviousMillis = 0;
long interval = 1000;
intsensorValue= analogRead (A0);
float voltage = sensorValue*(5.0/1065.0);
unsigned long currentMillis = millis () ;
if ( currentMillis - previousMillis> interval)
previousMillis = currentMillis;
if (voltage <= 3.0) {
Serial.println(“Low Battery”);
digitalWrite (A1,HIGH) ; }
else{
serial.println (voltage,DEC);
digitalWrite (A1,LOW) ;
}
}

```

VIII. EXPERIMENTAL RESULTS

Arduinonano which is used to monitor the mobile phones battery percentage displaying the battery voltage value if it is above the threshold value and displaying low battery when it is below the threshold value.

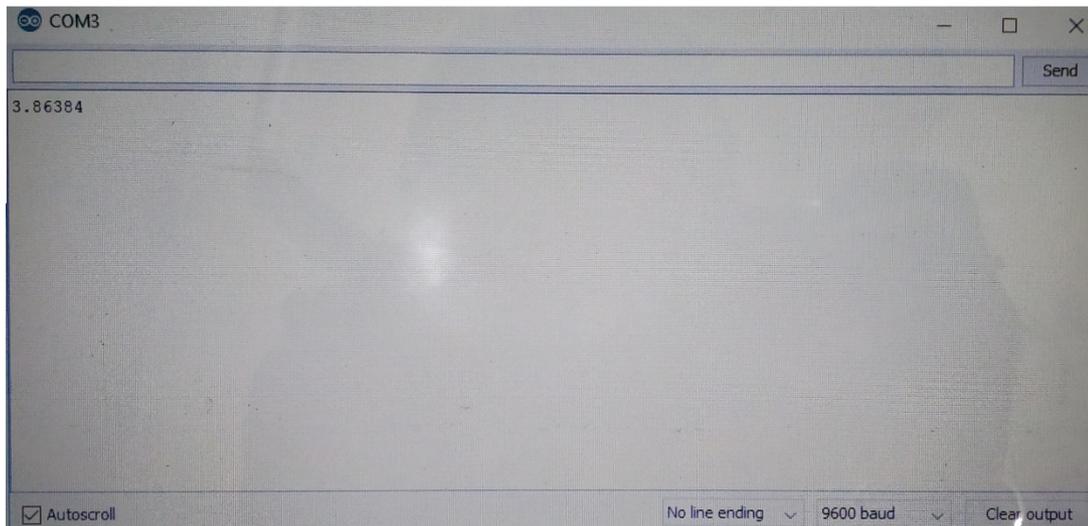


Fig.3. The Battery percentage is above threshold value (voltage value is displayed)

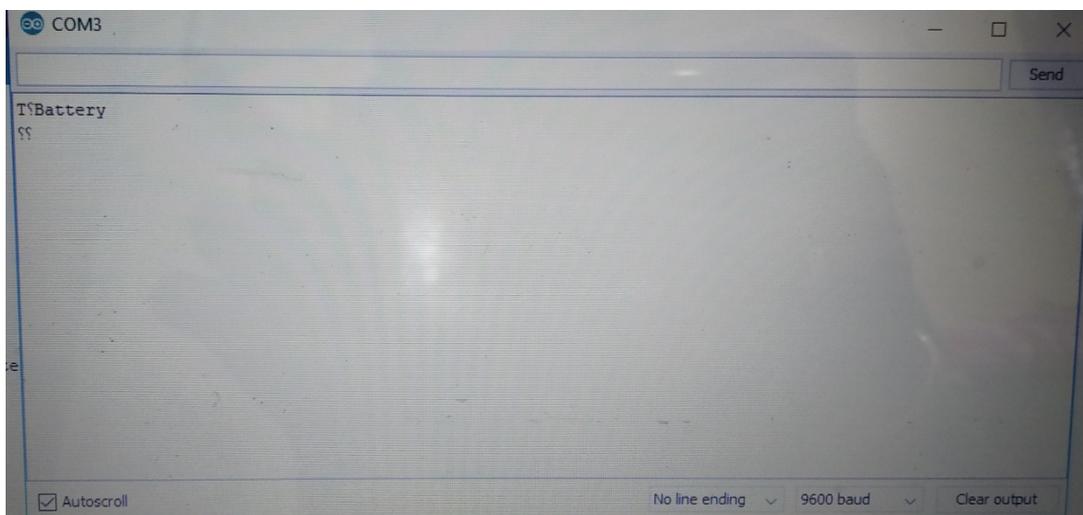


Fig.4. Battery percentage is below threshold value (Low battery is displayed)

IX. CONCLUSION AND FUTURE ENHANCEMENT

Thus, mobile phones can be charged by proprius energy generation without the help of chargers. In the future, this can be implemented in every electronic devices. This concept can lead to a charger-less future.

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