



Power Generation by Energizing the Speed Breaker Using Piezo Electric Transducers for Automatic Street Lighting

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Abstract:

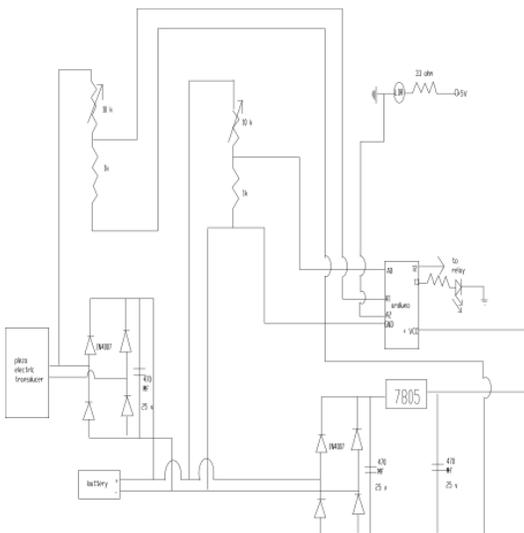
Energy is utilized by each and every organism in the universe for its survival. As in this fast moving world, the population is increasing day by day and the conventional energy sources are lessening. The extensive usage of energy has resulted in an energy crisis over the few years. Therefore to overcome this problem we need to implement the techniques of optimal utilization of conventional sources for conservation of energy. In this paper it is mainly considered on generating the electricity in the suspension system of the automobile and store the energy in the battery or alternator as conventional method by simply driving the vehicle. In this paper few of the power generation methods in the vehicle suspension system is discussed. These vibrations are generated when vehicle passes over a road bump. The kinetic energy generated from the suspension system is converted into electrical power by using various mechanisms. This paper is mainly concentrate on few power generated mechanism in vehicle suspension system. The followings are the topics considered to be reviewed in power generation methods.

Keywords: Speed Breaker, Piezo Electric, Power Generation Etc.

1. INTRODUCTION

A large amount of energy is wasted at the speed breakers through friction, every a vehicle passes over it. So electricity can be generated using the vehicle weight (potential energy) as input. So, this is a small step to try to improve this situation. In speed breaker arrangement it is better to use rubber road.

2. CIRCUIT DIAGRAM



3. DISRIPTION

In this circuit, we use piezoelectric transducer as an input supply to the converter; it converts AC supply to the DC

supply. The converter output is given to the battery as it is a 12V battery, and its output is given to the inverter. Inverter output is given to the relay driver circuit and relay driver is controlled using controller. Relay driver is used to run the relay, and relay is used on the lamp. LDR and relay driver is controlled using ARDUINO.

4. PIEZOELECTRIC TRANSDUCER:

A piezoelectric transducer is a device that uses the piezoelectric effect to measure changes in pressure, acceleration, temperature, strain or force by converting them to an electric charge. The Prefix- piezoelectric is Greek for 'PRESS' or 'squeeze'. That converts energy from one form to another. Usually a transducer converts signal in one form of energy to a signal in another. The transducer often employed at the boundaries of automation, measurement and control system, where electrical signal are converts to and from other physical quantities (energy force, motion).The piezoelectric transducer work on the principle of piezoelectric effect, when stress or forces are applied to some materials along certain plans. They produce electric voltage. This electric voltage can be measuring instrument, which can be used to measure the stress or force. The physical quantities like stress and force cannot be measured directly. In such cases the material exhibiting piezoelectric transducer can be used. The stress or the force that has to be measured is applied along certain plans to these materials. The voltage output obtained from these materials due to piezoelectric effect.

- **Piezoelectric effect proposition to the applied stress or force**

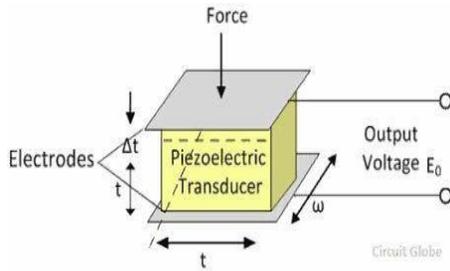
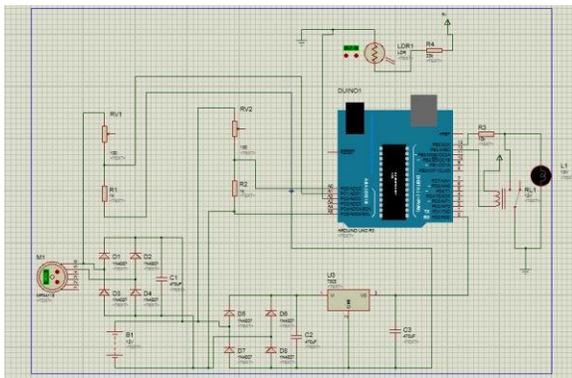


FIGURE 3: PIEZO ELECTRIC EFFECT

The output can be calibrated against the applied stress or the force so that the measured value of the output directly gives the value of the applied stress or force. The voltage output obtained from the material due to piezoelectric effect is very small and it has high impedance. To measure the output some amplifier auxiliary circuit and the connecting cable are required.

RESULT



6. CONCLUSION

As electricity is the basic need nowadays, from our side we took first step as social view to prevent electric scarcity. This project is the advancement of power hump method. Still in India this method is not in practice as from one speed hump we can make a street light to glow for the whole day and to give supply to the signals

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