

Speed Breaker used as an Electricity Generator: by Rolling Mechanism

Sushant Mane

B.E.Civil

Dr.JJMCOE, Jaysingpur,India

Abhishek Dhale

T.E.Mechanical

Dr.JJMCOE, Jaysingpur, India

Saurabh Rajmane

B.E.Civil Dr, JJMCOE

Jaysingpur, India

Abstract:- This technique is renewable source of energy for the development of the country we have to increase the amount of energy. He also says energy is the nearest and important thing. As the rate of population increases we need more amount of the energy. If we have to increase the standard of living we have to increase energy three to four times. This project is give idea for the electricity production which is pollution less and renewable. This project is used in the rural area where the electricity is not passing properly. In rural area it becomes costly to reach the electricity using transmission lines. This paper tell about how we use wasted energy is converted into electricity and that used for future use in many appliances.

Keywords:- Speed breaker, Roller mechanism, Electricity generation, Gear mechanism.

I. INTRODUCTION

Speed breaker is used for the break the speed of vehicle but in this project we use this in another way. In this traditional speed breaker is replaced by the roller mechanism. The concept of the rotating speed breaker is nothing but the one small step to reduce the use of conventional source of energy. In this we use roller which is connected to the gears through bearing using shaft. The bearing is used for increase speed and shaft connected to roller used for balance. The couple gears are used. One gear is connected to the shaft and another small gear is connected to the shaft of generator. Electricity is produced as speed breaker is rotate through gear. The equipment used is:

- Roller
- Shaft
- Spur Gears
- Bearing
- Generator
- Generator



Fig 1:- Initial Model

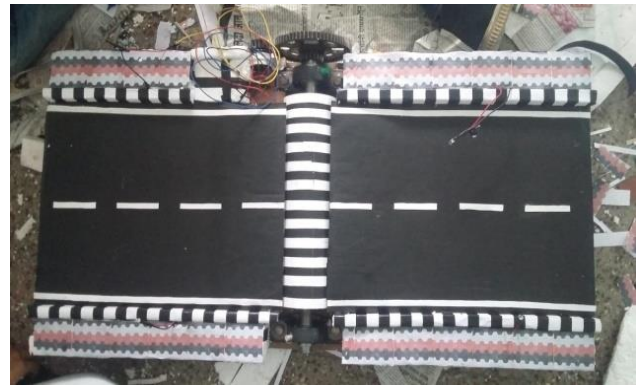


Fig 2:- Final Model

A. Advantages

- Generation of electricity from this equipment having low cost and it will conserve the conventional sources of electricity.
- Electricity produced from this method is not depending on the other factor in all the year.
- Because of its place of installation maintenance is easy.
- As there is no any fuel is used it is pollution free
- There is no any effect on the traffic.
- Power is generated from the equipment automatically so no any manpower required.
- It is non-conventional source of energy.

B. Disadvantages

- It is difficult to select the suitable type of generator.
- Continues speed for speed breaker is not maintained
- There is a problem of rusting of equipment in rainy season.
- The rate of electricity production is depending on the intensity of traffic. So we unable to promise for fix power generation.
- For different type of vehicle different weight roller should be used

C. Applications

- This project is helpful in hilly as well as in remote area where light is not reached.
- The electricity produced from this technique is used for street lightning, for signals, and for the lightning for the check post.

- This technique of electricity production is practically applicable at the place of high density traffic region.

II. LITERATURE REVIEW

Shakun Srivastava, Ankitasthana [1]

The big problem in India now days which is faced by people in world is nothing but electricity. The one of the basic type of energy is electricity, and it is a heart of nature and it is one of our most widely used forms of energy. Many cities and towns were built alongside water falls that turned water wheels to perform work. Some years ago production of electricity began, after some years later we are still using the same basic principles to generate electricity, only on a much larger scale. So in this paper they produce the electricity using chain drive mechanism. We can create the electricity as number of vehicle pass.

Aniket Mishra, Pratik Kale, Atul Kamble [2]

All the human being in the universe requires the electricity for their survival. Whatever happens in our environment is one type of energy. As the population increases day by day the amount of conventional sources of energy is reduced. Large amount of energy is generated when vehicle is passed over the speed breaker. The energy which is generated is catches and produces power by using the speed breaker as power generating unit. The kinetic energy of the moving vehicles can be converted into mechanical energy of the shaft through rack and pinion mechanism

K. Ravivarma, B. Divya, C. P. Prajith, A. Sivamurugan, K. Vengatesan. [3]

Energy is used resulted in an energy crisis, and there is a need to develop methods of optimal utilization, which will not only ease the crisis but also preserve the environment. Our aim is diverted more and more towards the conventional source of energy, which are very important and pollution less. In this paper we approach a new mechanism to generate power from speed bumper, because the number of vehicles passing over the speed bumper in roads is increasing day by day. From this system the kinetic energy of the speed breaker is converted into the power.

Alok Kumar Singh, Deepak Singh, Madhawenda Kumar, Vijay Pandit, Prof. Surendra Agrawal [4]

In this paper a prototype model is prepared and studies the concept of electricity generation from rotating speed breaker. Each object has its own energy but that energy used at the appropriate position is the important thing. So by keeping that in mind we are going to energy dissipated from the vehicle is utilized for the electricity generation. Whatever voltage is produced is used for the different purpose. The power rating is increased by introducing high capacity battery and inverter circuit. As the road network increases day by day, so that vehicles rate also increases and it will help to our idea.

N. N. Ghuge, Arati Sathe, Varsha Patil, Anagha Warankar [5]

People are not satisfied with current condition related with electricity. Electricity is the one type of energy, it is the heart of the nature and it is most important type of energy. We get electricity, which is a secondary energy source. Some years ago we had used kerosene lamps and rooms for the electricity generation. The utilization of power is more in India as compared to that of United States. But quiet there are some villages are such that the electricity not reach. So this is method which will defeat this problem. The concept of electricity generation from rotating speed breaker is innovative and useful.

Priyanshi Vishnoi, Pradip Agrawal [6]

Energy can be converted from one form to another form so that kinetic energy can be converted to electrical energy. Here in this paper we are looking forward to conserve the kinetic energy that go wasted, while vehicles move. That will not alternative method but it also help us in the economy of the country. People thought that traffic is big problem to the people in the country, but use of this traffic to solve the problem of that people is the best achievement which can be explained from this paper. Here the electricity is produced by rack and pinion method

G. Ramakrishna Prabu, G. Ethiraj [7]

As there is shortage of oil and other resources the electricity rate also reduced. The energy generated from the speed breaker and this power is catches. The kinetic energy of the moving vehicles can be converted into mechanical energy of the shaft through rack and pinion mechanism. Country will develop when there is continuously supply of power, there is no intermittent in the supply of electricity. This will only happen by such types of new ideas.

Anyaeqbunam F.N.C. (Ph.D.) [8]

The one of the most important type of energy is electricity which is most widely used in nature. Power outages are witnessed in various cities and village. The coal, natural gas, oil, nuclear power this are primary sources which convert the power into electricity. Electricity generation was first developed in 1800's using Faraday's dynamo generator. Now days the primary energy resources are the conventional types and going to reduce because they are not renewable and on the other hand they polluted the atmosphere. This concept of electricity generation from speed breaker is very useful and revolutionary. This paper attempts to show different methods of renewable energy generation through speed breaker.

Miss. Shraddha Deshpande Miss. Bhagyashri Kulkarni, Prof. Aashish Joshi [9]

The regular speed breaker is changed by some another mechanism for production of electricity. When the vehicles pass over the speed breakers, rack & pinion mechanism works which in turn generate electricity. The production of electricity from this method is very effective as the numbers of vehicles on the road are ever increasing. This system can be placed

near the traffic signal, at the entrance of parking lots and any other place where the traffic density is high. A Rack & pinion, spring assembly mechanism is provided which transfer the motion to a DC motor/generator for electricity generation. This method provides an efficient way to generate electricity from the kinetic energy of moving vehicles in roads, highways.

III. EQUIPMENT REQUIRED

A. GEARS

This is positive power transmission device with definite velocity ratio. It is preferred for adjusting some linear misalignment. It should have high wear and tear, shock-absorbing capacity

B. Bearing

This is a device which is used for the increasing the speed. The Shaft is placed in this device for rolling motion. They reduce the friction and transmit the motion effectively.

C. Motor

It is a device, which converts mechanical energy into electrical energy. The generator uses rotating coils of wire and magnetic fields to convert mechanical rotation into a pulsing direct electric current through “Faraday’s law of electromagnetic induction”.

D. Roller (speed breaker)

It is the material which is used for the speed breaker. When the tires of vehicle are impact or pass over the roller then it will rotate and produce energy. The material used for the speed breaker as roller is MS

E. Shaft

It is the material which is used to connect the roller on this shaft and to rotate the roller(speed breaker).This material is made of steel bar or MS bar. When wheel of vehicle is impact on the speed breaker the shaft connected to this roller is also rotate.

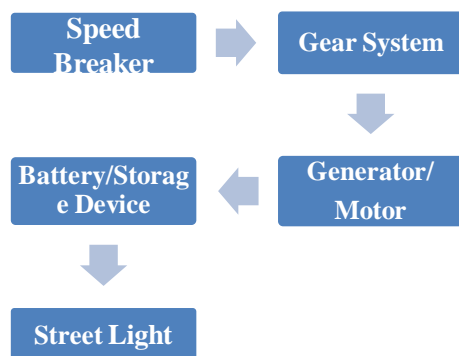


Fig 3:- Block Diagram

IV. MATHEMATICAL CALCULATION

Voltage production from model:

Voltage produced when 1 vehicle is passed from the speed breaker: 3V

Let us assume 1 vehicle is passed in 1 minute

Then number of vehicles passed in 1 hour: 60

Voltage produce in 1 hour: $60 \times 3 = 180V$

Voltage produce in 24 hour: $180 \times 24 = 4320V$

So, it will produce 4KV voltage in 1 Day

240V voltage is sufficient for emitting 4 Bulb of 60W

V. CONCLUSION

For the improvement of living standard in day to day life we require electricity. This electricity is obtained from the primary sources like coal, gases, etc. but this source is going to be reduced due to increasing population. So this project helps to overcome this problem. This project represents the new technology to generate the electricity from speed breaker. This project not only provide alternative but also provide economy to the country.

REFERENCES

- [1]. ShakunSrivastava, Ankitasthana“Produce Electricity by the Use of Speed Breakers” Journal of Engineering Research and Studies E-ISSN 0976-7916 JERS Vol.II, April-June,2011.
- [2]. Aniket Mishra, Pratik Kale, AtulKamble “ElectricityGeneration from Speed Breakers” The International Journal Of Engineering And Science (IJES) Volume 2 ,Issue, 11 Pages ,25-27 ,, ISSN 2319 – 1813 ,2013.
- [3]. K.Ravivarma, B.Divya, C.P.Prajith, A. Sivamurugan, K.Vengatesan”Power Generation Using Hydraulic Mechanism at Speed bumper” International Journal of Scientific &Engineering Research, ISSN 2229-5518 Volume 4,June 2013.
- [4]. Alok Kumar Singh, Deepak Singh, Madhawendra.
- [5]. Kumar, Vijay Pandit “Generation of Electricity through Speed Breaker Mechanism”International journal of Innovation Vol.4, No, pp. 90-93 ISSN 2319-1058, 2014.
- [6]. N.N.Ghuge, AratiSathe, VarshaPatil, AnaghaWarankar “Every Speed Breaker Is A Source Of Power” AratiSathe Int. Journal of Engineering Research and Applications ISSN : 2248-9622, Vol. 4, pp.01-05,march 2014.
- [7]. PriyanshiVishnoi, PradipAgrawal “Power Generation by Kinetic Energy of Speed Breaker” MIT International Journal of Electrical and Instrumentation Engineering Vol. 4, No. 2, , pp. 90-93 90, ISSN 2230-7656, August 2014.
- [8]. Ramakrishna Prabu, G. Ethiraj”Electricity Generation by Speed Breaker “International Journal of Advanced Researchin electrical, Electronics and Instrumentation EngineeringVol. 4, Issue 5, May 2015.

- [9]. Anyaegbunam F.N.C. (Ph.D.) “Electric Power Generation by Speed Breaker Generator” IOSR Journal of Engineering (IOSRJEN)ISSN (e): 2250-3021, ISSN (p): 2278-8719 Vol. 05, Issue 09 ,V2 PP 17-21,September,2015.
- [10].Miss. ShraddhaDeshpande, Miss. BhagyashriKulkarni, Prof. Aashish Joshi “Electricity Generation Using Speed Breaker “International Research Journal of Engineering and Technology (IRJET) ISSN: 2395-0072 Volume: 03 Issue: 02 | Feb-2016.