

## POWER GENERATION THROUGH SPEED BRAKERS

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### ABSTRACT

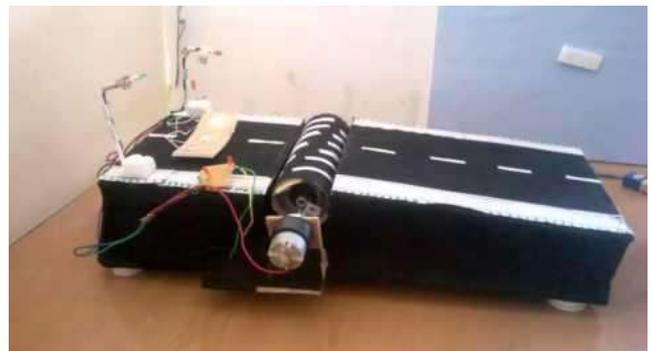
It is very important for us to bring up with new idea such as pollution free power generation technology. Speed breaker Power Generator (SBPG) is one of the best methods which produces power with minimal input. An experimental observe to generate the power through the rack, SBPG is defined on this paper. In this system, we make use of racks and pinions for the power generation. When an automobile reaches on the speed breaker, the rack movements downward to generate linear to rotary movement with the usage of pinions. The rotary movement is transferred to DC generator which generates DC energy that's stored in batteries. The generated energy may be used for the home purpose or commercially purpose, which are present near to speed breaker. As a human being it is our responsibility to conserve the energy for the future generations. So, by using this project we can reduce the pollution caused due to pollution emitting power generation techniques.

### INTRODUCTION

During previous few decades, electricity is the fundamental requirement of human beings. The ratio of electrical energy requirement is growing day to day. But we are getting to know that the sources which are used to generate electricity are limited

and due to the heavy usage, the future generation may lead to crisis of this sources. Due to increasing in demand of electrical energy the resources which are used for power production are reducing day by day and leads to increasing of pollution. It is our need to use energy resources which doesn't harm environment. To decrease the emission of greenhouse gases, renewable electricity technology is broadly used for energy era. The number of vehicles that are passing over the speed breakers are increasing day to day, since a large amount of energy is getting wasted which can be used for domestic purpose. This is a technique in which potential energy is converted into rotational energy. By using this technique, we can produce many KWs of power and since this technique is a non-conventional energy resource, we can reduce pollution.

### EXISTING WORK

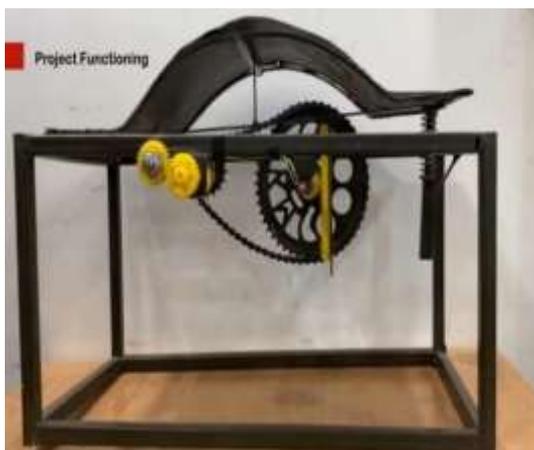


This is one kind of technology in which power is generated through speed breakers. But in this technology the speed braker itself rotates to generate the power. The power which is generated through this technology is less when compared to proposed technology. In this technology the speed breaker is connected to a DC motor when a vehicle passe over a speed breaker, the speed breaker itself rotates and then the DC motor which is connected to the speed breaker also rotates then the power gets generated which can be stored in battery and can be used for domestic purpose. And this can be converted into AC power by using an inverter.

### **DISADVANTAGES**

1. The power which is generated through this technology is less when compared to the proposed technology.
2. High maintenance.

### **PROPOSED WORK**



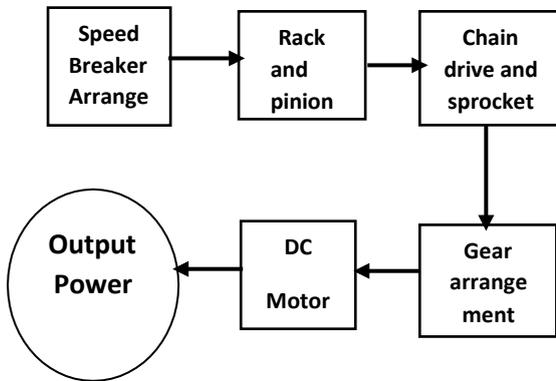
### **WORKING**

This is a technology in which power is generated using the speed breaker. In this technology when a car passes over a speed breaker, the rack moves downward to generate the linear motion. The rack is connected to two pinions which are used to convert the linear motion of rack into the rotary motion. The two pinions have unidirectional motion just like a bicycle sprocket. There are two sprockets available for us in this project, one of larger size and other of small size. These two sprockets are connected by using a chain, which is used to transmit power from large sprocket to small sprocket. Since the power is transmitted from large sprocket to small sprocket, the rotary motion speed is high. This speed is sufficient to rotate the shaft which is connected to the generator. Then due to the rotation of the shaft the generator also rotates and finally the generator produces the DC current. This current can be stored in batteries during daytime and can be used in streetlights at night-time. Even this power can be also used for some domestic purposes also as per our requirement.

### **ADVANTAGES**

1. No pollution is generated by using this technology.
2. No manual work required.
3. We can produce energy every day.
4. No fuel required.
5. More power generation when compared to existing technology.

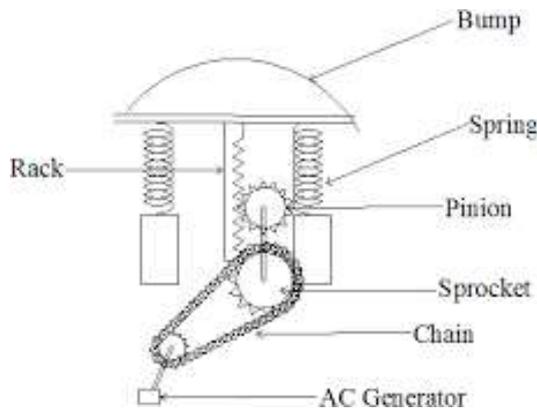
**BLOCK DIAGRAM**



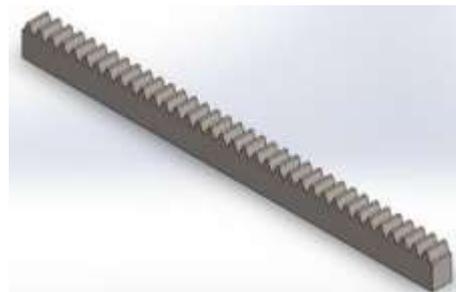
**MATERIALS REQUIRED**

1. Rack
2. Pinion
3. Sprocket wheels
4. Chain
5. Springs
6. Shaft
7. Speed Breaker
8. 12V DC motor

**CIRCUIT DIAGRAM**

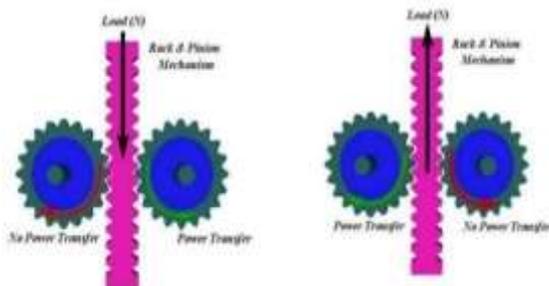


**RACK**

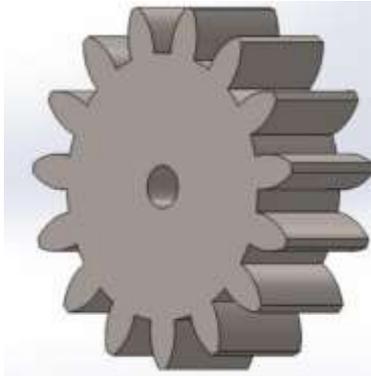


Rack is the part which is attached to the bottom of speed breaker, which is used for downward and upward movement of the speed breaker. Rack is the one which is used to rotate the pinion. This is a plastic type of material. Due to the spring mechanism, it can have upward movement without any external force.

**INTERNAL WORKING OF RACK AND PINION**



## **PINION**



Pinion is the part which is connected to the shaft and uses the motion of rack and converts the linear motion of rack into the rotatory motion and rotates the sprockets. The material used for pinion is plastic.

## **SPROCKET WHEELS**



Sprocket wheels and chain are the kind of mechanism which are used for transferring the rotary motion to the DC motor from the rack and pinion.

## **DC MOTOR**

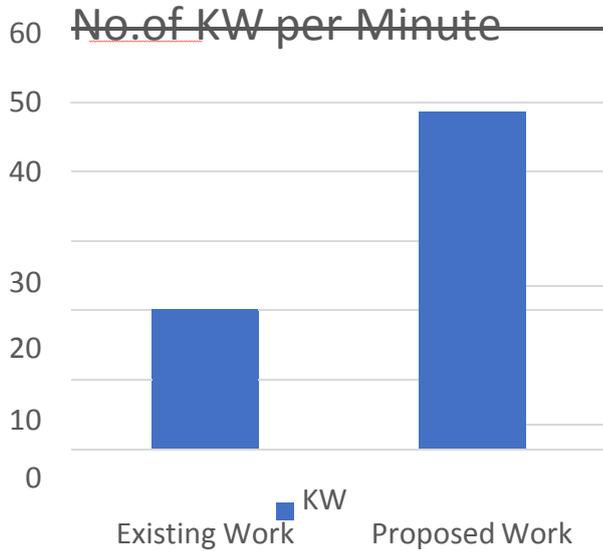


DC motor is a tool that is used to generate electricity. The DC motor used right here is of 12V and with a rpm of 1000rpm. This makes use of the rotary movement and generates the energy from it. The energy generated from the DC motor may be saved in battery and may be used for the home purpose. Even the direct energy may be utilized by connecting to the terminals of the motor.

## **OUTCOME**

1. This is generating many kilowatts power by using downward as well as the upward motion of rack.
2. This examined that SBPG is generating 273.24W on single push under the application of 400kg. In an hour, passing 100 cars of 400kg can generate 54.59kWh.

**COMPARISON BETWEEN EXISTING AND PROPOSED WORK**



**CONCLUSION**

In future, call for power could be very excessive as it's growing each day, speed breaker energy generator will be very useful for us in future.

The Aim of this studies is to introduce other modern approach of non-conventional energy technology that allows you to make contributions towards growing the sector through make use of it in a well beneficial manner.

And by using this technique we're capable of producing energy without emission of pollution.

So, it is our responsibility to use this kind of non-conventional energy sources to save environment and to reduce the global warming and pollution.

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