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ROAD POWER GENERATION BY SLIDING PAIRS

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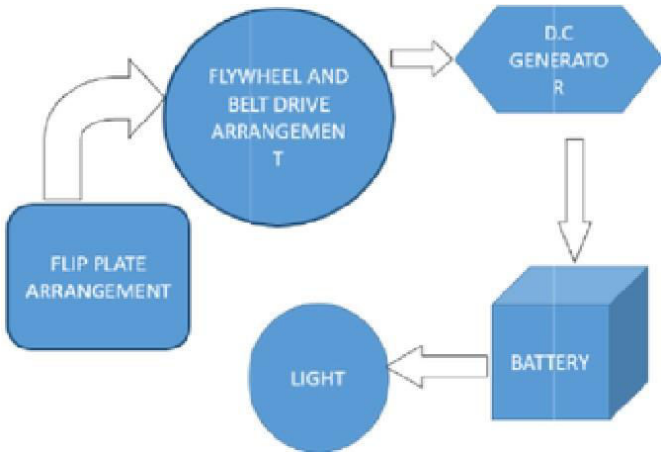
ABSTRACT -Throughout his existence, man uses vitality in one way or another. Indeed, everything that happens in nature is the result of a change in vitality in one structure or another? A number of models that stand declaration to this fact are the blowing of the breeze, the development of mists, and the progression of water. The widespread use of vitamin A has resulted in a vitality crisis, necessitating the development of ways for optimal use that will not only alleviate the crisis but also save the planet. The sliding instrument is used to generate power in this paper. A model is constructed and considered in order to obtain the power through the slipped in g component. This project discusses the discoveries made as a result of this research. This research used a permanent magnet D.C. generator to generate 12 volts of direct current. This direct current voltage is stored in a lead 12-volt battery. The battery's stored energy is used to turn on the light, fan, and other devices. The control rating is increased by increasing the battery's limit. This paper depicts the general concept of a Road Power Generator (RPG), which is an instrument that generates power from a vehicle's squandered motor energy. It consists of a flip-plate, gear instrument, flywheel, and, at the very end, a generator, which uses the rotating action of the flywheel to turn the generator's pole, so producing power. RPG does not necessitate the use of piezoelectric material. It's a unique concept based on a flip-plate instrument. The initiative can be implemented on expressways where a large number of vehicles pass every day, resulting in a higher amount of power produced. This generated energy can be used for a variety of purposes, including street lighting, on-street battery charging equipment, and a variety of home uses such as cooling, lighting, and heating.

***Key Words*:** Road Power Generation Using Sliding Plates.

1.INTRODUCTION

The reliance on petroleum products and conventional energy sources has been significantly reduced as a result of advancements in the field of sustainable power sources. This has resulted in increased access to and use of Distributed Resources. The rapid rise in demand for energy, as well as ongoing changes in environmental conditions, such as a global temperature rise, necessitated the search for new sources of energy. As we all know, the number of automobiles on the road is steadily increasing. Each time a vehicle ignores the Speed Breaker, a large amount of energy is wasted due to friction. By utilizing this vit alit y, there is a high likelihood of producing power. A lot of vitality can be tapped by just putting a unit like the "Power Generation Unit from Speed Breakers" or "Street Power Genera tor" . This generated energy can be used for a variety of purposes, including streetlight lighting, battery charging, and street signal lights, among others. The proposed structure provides pollution-free energy, would have no effect on rush-hour traffic, and would result in low-cost power generation. It would have less floor space and would be easier to sustain.

The power generated by this approach can be used in road lights, traffic signals, bus station illumination, checkpoint lighting, and other applications.



India's automobile industry is one of the world's largest, as well as one of the fastest growing. We regularly work up with these automobiles provide us brain pain. India's reveler vehicle and business vehicle fabricating industry is the sixth largest on the planet, with an annual production of more than 3.7 million units in 2010. This work could, however, be the answer to a new kind of power age. One of the most recent power-age concepts is Street Power Generation (RGP). This device is designed to be a practical and useful optional energy invention for generating clean energy from the enormous number of vehicles on our roads.

Engineers anticipate that, once fully developed and implemented, gadgets will be used to augment or replace traditional electrical supplies for things like road and building lights, backup and crisis control systems, and various hardware devices, as well as gadgets used in homes and businesses.

One of the most widely used varieties of vita lighting y is power. In addition, there is a severe power shortage today. In this investigation, an innovative idea for generating electricity from moving automobiles is presented, such as the Street Power Generator with Flip Plate Mechanism. Another possibility that is being researched is delivering power from a road control generator. The number of vehicles on the road is rapidly increasing, and if we can convert a portion of their dynamic vitality into the rotating movement of a generator, we can give a large amount of power, which is the basic principle behind this assignment.

Today, our entire way of life is subject to the will of the powerful. Electric power usage is increasing in tandem with the growing population. In any event, we recognize that the

assets available to generate electricity are limited, which has resulted in a power shortage. During this time, we must generate power from the items we use on a daily basis[6]. The speed breakers on the roadways are used to generate power in this activity. As we recognize that the number of vehicles on the road is gradually increasing, how will this help us generate power as these vehicles pass past speed breakers? This energy can be used for a variety of purposes, such as lighting signs and streetlights on street corners.

Power is the most variable and widely used form of vitality. A vitality emergency is a massive bottleneck (or charge ascension) within an economy's store of energy supplies. Overconsumption, overpopulation, delays in power plant commissioning, and energy waste can all contribute to a lack of vitality. Bottlenecks at petroleum purification plants occur from time to time, and port emphasizes Limit fuel delivery. As a result of overuse of resources and squandering of vitality produced, a vitality emergency might arise. Another severe issue that is currently becoming a departure point is pollution. Power plants and automobiles are two of the most significant sources of pollution. As a result, non-traditional power sources are projected to alleviate this problem. We suggested a nonconventional control producing framework based on a speed breaker instrument that generates power without using any non-renewable energy sources and produces no pollution.

This endeavor addresses the challenges of energy conservation, as well as innovation and the use of a basic speed breaker on a busy route. From one building to the next, vitality changes." When a vehicle passes through a speed breaker, a variety of energies are released, including rubbing energy, capacity vitality, heat, and a variety of other factors. Are obliterated by the environment. Because of the vehicle's weight, the idea is to use and convert potential vitality into electrical energy. When the speed breaker is squeezed, the spring compresses, pivoting the driving gear, which spins the generator pole with the help of the apparatus framework. The electricity generated by the generator is stored in the battery-powered battery.

2. BODY OF PAPER

The desire for sustainable vitality is gradually growing. As a result, RPG displays to be a sensible technique that can tap the vehicle's squandered motor vitality and therefore generate electrical vitality. This generated energy can be used to power traffic lights and automobile batteries. The equivalent's construction was completed, and the results revealed that a conservative RPG framework may be used to obtain a reasonable amount of vitality. As a result, unique constituent pieces were structured, and distinct configuration-based outcomes were obtained.

Looking at the current status of India's electricity crisis, the government is focusing on utilizing non-regular energy hotspots for power generation and reducing the impact of global warming. As a result, the paper's system will also contribute to the age of power. The current sources of vitality, such as coal, oil, and so on, may not be sufficient to supply the ever increasing need for vitality. These common sources of energy are also depleting and can be exhausted. There are a few unconventional methods for imparting vitality. This project is the first step in determining the potential effects of vitality from a variety of non-regular vitality sources. This work will assist you in comprehending a part of the power shortage concerns.

3.DESIGN AND CALCULATIONS

Parts of Road power Generator

1. Fixed plates – 2 numbers.
2. Moveable plate.
3. Connecting shafts.
4. Bushes.

- **Fixed plates – 2 numbers**

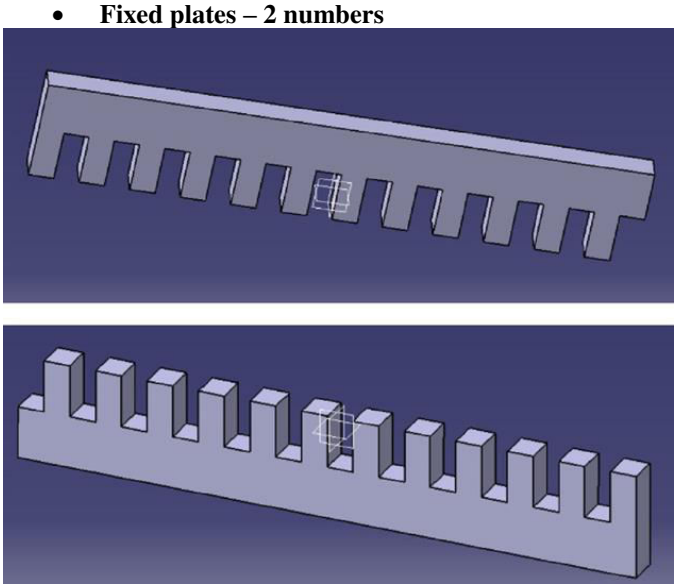


Fig -1: Fixed plates

Dimensions of Fixed Plates:

1. Length of the fixed plates: 1200mm.
2. Height of the fixed plates: 200mm.
3. Width of the fixed plates: 50mm.
4. Height of the Teeth on fixed plates: 100mm.
5. Width of the Teeth on fixed plates: 50mm.

- **Moveable plate**

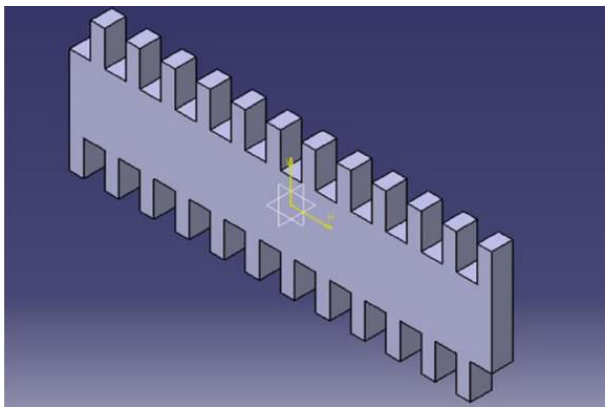


Fig -2: Moveable plates

Dimensions of Moveable Plates :

1. Length of the movable plates: 1200mm.
2. Height of the movable plates: 400mm.
3. Width of the movable plates: 50mm.
4. Height of the Teeth on movable plates: 100mm.
5. Width of the Teeth on movable plates: 40mm.

- **Connecting shafts**

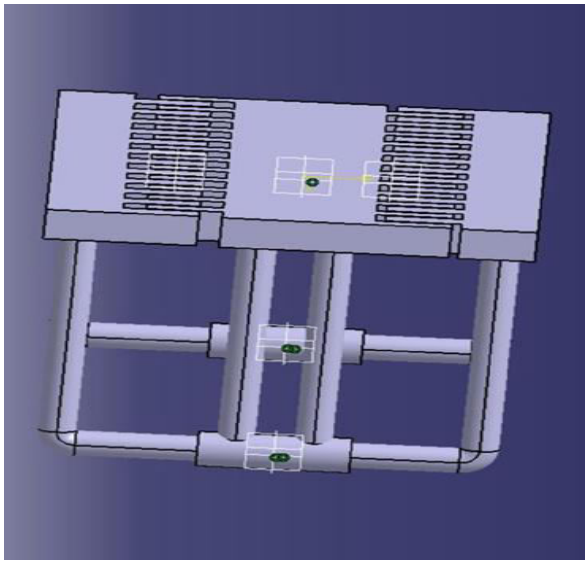


Fig -3: connecting shafts

There are about 10 supporting rods out of which 2 are Horizontal rods and rest of them are vertical rods.

Dimensions Supporting rods:

1. Diameter of Vertical supporting rods: 50mm.
2. Length of the Vertical supporting rods: 400mm.
3. DIAMETER of horizontal supporting rods: 50mm.
4. Length of the horizontal supporting rods: 500mm.

- **Shaft**

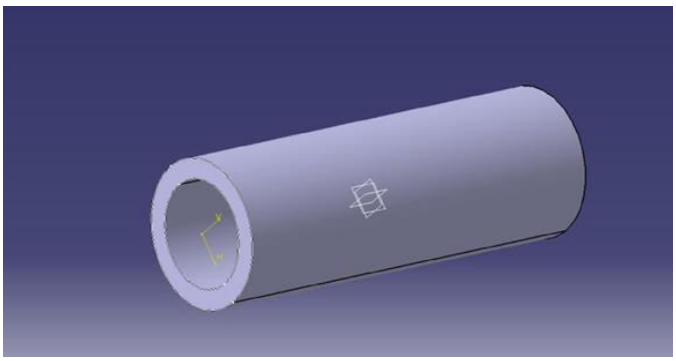


Fig -4: shaft

Dimension of shaft:

1. Inner diameter of shaft : 51mm.
2. Outer diameter of shaft : 70mm.
3. Length of the shaft : 100mm.

- **Final Model**

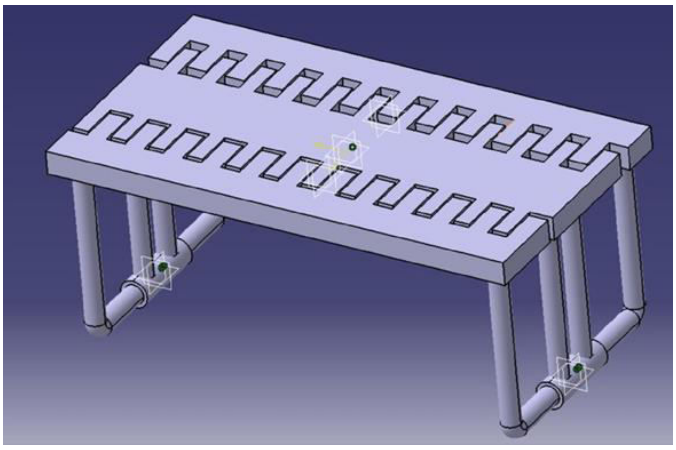


Fig -5: Final model

This model is designed to generated power when the vehicles are move on the plates.

- Assume the weight of the vehicle (Two-wheeler) = 180kg
- Avg. speed of the speed of the vehicle = 30km/hr
- Max height of the plate = 0.581m
- Force = mass acceleration due to gravity = 180*9.81= 1765 N
- Work done = force distance = 1765*0.1
- Therefore work done = 176.5 watts

So power developed for 1 vehicle passes through the sliding plates in 1 min = 2.9 watts The output is getting when the continuous sliding plate is in the working condition.

And the complete calculation is done on assuming for the case study.

4.FABRICATED MODEL

VIDEO LINK : https://youtu.be/H9JBO0F8S5A

5.CONCLUSIONS

The demand for controlled vitality is steadily growing. As a result, RPG displays to be a useful tool capable of tapping the vehicle's squandered motor vitality and therefore delivering electrical vitality. This generated energy can be used to power road lighting as well as charge automobile batteries. The design for the same was finished, and the results showed that a simple RPG framework can be used to achieve a reasonable amount of vitality. As a result, remarkable constituent parts were planned and diverse configuration-based out products were attained.

6. SCOPE OF FUTURE

Description of the paper, The use of vitality denotes a country's progress. For example, the per capita energy consumption in the United States is 9000 KWh per year, while it is 1200 KWh in India. One could deduce that in order to be physically wealthy and prosperous, one must consume growing amounts of vitality. According to a study on India's energy use, 85,000 communities in the country now lack power. In most parts of the country, there is a scarcity of energy. As a result, more inventive work and commercialization of breakthroughs in this subject are necessary. In contrast to the developed world, India has severely bad streets. When discussing a specific street, there are a variety of speed breakers to consider. Such a tremendous amount of vitality can be harvested by simply putting a unit like the "Power Generation Unit from Speed Breakers" in place. This energy can be used to power the lights on both sides of the street, allowing a large portion of the power consumed by these lights to be used to send capacity to these towns. Light shortage can be mitigated to some extent. The amount of vitality wasted by passing automobiles on the street can be reduced. Such speed breakers can be used to overload vehicles, so increasing input weight and, as a result, increasing generator yield. To improve productivity, gradually appropriate and smaller components must be added. It could also be used for a light vehicle.

7.ACKNOWLEDGEMENT

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9.BIOGRAPHIES

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