

# ELECTRIC POWER GENERATION USING PIEZOELECTRIC TRANSDUCER

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**Abstract:** In this project, the main aim is to generate the electricity from wasting human energy and convert that waste or renewable energy into useful light energy. As many developing places in India till today they are facing the problem of lack of electricity. So, our objective is overcome the problem of lack of electricity. Piezoelectric sensors is a sensor which senses the mechanical energy and convert that energy into AC voltage. Then that is given to the bridge rectifier and then to the LED, to indicate that electricity is generated.

**Keywords:** Piezoelectric sensors, renewable energy, mechanical energy, light energy, bridge rectifier.

## I. INTRODUCTION

Human beings basic need for the survival is food, shelter and clothes, but in this generation electricity has become apart of life, without electricity nothing can be done. Karnataka government CM Siddaramaiah is going to implement “Gruha Jyoti” yojana, means free power for the people of Karnataka who uses power below 200unit. This project can help to generate electricity with low cost and environment friendly.

Piezo is a Greek word which means compress or press. Transducer converts one form of energy into another form of energy. Piezoelectric transducer is the device which converts the mechanical energy or the stress applies on it into AC voltage. This piezoelectric sensors are affordable and can be implemented easily.

## II. LITERATURE SURVEY

The authors are Vikram Rathod, Subhada Hanotkar, Nikhil Daundkar, Ajay Mahajan, Anup Chaple<sup>[1]</sup> “Power generation using Piezoelectric material” going through this paper, got to know that by using this method both AC as well as DC loads are able to run.

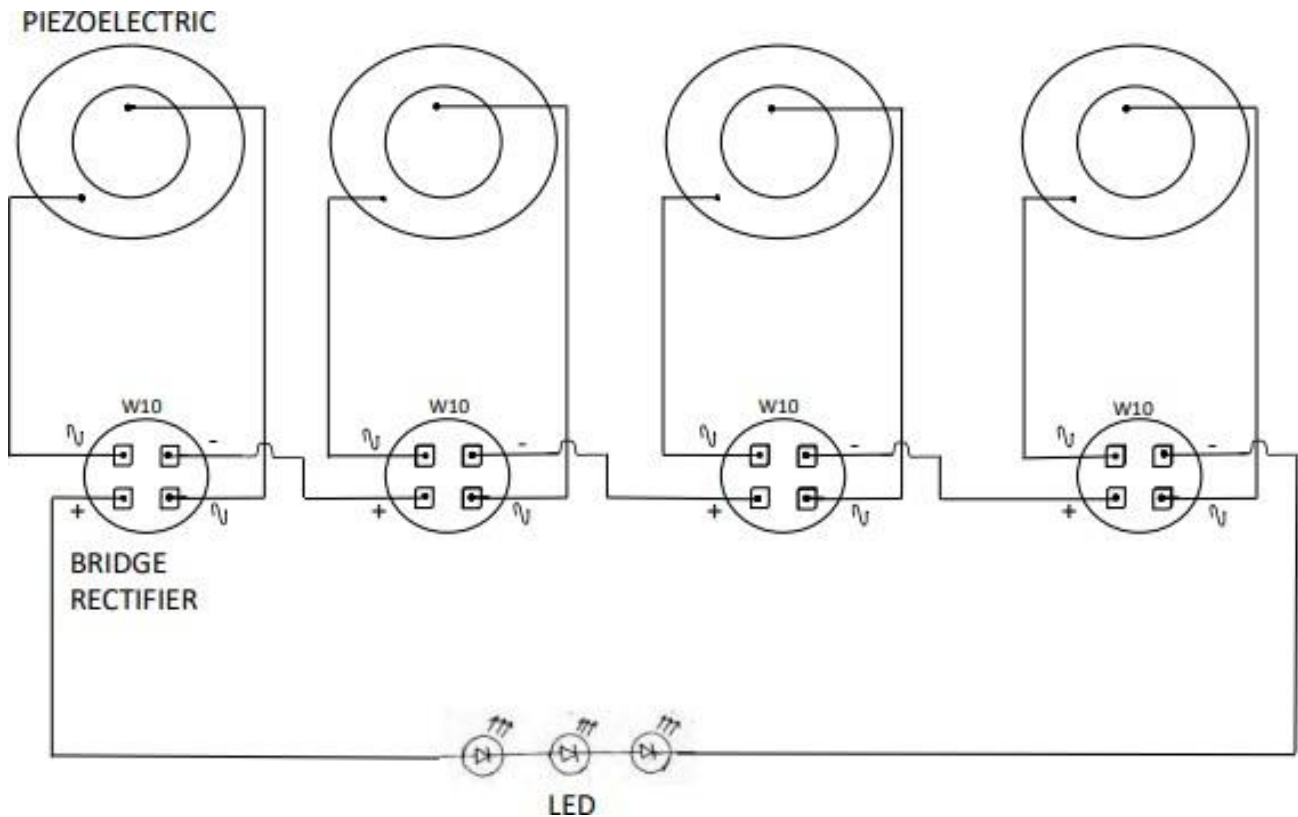
The authors are R Jai Ganesh.d.b, Shanmugan, S.Munusamy, T. Karthikeyan<sup>[2]</sup> “Experimental study on footstep power generation system using piezoelectric sensor”, In this paper ,they proposed that this project is applicable to the rural areas where there is poor electricity or power supplied, as India has huge population.

The authors are Denis O Urroz Montoya, Jeffrey R Alverto-suazo, Julio R Garcia and Cesar H Ortega Jimenez<sup>[3]</sup> “Generation of electricity using piezoelectric material” going through this paper, got to know that this method can be applied in various applications like Economic implementation of energy harvesting, energy collector by traffic, in railways, etc

The authors are Jedol Dayou, Man-Sang.C, Dalimin.M.N.Wang.S<sup>[4]</sup> “Generation electricity using piezoelectric material” going through this paper, got to know that the obtained final Dc voltage can be sitored in bateery for the later use and also connect capacitor to store charge.

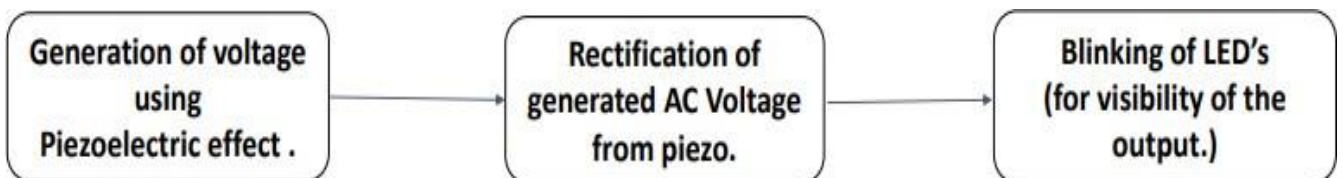
The authors are Pravin Wale, Chetna Patil, Aditya Thanka Vinchirkar and Purvi Pagare<sup>[5]</sup> “Generation of electricity from roads by using Piezoelectric sensors” going through this paper, got to know that this method of generation o electricity is eco-friendly and affordable and voltage obtained can be measured.

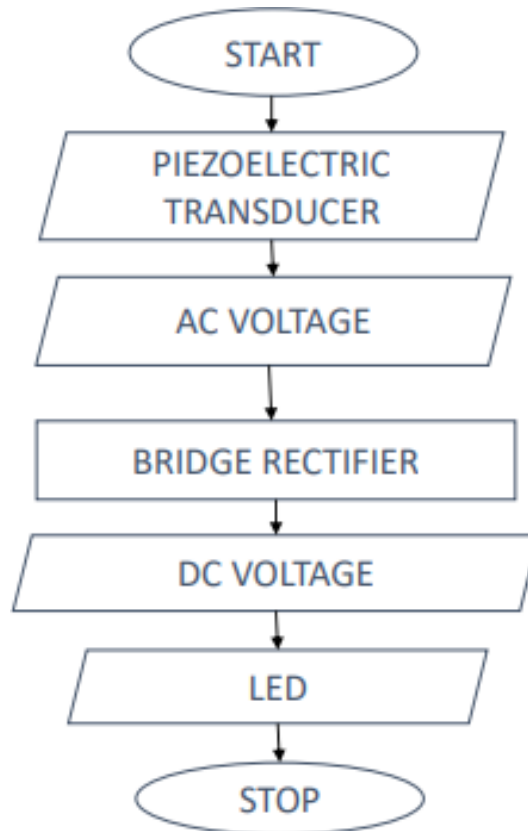
### III. CIRCUIT DIAGRAM



The above circuit diagram, it consist of piezoelectric sensor, bridge rectifier and LED[Light Emitting Diode]. Piezoelectric sensors are connected in series as shown in the circuit diagram because to get high AC voltage and then by using wire, it's given to the bridge rectifier where this generated AC voltage is converted into electric or light energy and then to the LED, to show the indication og generation of electricity.

### IV. BLOCK DIAGRAM



**V. FLOW CHART****VI. METHODOLOGY**

The components required are piezoelectric transducer, bridge rectifier, connecting wire, glue, LED [Light emitting Diode] and diode. When the pressure is continuously applied on the piezoelectric transducer, the corresponding AC voltage is obtained as the output of piezoelectric transducer, where that obtained AC voltage is given to the bridge rectifier specifically W10, W10 bridge rectifier has in built balance bridge circuit in it. Rectifiers are nothing but the device which converts one form of energy into another form of energy, here the AC voltage is converted into DC voltage and that DC voltage is given to the LED to glow, for the indication of generation of electricity.

Many piezoelectric transducers are connected in series to obtain more AC voltage by that more electricity can be generated.

**VII. HARDWARE IMPLEMENTATION****1. Piezoelectric sensors**

Sensors are device which senses or detects the change in environment and gives output according to the environment. The word 'PIEZO' is derived from the Greek, which means compress or squeeze. When the force is applied on the piezoelectric sensor the corresponding AC voltage is produced at the output by there will be internal energy loss.

**2. Bridge rectifier(W10)**

Rectifiers are devices which converts one form of energy into another form of energy. Here, specifically W10 bridge rectifier is used to convert the obtained AC voltage into electrical energy. It has inbuilt balance bridge rectifier.

**3. LED [Light emitting diode]**

LED means light emitting diode, it is a diode which emits light. Here, LED is used for the indication of generation of electricity].

**VIII. CONCLUSION**

By conducting this project, electricity can be generated by the human wasting energy. Convert that waste energy into useful energy and then it can be used in the future days.

**IX. FUTURE SCOPE**

This project can be implemented in vast areas where the humans walk or travel frequently so that electricity can be generated in higher rate. Especially this can be implemented in GYM components or equipments and this bridge rectifier can be connected to the capacitor and then charges can be stored for later use.

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