

Conversion of Sound Pollution into Electrical Energy

^[1] G.Supriya, ^[2] Chvss.Manikanta, ^[3] K.Lokesh, ^[4] B.Sreeveni
^{[1][2][3][4]} UG Students, Bhimavaram Institute of Engineering & Technology

Abstract: -- This paper gives the entire description about conversion of sound pollution into electrical energy. This concept is very useful and thus helpful in the future in such a way that it converts harmful thing into a useful ones. There is a need for energy. In our daily life. By this conversion one can able to gain an electrical energy.

I. INTRODUCTION

Sound is a type of pollution and its energy is in the form of mechanical energy. It propagates in the wave form. Now a days we can observe different kinds of pollution such as air pollution, water pollution, noise pollution etc. Here noise pollution is nothing but the sound. To overcome this sound pollution a conversion of sound pollution into electrical energy came into existence. As we all know that there is a huge use of energy in this entire world. To reach the needs of human the consumption of energy is required. Due to this the energy scarcity occurs. To run most of the appliances or to carry out our daily work we require electricity. Without electricity it is impossible to estimate our life. Yet we see that there is a lot of sound pollution in roads, airports, industries... It would be very useful if we could convert this type of noise into electrical energy source. The function and its application, advantages etc., are shown below.

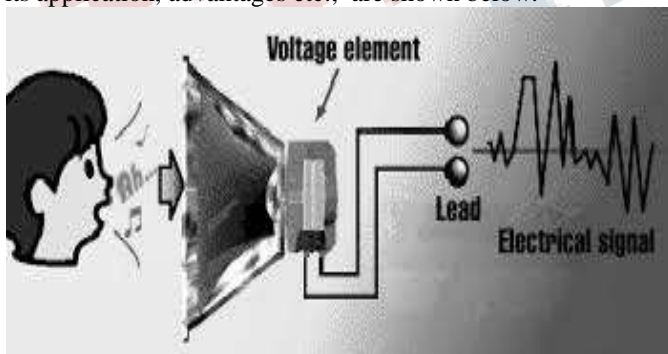


Fig.1

The above picture easily depicts how the sound can be transformed into electrical signal which will be a required source.

CONVERSION OF SOUND TO ELECTRICAL ENERGY:

The major function depends on the piezo electric material. The property of Piezo electric material is the material which turns mechanical strain energy into electrical energy form. It

would be able to convert sound energy into electrical energy. Transducer also includes the function of converting mechanical strain into electrical energy i.e., it converts sound to electrical energy; In simple it turns one form of energy into another form nothing but the electrical energy. For example, microphone is a device whose operation is based on piezo electric material. The construction of microphone resembles a loud speaker, but in opposite it is a type of moving coil microphone . It holds an action of transforming electromagnetic induction to sound waves into an electric signal

WORKING:

The mechanical strain energy can be changed into electrical energy when the material is stressed. When the strain is concerned with the piezo electric material with sound energy, it is converted into electricity. Its function is as shown in below figure.

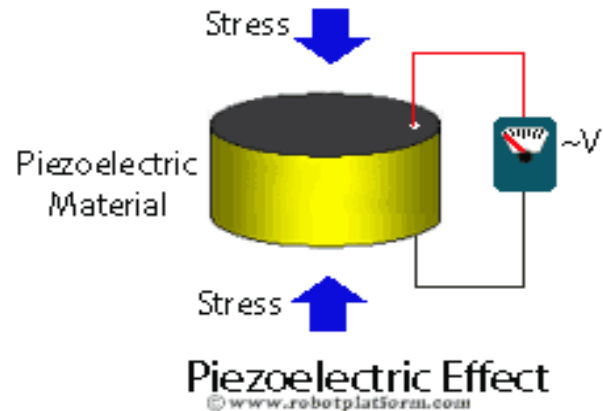


Fig.2

PIEZO ELECTRIC MATERIALS:

The piezoelectric materials can be figured as it has the connection between electrostatics and mechanics. This effect deals with the correspondence between the mechanical stress and an electrical voltage. It is reversible process. The then the applied mechanical stress will produce a

voltage. And also an applied voltage will bring a change in the shape upto a small proportion.

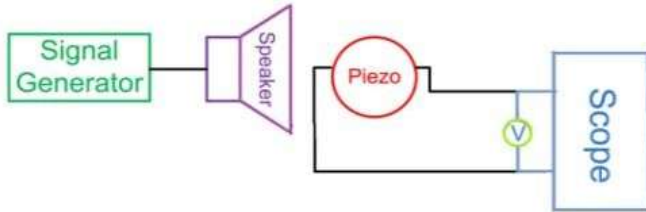


Fig.3

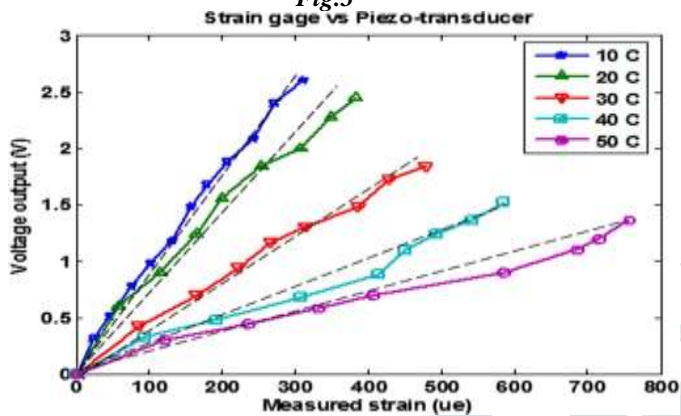


Fig.4 Strain and Voltage Output Response Of A Piezoelectric Materials At Various Temperatures

II. CONCLUSION

For each 100db we get 0.5 v of energy.
 For 1000db we get 5 volts.
 With this voltage we can securely charge our home devices like mobile etc., and more over we can harvest sound everywhere around us...such as industries, roads, thermal plants, auditorium, nuclear plants, explosions etc., if sufficient research is made in such areas we can definitely create a revolution in field of energy production. This application can be useful in lightening the street lights using the noise made by the vehicles on the road and in airport runways as the sound pollution is in a great extent there so that we get pleasant output., also electricity produce in nuclear power station could increase as the sound produce during nuclear fission and moreover if your mobile phone get discharged you could shout at it and then it will again gets charged.
 It does not ends over it...there are many applications too, So it would not be wrong if in future we see sound energy as new source of power, as sound has enormous power amount of energy with it ,which could be used by converting it in electrical energy.