

Alternate Energy Generating from Busy Roads by using Speed Breaker Mechanism.

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Abstract: Energy is acting as fundamental requirement to survive on the earth for every organism. All that occur in the environment is the result of some form of energy flow. Energy can be transformed into a series of forms that is proved by the constant experiments. In this busy and smart moving world, the populace is continuously growing and non-renewable resources of energy get exhausting. Significant energy consumption has led to the energy crisis for many years. To solve this difficulty, we have introduced new proficiency to use non-renewable sources for optimal energy saving. The number of automobiles passing over speed breaker on roads has increased day to day. Here the frictional energy will be created when the vehicle passes over the speed breaker so this energy can be utilized for generation of electricity. Normal speed breaker can be replaced by roller with DC motor, when vehicles passing over speed breaker roller gets rotates then it rotates DC motor automatically electricity generated. That energy can be stored in battery, it can be used wherever and whenever it is necessary.

Keywords: GSM, Lead Acid Battery, LDR, Renesas Microcontroller, DC Motor.

I. INTRODUCTION

In the current situation of the environment the human life is mainly depended on power means electricity. Whatever the work is done by the human from morning to evening he needs power for example cooking, washing, to dump water, charging phones, to use electrical machines etc. The economical background of the nation depends on per-capita and the shares that are available. As the living standards of the people are changing the consumption of the availability of energy is also changing. So the standard of living is directly proportional to the increasing use of non conventional energy which sometimes may cause adverse effect on the living beings or on the environment. India is those one of the country where it has incorporated many projects to generate electricity like thermal power plants, hydroelectric power plants, nuclear power plants etc. even though they have these many projects to produce electricity it is not meeting the needs of human life. So it again suffering by energy lacking. And the method is implemented to this causes many types of pollution. As we know most of the time power is generated by conventional sources only. We have used this energy to the core so now we are running out of conventional energy. Now we are facing two problems one is running out of conventional energy and another is lack of power supply. To overcome these hurdles that are happened to create sufficient we have introduced the new method called producing energy using renewable sources.

Energy crisis is the major problem we are facing in day to day life. As the production of energy is low and the consumption is high leads to the highest price it is like inversely proportional. Higher consumption, higher the population, higher the standards of living is the major reason for energy crisis. This problem can also be arising because of wasting of energy. The importance of electricity is not only depend on how we hardly need it how we use, how we conserve energy without wasting it.

II. LITERATURE SURVEY

Author introduces innovative method for producing green energy and contributes to the development of wealthy countries in a more suitable way with the use of available resources. Due to expansion of the population, the current generation of power is not enough to fully satisfy our needs. In coming days, the demand of electricity is increasing rapidly, it was very special blessed to country and also world, hence it will save a lot of electricity which is going to be wasted. So the research can develop country by enhancing techniques and more utilization of resources in an efficient manner [2]. Author includes the utilization of power which is pointless when the automobiles roll over a speed breaker. The proposed idea has been fabricated with the help of Rack and Pinion technique of transferring rotational energy into electrical energy. The proper usage of pointless energy will be done when automobile rolling over speed breaker. This mechanism provides systematic way to induce electricity from the kinetic energy of moving automobiles on roads, highways etc. This project is a very promising future, non conventional methodology that can be used as an eco-friendly energy production mechanism [1]. The new idea introduced by author tries to generate electricity from the road by touching the

energy and generating electricity from the system. This is achieved by initiating the bearing force by changing the shaft in one direction and moving explicitly in another way. The reverse motion is controlled by other connections. The switch works the same way on the suspension earlier. The storage drive is similar to a small rear bike tire. If the automobile rolls through the third joint, the first joint must return to its initial position. The third connection is returned to the initial position when the automobile passes through the first joint. By initiating this method, it could operate on 12 volts DC Motor at 30 RPM producing 72 watts electric power [4]. In this system speed breaker is included with air compression pump. The vehicles rolls over the speed breaker it creates the air pressure. The pump pushes air and with the help of the compressed air turbine it starts to revolve. This turbine is straightly connected with the substitute dynamo; from this we get electrical current as output. This paper also described the use of renewable energy element for electricity generation. Here they generate power by using air compression technique. Over initialization can be place under speed breaker when automobile rolling through speed breaker it generates electrical energy. Main advantage of this method is they use pointless energy for power production [6]. The aim of author is to generating large kilowatts of electricity using downward also upward movement of rack. By using speed breaker technique, linear movement of rack convert into rotation movement of pinion and that will rotate the shaft of DC generator. This result in generating 232.24 watts with 400kg load and also 14cm of the height of the rack. DC charges the battery and that can be used in efficient manner [3] [7].

There are so many techniques for production of electricity through speed breakers but the electricity is not sufficient for usage of specific purpose this paper tries to show the new method of electricity generation. Old days many difficult mechanisms are developed which are not efficient. The technique proposed in this paper is more efficient and a specific purpose can easily be fulfilled, the amount of electricity generated from this model can sufficient to the nearby areas. The both combine of hydraulic press and crank lever mechanism is most helps to generate electricity [5] [8].

III. PROPOSED SYSTEM

The proposed idea gives the solution for generating electricity using conventional method. We call that mechanism as speed breaker mechanism. Where this proposed idea can be used in busy roads by incorporating roller and dc motors in it. As we already know that energy can be in many forms. So here when the vehicle moves over the speed breaker the roller get rotated this creates energy. The kinetic energy will be created by the motion of the vehicle on speed breaker. That energy is created by the frictional force that force creates the thermal power i.e. heat. The kinetic energy that is created it will be based on weight of the vehicle. Only this roller will get rotated only based on the speed and weight of the vehicle. The energy that is created will get stored on the lead acid battery. The booster helps to boost up the energy. So that stored energy can be used by the street lights, digital displays. By this speed breaker mechanism rate of accidents can be avoided and we can also generate electricity. The street lights can be controlled by android application. The street lights can be on and off based on day and night mode.

IV. BLOCK DIAGRAM

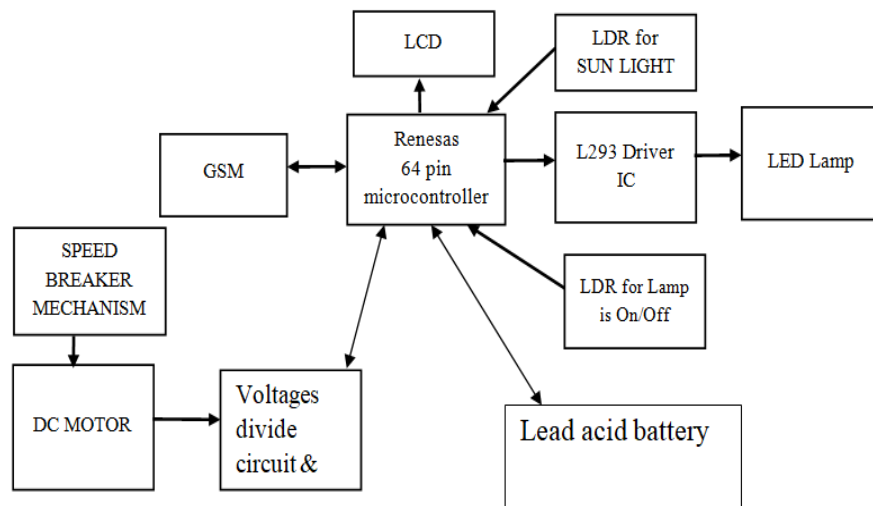


Fig: Block diagram of speed Breaker mechanism

A vehicle passing over a speed breaker, roller with dc motor placed on a speed breaker roller gets rotated then it rotates dc motor. The electricity generated from motor that voltage should be boosted by using buck booster and voltage divide circuit and then it will be stored in lead acid battery. L293 driver i.e. can operate LED lamp of street light. LDR sensor can use for sensing the sunlight falling and it perform the switch condition (ON/OFF). Renesas microcontroller as perform a major controlling part of the overall system. LCD can perform the displaying of operations on system like how much voltage generates and stored that could be used for street lights and rural areas. GSM module can also one of the major unit used to send messages of operation.

V. EXPERIMENTAL RESULTS

SL.No	Time	Output voltage of speed breaker	Light Status
1	5 PM	0.181V	OFF
2	4.30 AM	0.020V	ON
3	6 AM	0.030V	OFF/ON
4	5.55 PM	0.087V	OFF/ON
5	10 PM	0.034V	ON
6	12 AM	0.022V	ON
7	10.30 AM	0.190V	OFF

Table: Experimental Results

In above table shows the result analysis of speed breaker mechanism. For example-1 take a serial number-4, 5:55 PM generates a 0.087Volts of energy and also lights will be ON/OFF condition because sometimes sunlight will be falling on a earth on that condition street light OFF and also sunlight not lightning hence the a street lights will ON. Example-2 takes serial number-6, 12 AM generates a 0.022Volts of energy and also lights will be ON a street lights (Midnight).

VI. CONCLUSION

Energy is a basic data to assist industrial development and standard of living of a country. This data may be instantaneously connected to income of the government. The non-renewable sources of energy is evacuating very quickly. The current technique has to rely on renewable sources for power production. Various sort of renewable sources are solar energy, wind energy, biogas etc. Now by using these speed breakers, we can generate electricity without any external sources. These days, vehicle traffic is a major issue in most big cities. This can be taken as advantage by installing these speed breakers in heavy traffic roads and toll booths we can generate electricity almost continuously by using the moving of the vehicles to produce electric power in the roller rotation with dc motor. As this method does not require any external power source and the traffic never reduces, these speed breakers are more reliable and have a greater life span.

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