

## ELECTRICITY GENERATION BY PRESSURE

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### Abstract

Now-a-days waste age of electricity is increasing very rapidly, energy is the basic need for the development of modern world people are forced to find new ways to produce energy that will not have an impact on the environment and human health, or this impact will be minimal. Electricity plays a major role in human evolution but creation of it making many problems to environment. As apart of development we need make sure that we create without causing damage to nature and creating it ecofriendly. Now we want to generate it through our daily routine. Electrical power generation is based on Faraday's law of mutual electromagnetic induction The main purpose of our project is to develop such a device that can convert pressure into electrical energy based on the rack and pin mechanism. Electric generators work on the principle of electromagnetic induction. This project will also show that the presence of waste vibration energy might have some values to be used. Therefore, in this regard to save electricity in low cost we came across with our project "ELECTRICITY GENERATION BY PRESSURE". In our idea there is usage of two metal plates, two springs, a rack & pin, a battery of(5V), a light, a full wave bridge rectifier, when pressure is applied on the metal plates the springs are compressed and a rack & pin mechanism occurs so the energy is converted from external energy to electrical energy the energy which is converted is observed when the light glows with the help of battery. Ecofriendly nature and sustainability of the prototype make the project so simple and user friendly. As it may produce less amount of electricity but in the of time it makes more profits and it may change the phase of electricity generation. As the human's daily activity consists of lot of energy by converting it into another form of energy can make great changes.

### 1. INTRODUCTION

The demand for energy has been increasing at an alarming rate and there has been a decrease in the availability of energy resources. For sustainable

development, the need of the hour is to develop more efficient, pollution free and renewable energy resources to meet the unending demands. Always a user needs safety at first and comfort, we can use this

in railway stations and where there is more probability of walking on that product like for example in colleges, railway and bus stations by this we can generate more electricity. we are using two plates and in between them springs are arranged and a rack & pin is also set for bottom plate and battery is also connect by which we can blow light. For each step some amount of energy is generated, we should give very good quality of metal because if weight exceeds there is a chance for bending of plates. Electric generators work on the principle of electromagnetic induction. This project will also show that the presence of waste vibration energy might have some values to be used. The use of electricity gives a very convenient way to transfer energy, and because of this it has been adapted to a huge, and growing, number of uses. The invention of a practical incandescent light bulb in the 1870s led to lighting becoming one of the first publicly available applications of electrical power. Although electrification brought with it its own dangers, replacing the naked flames of gas lighting greatly reduced fire hazards within homes and factories. Public utilities were set up in many cities targeting the burgeoning market for electrical lighting. Electrical power is usually generated by electro-

mechanical generators driven by steam produced from fossil fuel combustion, or the heat released from nuclear reactions; or from other sources such as kinetic energy extracted from wind or flowing water. The modern steam turbine invented by Sir Charles Parsons in 1884 today generates about 80 percent of the electric power in the world using a variety of heat sources. Such generators bear no resemblance to Faraday's homopolar disc generator of 1831, but they still rely on his electromagnetic principle that a conductor linking a changing magnetic field induces a potential difference across its ends. T Man has needed and used energy at an increasing rate for his purpose. Due to this a lot of energy resources have been exhausted and wasted. The utilization of waste energy of foot power with human locomotion is very much relevant for highly populated countries where the roads, railway stations, bus stands, temples, etc. The human bioenergy being wasted if it is made possible for utilization it will be very useful energy source. Walking is the most common activity in day-to-day life. While walking, the person loses energy to the surface in the form of vibration. This energy can be tapped and converted to electrical form.

## 2. RELATED WORK

The Energy that is generated when pressure is applied can be used for any purpose of electricity like lights, fan. This model is more ease to use it can be applied anywhere, less of cost. According to research compare to other model the main advantage of this model it is not dependent on any resource like wind, sun, water etc. The word piezoelectricity means electricity resulting from pressure. It is derived from Greek piezo or paesani, which means to squeeze or press, an electric or electron, which stands for amber, an ancient source of electric charge. Piezoelectricity was discovered in 1880 by French physicist Jacques and Pierre Curie. The roads which produce electricity by application of mechanical energy when vehicle moves over the road, those roads are called as piezoelectric roads. These roads are having a piezoelectric sensor within them to produce electricity. This kind of construction is built in Israel, California and we are trying to construct it here in India. Wind-power technologies are actively deployed today, and there are no technological barriers to continued deployment. Cost reductions will be possible as a result of wider deployment and incremental improvements in components. No other enhancing

technologies are required for wind power to meet 20 percent and higher of U.S. electricity demand. At present, no revolutionary technology to extract energy from wind has been proposed, but several designs, e.g., vertical wind turbines or eggbeaters, are again under consideration. A wide range of solar PV technologies are now at various levels of development. Silicon flat-plate PV technologies are mature and actively deployed today. Reduction in the production cost of the cell and an increase in efficiency and reliability will make silicon PV cells even more attractive to customers. New technologies such as thin film, which has great potential to reduce the module cost, are in a relatively mature development stage, with further research and testing required. Other competing technologies, such as dye-sensitized PV and nanoparticle PV, are at an early stage of development, and commercialization will require much more technology development. The pressure to increase generation from traditional hydropower technologies due to their ability to provide low-cost, low-carbon electricity is countered with the understanding that damming freshwater rivers reduces their ecosystem benefits. There are significant pressures to return river systems back to

free-running conditions. While removal of major generating facilities is unlikely, environmental and social forces will likely force the removal of some small dams and put a halt to any new hydroelectric dam development. At present, there is also great uncertainty about the future for new current, wave, and tidal generators. Scale demonstrations are under way, and some of these have been connected to the grid. However, there are no uniform designs or long-term experiences with the technologies. Tapping the oceans' huge reservoirs of energy on a large scale is clearly a distant prospect.

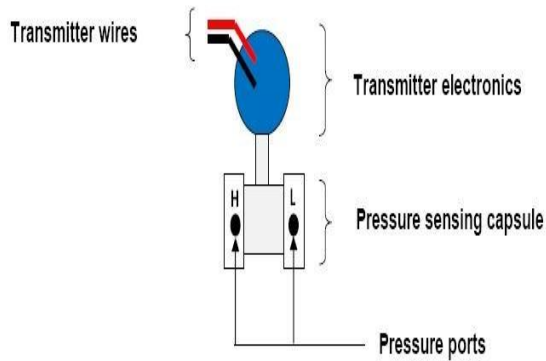
### **3. IMPLEMENTATION**

Electricity Generation by Pressure. Due to heavy loss of electricity now-a-days we came up with an idea of generating electricity which converts mechanical energy into electrical energy. Due to lack of electricity now-a-days. We develop an effective idea store energy and use it for the need.

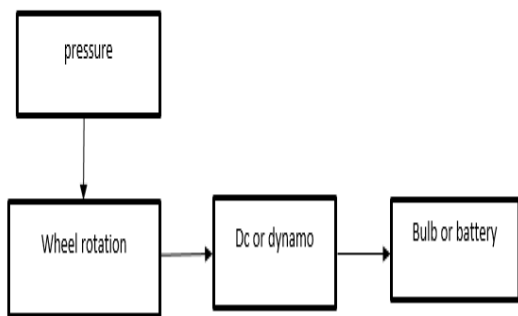
#### **Methodology**

Our task is to design an electricity generating product for effective electricity use there is a lack of electricity so we came up with this idea. Our proposed design is to generate electricity because by some out coming energy in converted into electrical energy, so when pressure is

applied the springs are pressed and rack & pin mechanism is applied to the generated energy is seen when the light switch on's with the help of battery. We have many existing solutions which are high of cost and a bit difficult for comfortable use. we are using two metal plates and in between them springs are arranged and a rack & pin is also set for bottom plate and a battery is also connect by light glows with the help of battery when pressure is applied on it. Always a user needs safety at first and comfort, we can use this in railway stations and where there is more probability of walking on that product like for example in colleges, railway and bus stations by this we can generate more electricity. We are keeping two springs on the walking platform so when heavy crowd walks through it produces pressure and due to that pressure, the rack & pin mechanism under goes which is kept between springs and electricity is generated and the light glows which indicates pressure is applied and external energy is converted into electrical energy.



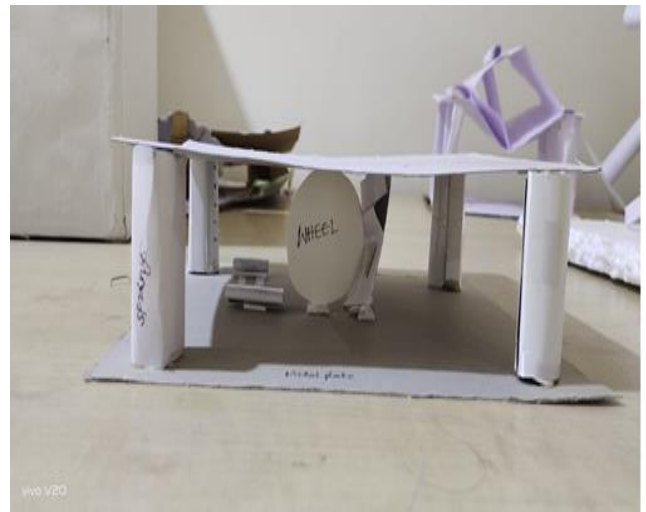
**BLOCK DIAGRAM: -**



**4. EXPERIMENTAL RESULTS**



**WITH DYNAMO**



**WITH RACK AND PIN**



**WORKING MODEL**

Hence this model converts energy by which electricity is produced.

**5. CONCLUSION**

By this way we are able to convert human’s daily activities into form of energies and also able to use them. The methods we use for converting human activities to electrical energy is eco friendly and it sustains for a longer period of time. The electricity it generates may be

small but in a longer run it makes huge profits and can change ways of generating electricity. This type of model has a good future scope because comfortable to use, less of cost, applicable everywhere. It can store energy and can be used further. And main it is use for middle class people.

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