Noice To Electrical Energy Conversion Using Piezoelectric Devices

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I. INTRODUCTION

My Project is depends on producing the Power which can used to charge the mobile phone. This energy can be used to operate any electrical equipment.

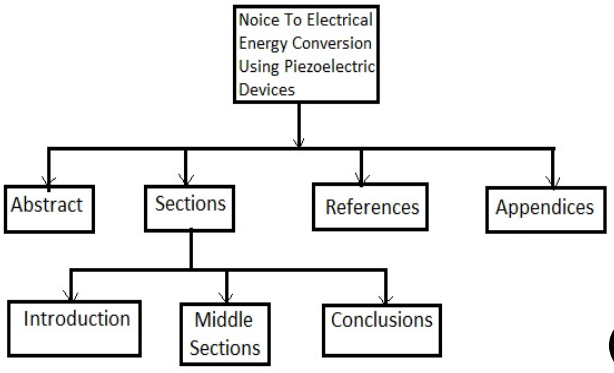


Figure 1: Structure of your paper

1.1. Technical Background

This project is based on piezoelectric device which converts noise to electrical energy. The project is developed from the previously formed idea of obtaining electrical energy using piezoelectric material. In that project the vibrations are converted into electrical energy, but in this project we are converting noise into electrical energy which will produce more power.

1.2. Proposed Solution

In this project the main block is the conversion block, which converts noise to electrical energy. The major input is the noise which is in the form of voice signal. This project works well in the noisy areas i.e. industrial surroundings. Compared to the other publications this project produce more output voltage since noise is given as the input.

1.3. Organization of the Paper

The rest of the report is organized with the help of an operational amplifier, a transistor (BC 547) and a TEXAS IC (UCC 28600).

II. PROPOSED SOLUTION

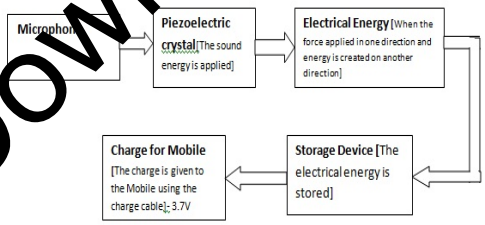


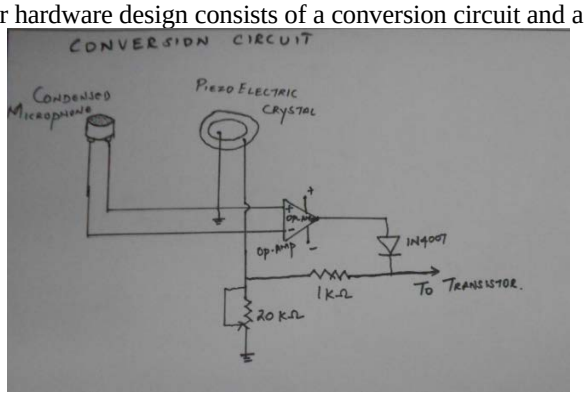
Figure 2: Block Diagram

The system-level block diagram of noise to electrical energy conversion is given above. The input is given to the microphone and converted to electrical energy using piezoelectric crystal. Here the storage device is the capacitor which stores the electrical energy temporarily until the charge is given to the mobile phone.

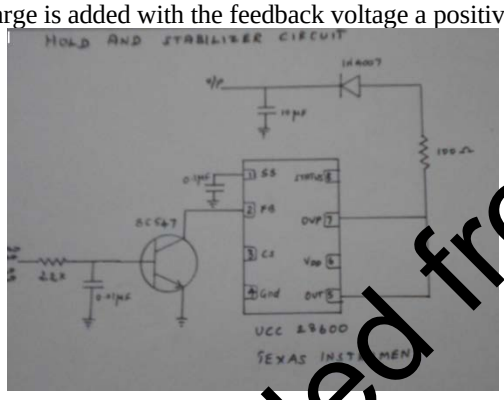
III IMPLEMENTATION

3.1. Hardware Implementation

Our hardware design consists of a conversion circuit and a hold and stabilizer circuit.

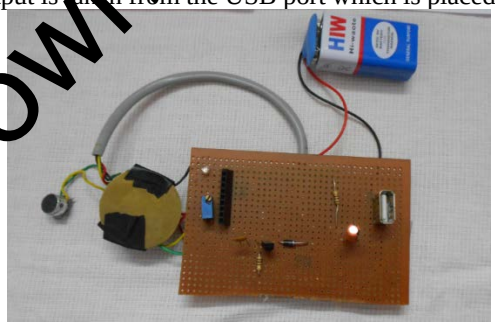


The conversion circuit is the major circuit which consists of the condensed microphone and the piezoelectric crystal. The operating voltage for the condensed microphone is taken from the feedback circuit of an OP-AMP. The output of the microphone is applied to the piezoelectric crystal and is given to the OP-AMP which works here as a comparator. Another input to the comparator is given from the feedback circuit. When the voice signal is applied, the generated charge is added with the feedback voltage a positive charge.



The hold and stabilizer circuit consist of a transistor BC547 which acts as a switch here. This triggered voltage is stabilized by the TEXAS (IC UCC28600) Quasi Resonant Flyback Controller. This voltage is passed in forward direction with the help of a diode (IN4007), this voltage is stored in the capacitor.

The resultant PCB design of the finished product is shown below which has the input microphone, a conversion circuit which is covered in the piezoelectric crystal and a hold and stabilizer circuit which is printed in the PCB. The output is taken from the USB port which is placed at the end.



IV. RESULTS

When the input is given to the microphone the charge is added with the feedback voltage and produces a positive voltage. This triggers the transistor and generates a constant output voltage. This voltage is used to charge the mobile phone efficiently.

CONCLUSIONS

In this circuit we are using a 9v DC battery externally while installing in mobile phone we can eliminate the usage of externally battery and use the mobile phone battery for initial purpose for instances, when we are charging our mobile for two hours it will long last for 10 hours. In that we are using the mobile for 1hour. It will drain the charge of 20% without our circuit. By installing this circuit it will reinstall the 10% of charge to the battery. So instead of 10 hours, Battery will work for 15 hours.

ACKNOWLEDGMENTS

Thank all those who have helped during your project. Video of the project in youtube in this website:
http://www.youtube.com/watch?v=j_V7i2jqQ4Q

REFERENCES

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APPENDIX C – BILL OF MATERIALS

Give a table which shows the name of the hardware/software component, number of components in the project, cost per component, whether the component is a TI/non-TI component, total cost of the component, and the total cost of all components.

	Component	Manufacturer	Cost per component	Quantity	Total cost of component	TI Supplied / Purchased
1	**UCC28600**	**Texas Instrument**	**-**	**1**	**-**	**Supplied**
2	**Diode**	-	**1**	**2**	**2**	**-**
3	**Resistor**	**-**	**0.50**	**4**	**2**	**-**
4	**BC547**	-	**1**	**1**	**1**	**-**
5	**Piezo Crystal**	-	**15**	**1**	**15**	
6	**Condensed Microphone**	-	**20**	**1**	**20**	
			Total Cost of the Project		**40**	