

Electric Generation through Speed Breaker with Emergency Stopper

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ABSTRACT:

In this project we produced electricity from the normal speed breaker into smart speed breaker. We use kinetic energy of vehicles to convert into some useful electrical energy we can use that energy for street lights and can save at least some amount of electrical energy. In this project we added a stopper on the smart speed breakers for some emergency situations. In existing methods they are producing less electricity. In this smart speed breaker we are using Rack & Pinion Mechanism and added the solid Disc flywheel for more energy generation. Experiencing the power is basic requirement of human existence. The dynamic energy of the moving vehicles can be changed over in to mechanical energy through Rack & Pinion instruments and this mechanical energy will be switched over completely to electrical energy utilized for lighting the street. The day by day to increasing traffic problems and other security issues. In the proposed project We address that the concept of tire killers. The tire killers activated as per the user requirements and will be able to catch and hold the responsible for crime person as quickly as possible.

KEY WORDS: Smart speed breaker, Rack & Pinion, Disc flywheel, Emergency stopper.

I. INTRODUCTION:

The project is trying to Demonstrate how to harness and Energy in street speed breakers, A framework that is used on a regular basis. The number of vehicles that violate the speed limit of the road is Gradually increasing. A lot of Energy is wasted on speed breaks due to the Intensity Distribution and the Friction of the vehicle as it Travels over it. By turning the speed breaker into a force age unit, there is an exceptional opportunity to use this energy to generate electricity. Created power can be used for lights near speed breakers. This model shows how to generate excitement from congested traffic. Converting mechanical energy

into electrical energy is a widespread idea. It is a component that generates electricity by converting the potential energy of the vehicle that collided with the speed breaker into rotational energy. We used this basic idea for our project. Tire execution, also known as traffic spikes, is a type of tire crushing road blocker.

NEED FOR ROBOTICS AND AUTOMATION:

Robotics and automation can be accomplished through PC'S, Water power, Pneumatics, Mechanical, technology. And these sources, Pneumatics frames an appealing mode for minimal expense mechanization. The fundamental benefits of all Pneumatic frameworks are economy and straight forwardness. Robotization assumes a significant part in a Largescale manufacturing.

II. LITRATURE SURVEY:

POWER GENERATIONS:

Mohsen Partodezfoil, Abbas Rezaey (March 2012). A novel speed breaker for electrical energy Generation suitable for Elimination of remote Parts of power systems where is near to roads. Pankaj D.Jagtap (July 2014) Compared the different mechanism and concludes that rack pinion mechanism is suitable one compared to remaining. Akash Narendra patil (April 2018). It was a detailed comparison of different mechanism like air piston mechanism, rack and pinion method, roller mechanism, spring table mechanism. Gupta.R, Sharma.S, and Gaykawad.S (2013) a newly installed, mechanized speed bump will both help slow down and harvest some of the coasting energy. The weight of the car is used to throw a lever, explains GeradeLaynch, the energy behind the motion power system developed for new energy technologies. Fawad A.S (2015) the instantaneous which means some from of storage will be required.

IIT Guwahati has evaluated the machine and recommended it to the Assam ministry of power for large scale funding IT design department says it is a very viable proposition to harness thousands of mega watts of electricity untapped across the country every day. Gorle A.L, Patil A.N, Thawela A.V, Giri S.V, Darjee.B, (2018) one such survey was done by the Tamil Nadu electricity board. According to this survey the electricity consumed by a remote village for 45 days is equal to the electricity consumed by all the street lights in one night in Chennai city. By this scenario we can get an idea of the rate by which electricity is being consumed in India also this consumption rate is increasing day by day.

DESCRIPTION OF EQUIPMENT:

DC GENERATOR: A DC generator is an electric machine whose main function is to convert mechanical energy into electricity. Whenever a lead intersects a fascinating transition, an electromotive force is generated in terms of Faraday’s law electromagnetic registration rules. This electromotive force can cause current to flow when the control circuit is closed.

RACK AND PINION:

Rack and pinion exist as a working set of gears designed to convert rotary motion into linear motion or direct motion into rotary motion. This device uses round gears called pinion that has teeth that intersect straight teeth called a rack. When the pinion rotates, its rotational force completely switches to the force of linear motion in one or the other direction.

FLYWHEEL:

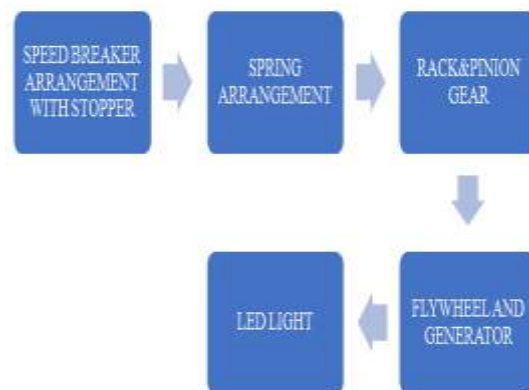
A flywheel is a mechanical device that stores rotational energy using accurate force maintenance. A type of dynamic energy that is equal to the result of an idle snapshot and the square of the velocity. The main function of the flywheel is to act as an energy aggregator. Reduces speed fluctuations. It absorbs energy when the requirements are low and releases similar energy as needed.

WORKING PRINCIPLE:

In this project, we designed a electricity generating through force, the vehicle has dynamic energy which is wasted. This is unique energy can be used to transfer power using an extraordinary technique called power hump. The power hump is a vault-like device and tends to be a speed breaker. At the point where the vehicle can leave the vault, the vehicle is pushed down the speed breaker then the spring are attached to both side. And the rack connected to the bottom of vault tilts in the corresponding direction.

Because the rack has teeth that connect to the gears, change in the rack response translate into change in the reaction force of the rack will change the rotation of the pinion, but the gears of two machines rotate in antipode. A flywheel is attached to the shaft, and the limits is to adjust the energy and make the energy uniform. To rotate this armature, Flywheel is connected to long shaft. Power is generated in one and other direction. To convert this power in one direction, a special component called Zener diode is used for consistent storage. We can improve the electrical results by connecting to these power hump in series. This generated power can be amplified and maintained using a variety of electrical equipment. The tyre killer is basically a metal rod that acts as a speed breaker on right side, however the spikes will be the ones enacted if cut the tyres of a vehicle coming from the wrong side. It is used as a signal stopper, and police was activated by the remote controlling the spikes or tyre killer during emergency situation.

III. BLOCK DIAGRAM:



IV. CONCLUSION:

Due to the population explosion, this energy era is not enough to meet our needs. In this project, We will see an innovation in which the system used generates energy from a reliable speed breaker. This procedure will help you maintain your normal assets. For the next few days, this will provide extraordinary protection to the world by saving the large amount of power wasted on lighting street lights. Common sources are exhausted so quickly that we have more opportunities to consider option assets. The energy gained from regular hotspots must be stored for productive use. Therefore, this idea not only gives choice, but also contributes to the country’s economy.

REFERENCE:

- [1]. Ahuja D. &Tatsutani M.(2009) Sustainable Energy for Developing Countries. S.A.P.I.E.N.S. 8.1(8):No.1.
- [2]. Das c. k & Hossain S.M. (2013) Introducing speed breaker as a power generation unit for minor needs. 2nd International conference on Informatics, Electronics & Vision (ICIEV-2013). Dhaka University, Bangladesh. (73):No.1.
- [3]. Dave J.J (2010) Fairley's- Speed bumps ahead for electric-vehicle chargingby,Spectrum ,IEEE Journals & Magazines.2(3):75-79
- [4]. Mukheje, D, Chakrabarti S, Non-conventional power plants, New Delhi,(2005)
- [5]. Prabhu G.R. &Ethiraj (2013) International journal od advanced research in electrical. Electronics & Instrumental engineering. Innovation in Engineering and Technology(IJIET).2(2)
- [6]. R.S.Khurmi, J.K Gupta, Theory of machines,B.D Shivalkar-Design of Machine element.
- [7]. <https://gearchade.com/Gearchade%20content/Book/Handbook-Gear-Design-Maitra-2nd-Ed.pdf>