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GENRATION OF ELECTRICAL ENERGY FROM SOUND AND LIGHT ENERGY

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Abstract—We need electricity in our day to day life for running most of appliances. Today there is a lot of noise pollution on roads, airports, industries etc. In this paper we are trying to convert this noise pollution to electric energy.Sound is a mechanical form of energy which can be converted into electric energy using laws of thermodynamics. Piezoelectric material converts sound energy to electric energy. Light is electromagnetic radiation which can be converted into electrical energy. Photovolatic cell converts light energy into electrical energyThis paper implements an efficient way of power generation using light energy and sound energy as non conventional energy sources. All the natural wastage energies are used for production of electricity reveals a new step.

Keywords — Piezoelectric material; Photovoltaic cell

INTRODUCTION

In our project we have decided to develop new method for generating electricity. i.e generate electricity form sound. Sound is a mechanical wave and Mechanical energy is converted into electric energy using transducer. i.e. it can convert sound to electric energy. In our project, We use Piezoelectric material as a Transducer. This piezoelectric transducer used to convert sound to electricity. In our project we also use other method to generate electric energy. Photovoltaic sensor converts light/sunlight directly into electricity, unlike solar heat concentrators. Initially, they were considered to best suited to rural areas, where there is no electricity grid or a proper infrastructure as well as where most of light required for a day i.e industry, street light, home. But, with an increasing awareness about their environmental advantages, these sensors are being used on a large scale around the world. Many experiments are being conducted to tap solar energy.

LITERATURE SURVEY

The sound creates the pressure. An oscillation of pressure is a mechanical wave. Mechanical energy could be converted into electrical energy using law of thermodynamics Mechanical strain converts into electric energy using piezo electric material .this property of piezoelectric material could be used to make a device which would be able to sustainably convert the sound energy to electric energy .[1]

Random sound energy can be converted into electrical energy using piezoelectric transducer. the produced electric energy capacitors which amplified through adder and voltage multiplier circuits. . Sound can be sensed through various types of sound sensors. Piezoelectric material is one of the most effective sound sensors .the word piezoelectricity means electricity resulting from pressure. Piezoelectricity is the charge that accumulates in certain solid materials (notably crystals and certain ceramics) in response to applied

mechanical stress. The piezoelectric effect is understood as the linear electromechanical interaction between the mechanical and the electrical state in some crystalline materials with no inversion symmetry. The piezoelectric effect is the process of internal generation of electrical charge resulting from an applied mechanical force the capacity of piezoelectric materials to receive any vibration and to convert that into electric signal attracted many researchers who tried to implement circuits and systems for converting pressure and vibrations into electric power. [2]

we have used the principle of electromagnetic induction, using transducers to convert mechanical into electrical energy. the proposed technique generates electrical energy through readily available sound energy. this technique not only helps in generating electrical energy from noise but also helps in reducing pollution. production of electricity from available noise pollution as a source is a relatively new concept. the generation of noise pollution, objectionable though it may be, is mostly unavoidable in most circumstances. therefore, the production of energy from this available sound source can prove to be useful.[4]

SMART CITY

Figure1. Smart City

The team at Solar City is there for you every step of the way: we offer a free energy, design a custom Photo volatile cell system for your home. At Solar City, we believe in a better way to power homes and businesses at a lower cost. Our goal is develop new techniques to generate free electrical energy. Noise energy is use to generate free electrical energy. All the wastage noise energies are used to produce Electricity. Thus, the Electricity is available with a minimum cost and pollution free to anywhere at all times. Utilization of lightning energy for generation of electricity is a new step.

Electricity is one of the most widely used forms of energy. Today there is great scarcity of electricity. In our project we use an innovative concept of Generating Electricity from light energy by using photovoltaic cell.

SOFTWARE :

- Proteus

HARDWARE:

- PIC18F877A
- piezoelectric sensor

- photovolatic sensor
- lcd display
- relay
- battery

BLOCK DIAGRAM

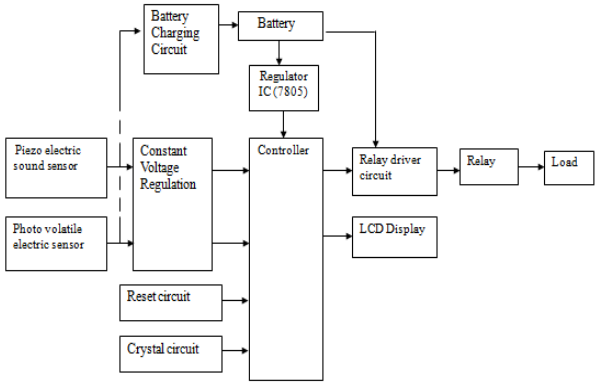

Figure2. Block Diagram

In this project there are two inputs sound and light which is converted into electrical energy by using piezoelectric sound sensor and photovoltaic electric sensor. This produced voltage given to the constant voltage regulator as well as Battery charging circuit Constant voltage provides required voltage for microcontroller. The 12 v battery provides the required voltage for microcontroller as well as to drive the relay. Relay acts as switch which is used to drive the load. Microcontroller is used to select the respective input i.e sound or light. Lcd is used to display the selected input.

PIEZOELECTRIC SENSOR:

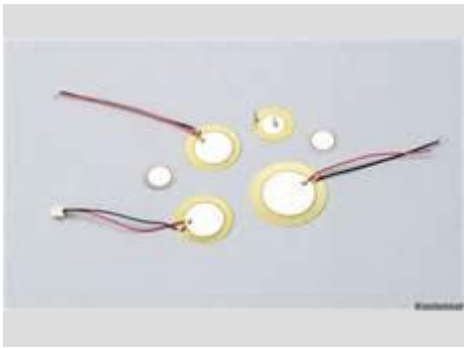

Figure3. Piezoelectric Sensor

Piezo electric sensor act as transducers to convert sound as mechanical strain to electricity. The way it works is that the mechanical energy of sound is applied directly to a crystal (or possibly a ceramic) with strong piezoelectric characteristics, and the crystal will generate a small amount of voltage in response to the application of that mechanical energy (sound) the crystal formed naturally to converts this mechanical strain to electricity.

LCD DISPLAY:

Lcd is Liquid crystal Display and it displays 16 character per 2 line and device. It has a two register namely command and data. It is very common device use in various circuit .

RECHARGABLE BATTARY:

Battery is used to store the energy from Light and piezoelectric sensor. we use 12 v of rechargable battery for microcontroller as well as relay.

PHOTOVOLATIC SENSOR:

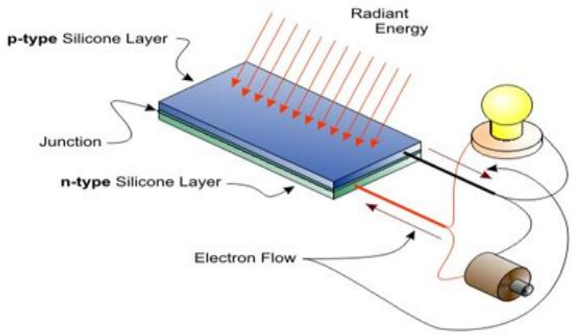

Figure4. Photovolatic Sensor

Photovoltaic materials to convert the radiant energy directly into electrical. It is noiseless and pollution free & It is renewable.

RELAY:

Figure6. Relay

Relay acts as a switch which is used to control the AC/DC supply. This relay can be used to turn ON the electrical appliances like Mobile, fan, tubes etc.

MICROCONTROLLER PIC16F877A:

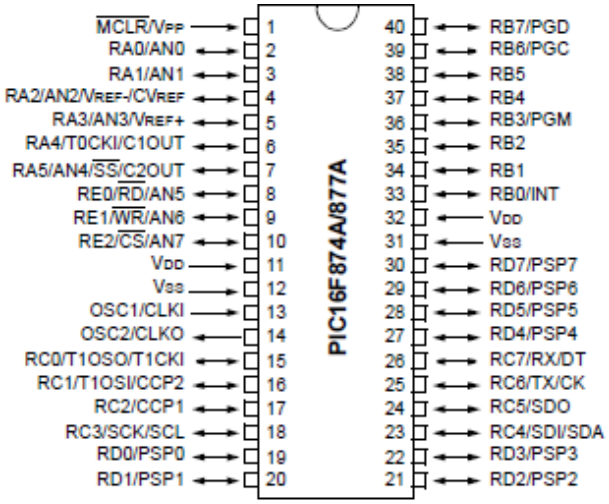

Figure5. Pin Diagram

CONCLUSION

The sound energy and Light energy are the unexplored source which has enormous potential to meet the future growing requirements of the electricity and serve as the eco-friendly and renewable source of energy. In our project, we have used sound and light energy to charge the mobile phone. Likewise we can also run the other appliances on this energy

FUTURE SCOPE

The electricity produce in nuclear power station could increase as the sound produce during nuclear fission also could be used to get more electric energy. The noise pollution in industries could be used to produce the electricity and work certain low voltage machine.

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