

# ELECTRICITY GENERATION THROUGH SPEED BRAKER

<sup>1</sup>Kamlesh Subhash Pawar, <sup>2</sup>Arkhadde Arti Sunil, <sup>3</sup>Kale Pragati Baban, <sup>4</sup>Mule Pratik Suresh, <sup>5</sup>Aher S.S., <sup>6</sup>Barawakar P. A.

<sup>1</sup>UG Scholar, Dept. Mechanical Engineerin, SND COE & RC, Yeola

<sup>2</sup>UG Scholar, Dept. Mechanical Engineerin, SND COE & RC, Yeola

<sup>3</sup>UG Scholar, Dept. Mechanical Engineerin, SND COE & RC, Yeola

<sup>4</sup>UG Scholar, Dept. Mechanical Engineerin, SND COE & RC, Yeola

<sup>5</sup>Asst. Prof., Dept. Mechanical Engineerin, SND COE & RC, Yeola

<sup>6</sup>Asst. Prof., Dept. Mechanical Engineerin, SND COE & RC, Yeola

**ABSTRACT-** In the present day scenario, power is a major need for human life. There is a need to develop non- conventional sources for power generation due to the reason that our conventional sources of power are getting scarcer by the day. This paper emphasizes on the idea that the kinetic energy getting wasted while vehicles move can be utilized to generate power by using a special arrangement called “power hump”. This generated power can be used for general purpose applications like streetlights, traffic signals. In addition, we could also have solar panels, which would satisfy our power needs, when there is no vehicular movement.

There is a system to generate power by converting the potential energy generated by a vehicle going up on a speed breaker into kinetic energy. When the vehicle moves over the inclined plates, it gains height resulting in a rise in potential energy that would otherwise be wasted on a traditional rumble strip. The sprocket is attached to a spring, which is then attached to a chain mechanism, which rotates a geared shaft loaded with recoil springs when the breaker is depressed. This shaft's output is connected to a dynamo, which turns kinetic energy into electricity. This idea would produce a maximum of 12 volts and is a prototype for the description above.

**Index Terms-** Invertor, Gear Management, Generator System.

## I. INTRODUCTION

The energy crisis is any great bottleneck in the supply of energy resources to an economy. The studies to sort out the energy crisis led to the idea of generating power using speed breaker. Firstly, South African electrical crisis has made them implemented this method to light up small villages of the highway. The idea is basic physics, to convert the kinetic energy into electrical energy that gone wasted when the vehicle runs over speed-breaker [5]. Since then, a lot has been done in this field. An amateur innovator, Kanak Gogoi in Guwahati has developed a similar contraption to generate power, when a vehicle passes over speed-breaker. The idea has attracted the attention of IITGuwahati, which provided funding for a pilot project to produce electricity from speed bumps. They assessed the device and made recommendations to the Assam administration. Their research has made it necessary to consider this largescale power generation alternative since it will benefit the nation's economy.

## II. SYSTEM DESIGN

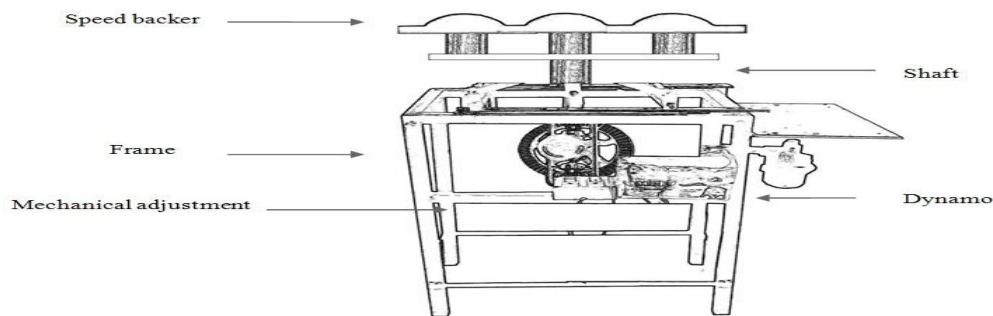
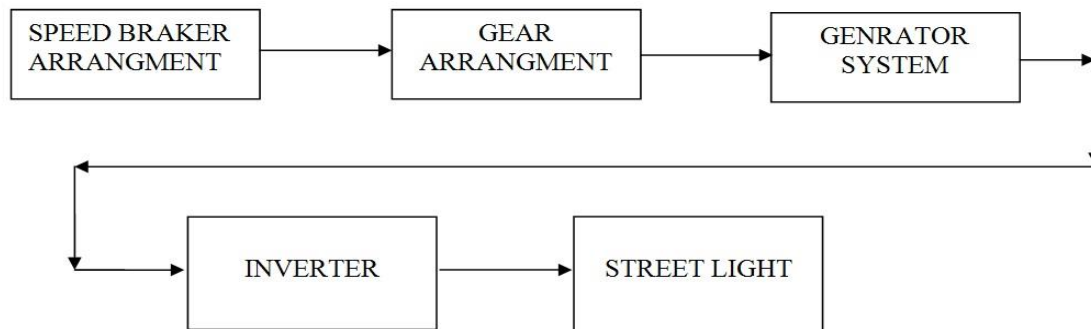


Diagram of Speed braker through electricity generated system

Figure 1- System Design

## III. COMPONENT USED

**1. Power supply unit:-** To provide regulated power supply to all blocks a special required power supply is designed for digital IC +5v is achieved for Op-Amp adder is +15V is generated as well as for ADC a signal +10V is generated power supply. Block consists of transformer the sensor and switches.

**2. Relay Board :-** A relay is device that functions as an electrically operated switch. Most relay are electromagnetically operated. Current through a coil generates a magnetic field that attract and armature, which inter closes or opens the electrical contacts.

**3. Rectifire Unit :-** Rectifier unit is a ckt. Which converts A.C. into pulsating D.C. Generally semi-conducting diode is used as rectifying element due to its property of conducting current in one direction only Generally there are two types of rectifier.

- A. Half wave rectifier
- B. Full wave rectifier.

In half wave rectifier only half cycle of mains A.C. rectified so its efficiency is very poor. So we use full wave bridge type rectifier, in which four diodes are used. In each half cycle, two diodes conduct at a time and we get maximum efficiency at o/p.

The above system is used for the electricity generation in the speed braker system.



#### IV. CONCLUSION

The above review paper is used for understanding the details and all efforts taken in the area of Electricity generation by speed breaker. Electricity is generated by replacing the usual speed breakers with some simple mechanism. As vehicles pass over the speed breakers, rack and pinion mechanism works and with the help of high tension springs in turn generate electricity. This method is an effective way to produce electricity as the number of automobiles is constantly rising. It can be strategically positioned close to parking lots, toll plazas, and other areas with high vehicle densities. For the purpose of generating power, a rack and pinion and spring assembly mechanism is offered. With this technique, electricity can be produced at a reasonable cost using the mechanical energy of moving automobiles on roadways..