



Speed Breaker Through Power Generation

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ABSTRACT:

Nowadays conventional energy sources generate most of the energy of today's world. But the population is increasing day by day and the conventional energy sources are diminishing. Moreover, these conventional energy sources are polluting and responsible for global warming. So, nonconventional sources are needed to be developed for power generation which are clean, environment friendly and sustainable. In this research we propose a renewable non-conventional energy source based on speed breaker mechanism. Our project is to enlighten the streets utilizing the jerking pressure which is wasted during the vehicles passes over speed breaker in roadside. We can tap the energy generated by moving vehicles and produce power by using the speed breaker as power generating unit. The kinetic energy of the moving vehicles can be converted into mechanical energy through rack and pinion mechanism and this mechanical energy will be converted to electrical energy using generator which will be used for lighting the street lights. Therefore, by using this mechanism we can save lot of energy which can fulfil our future demands.

INTRODUCTION

In today's life power has become the basic need for human life. Everywhere energy is an important in all the sectors of any countries economy. We are using conventional source of energy like fossil fuels which are on stage of finishing, but there is a fear that they will get exhausted eventually by the next few decades. Therefore, we have to find some other types of renewable sources to rely on.

The increase in population and decrease in conventional sources for power generation, makes us to think on non-conventional energy resources. Pollution is another major problem, which is becoming the exiting topic for today. Power stations and automobiles are the major pollution producing places. So non-conventional power source is needed to reduce this problem. We proposed a non-conventional power generation system based on speed breaker mechanism which generate electricity without using any conventional energy source, that's why there is no issue of pollution and all. In this paper, our aim is to conserve the kinetic energy produced by passing vehicles or people over speed breaker, which is then converted into electric energy.

LITERATURE SURVEY:

[1] Sharma, P.C., "Non-conventional power plants", Public Printing Service, New Delhi, 2003.

[2] Sharma.P.C , Principle of renewable energy systems (Public printing service, New Delhi, 2003).

The vehicle load acted upon the speed breaker system is transmitted to rack and pinion arrangements. Then, reciprocating motion of the speed-breaker is converted into rotary motion using the rack and pinion arrangement where the axis of the pinion is coupled with the sprocket arrangement. The sprocket arrangement is made of two sprockets. One of the sprocket is larger in dimension than the other sprocket. Both the sprockets are connected with chain which transmits the power from the larger sprocket to the smaller sprocket. As the power is transmitted from the larger sprocket to the smaller sprocket, the speed that is available at the larger sprocket is relatively multiplied at the rotation of the smaller sprocket. This speed is sufficient to rotate the rotor of a generator and is fed into the rotor of a generator. The rotor which rotates within a static magnetic stator cuts the magnetic flux surrounding it, thus producing the electric motive force (emf).

[3] Mukherjee, D. Chakrabarti, S., "Non-conventional power plants", 2005.

Due to this force is applied on the piston/spring mechanism in the water tank. And then water is coming outside of the tank. 11 Now one valve & DP transmitter is there which measured the pressure & Valve is maintaining of flow of water. This water is passing on rotor blade which rotates & one chain belt is there so Generator is also rotates with rotor.

[4] Watts,G., "Effects of speed distribution on the Hormonoise model predictions", Inter-noise Conference, Prague, 2004.

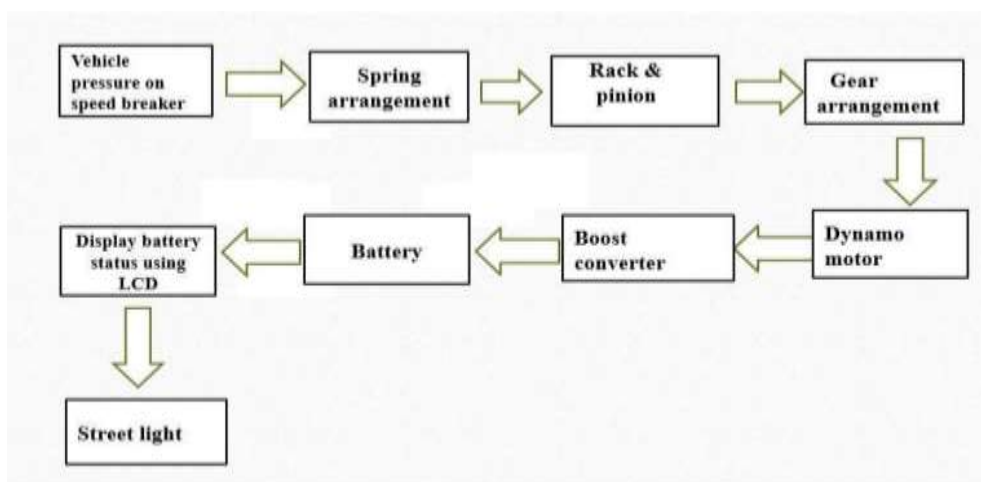
The power is generated using Air compression mechanism. In this method when vehicle pass from the speed breaker the piston of the pump is goes down and air is compressed. The following figure shows air compression mechanism. This compressed air has some velocity so we can use it to rotate turbine. The tank is provided for the more compression and storage of air it is not necessary if a force by the pump is very high. The exhaust air goes to turbine

which is connected with the alternator or any type of electric generator so we can generate electricity. This method is needed less maintenance and also low cost, here absence of any other rotational parts reduces losses. The reason for select this method is, it is applicable for constructing speed breakers which can generate electricity. The cost of construction is less and efficiency is high.

[5] Dr. Anders Brandt & MSc. John Granlund Swedish Road Administration. "Bus Drivers Exposure to Mechanical Shocks Due To Speed Bumps". Society for Experimental Mechanics, IMAC 25th.

When the vehicle load acted upon the speed breaker system is transmitted to rack and pinion arrangements. Because of the weight of vehicle the top portion of the speed breaker moves downwards. The 12 hydraulic press convert the force into 4times from small piston to large piston. 3 rakes attached to large piston. Every rack connected with 2 one way pinion. Pinions are getting rotation from the movement of rack backward and forward. Every pinion connect to a fly wheel which absorbs the energy when demand is less and releases the same when it is required. Fly wheel connected to a large gear and large gear connected to a small gear which attached to a generator. Generator convert rotational energy into electrical energy . When the vehicle passes the speed breaker, the expansion of springs takes the speed breaker at previous state which done the system reverse. The charging circuit charges a battery. The Inverter circuit converts this DC voltage into AC voltage and a step up transformer stepped up the AC voltage. A dark sensing circuit is used to sense the night so that the street light is on.

BLOCK DIAGRAM:



RESULT AND CONCLUSION:

- The existing source of energy such as coal, oil etc. may not be adequate to meet the ever increasing energy demands. This conventional sources of energy are also depleting and may be exhausted.
- This are some non- conventional methods of producing energy. This project is a one step to path of exploring the possibilities of energy from on-conventional energy sour

FUTURE SCOPE:

Such speed breakers can be designed for heavy vehicles, thus increasing input torque and ultimately output of generator. More suitable and compact mechanisms to enhance efficiency survey on the energy consumption in India had published a pathetic report that 85,000 villages in India do not still have electricity. Supply of power in most of the country is poor. Hence more research and development of technologies are needed in this field. This energy can be used for the lights on the either sides of the roads and thus power that is consumed by these lights can be utilized to send power to these villages. It may also be used for light vehicle also.

REFERENCES:

- [1] Prof. Niranjan M, Madhukar N, Ashwini A, Muddsar J, Saish M (Department of Electronics and Communication, Jain College of Engineering Belagavi, India)
- [2] D. L. Wu, Wing W. Y. NG, D. S. Yeung, and H. L. Ding, "A brief survey on current RFID applications," in Proc. International Conference on Machine Learning and Cybernatics, Baoding, July 12-15, 2009, pp. 2330-2334.
- [3] Umar Farooq, Mahmood ul Hasan, Muhammad Amar, Athar Hanif and Muhammad Usman Asad. the design of RFID based security and access control system for use in hostels inside the Punjab University premises.

- [4] G. Ostojevic, S. Stankovski, and M. Lazarevic, "Implementation of RFID technology in parking lot access control system," in Proc. Annual RFID Eurasia Conference, 2007, pp. 1-5.
- [5] M. A. Mazidi, J. C. Mazidi, and R. D. Mckinaly, The 8051 Microcontroller and Embedded Systems, Pearson Education, 2006