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Power Generation by means of Pendulum and Solar Energy

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Abstract: The more power demand has been occurring now a day in India. The main reason of the power demand is due to the lack of improper energy utilization and conservation. The pendulum generator deals with the power generation from the mechanical energy that has been wasted in many day today real time applications. The pendulum setup has been made, that is whenever it has been kicked off the kinetic energy of ball makes the pendulum to oscillate, generates the electrical energy.We can implement the pendulum-based power generation system in real time application wherever the vibration produced. We can implement a pendulum-based power generation system in such dynamic application we can generate power from it. The pendulum power generator is most efficient & eco-friendly power generator.The pendulum power generator is the machine which converts the motion of pendulum i.e. mechanical energy into electrical energy. This is most helpful source or machine for power generation in today.

Keywords: Pendulum, Generator, Motor and Solar Energy.

I. INTRODUCTION

Energy has been universally recognized as one of the most important inputs for economic growth and human development. There is a strong two-way relationship between economic development and energy consumption. On one hand, growth of an economy, with its global competitiveness, hinges on the availability of cost-effective and environmentally benign energy sources, and on the other hand, the level of economic development has been observed to be reliant on the energy demand. In the recent years, India's energy consumption has been increasing at one of the fastest rates in the world due to population growth and economic development.

Man has always been in pursuit of energy to meet his ever-increasing demand. In recent times due to effects of pollution and global warming there is a need for generating power from renewable sources. The reason for generating power using gravity is that it is available all over the Earth, abundant and consistent too and it cannot be efficiently converted into electrical energy. In this paper we designed a methodology wherein gravitational energy is further amplified in terms of its magnitude by using Perpetual Motion Mechanism and hence can be successfully transformed into usable electrical energy. The basic concept of a gravity power generating mechanism is simple. When a body moves down from a higher altitude to a lower one its potential energy is converted into kinetic energy. This motion is converted into circular motion and is then converted into electricity using a generator.

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The term "solar energy" in this context includes the indirect uses such as wind energy and biomass. Because of the international character of Solar Energy, articles that deal solely with the solar radiation or wind data base of a specific country are not normally considered suitable for Solar Energy. Submitted manuscripts may take the form of reports of original studies or reviews of significant prior work in a given area. All manuscripts are subject to reviews to assure accuracy, clarity, and long-term value.

II. LITERATURESURVEY

Rahul Singh [1], from Dept. of Electronics uses Takagi Surgeon Fuzzy controller. A mode controller is used to decide which control action is to be implemented. Mode controller is the third approximation. In contrast, the traditional linearization procedure is not always faithful. Alternative characterizations of stability are also presented. They are based on degree theory and on the algebraic structure of the sympletic group. Basically, a condition check on the angle of the pendulum rod. Finally, MATLAB SIMULATION results reflect the performance of the RIP system with the stated control actions.

Mr. Manjunath C.R [2], was presently working in Asst. professor in SEA college of Engineering, Bangalore. He done convert obtained mechanical energy during the movement of seating of swing set into electrical energy along with no added and also storing the electricity thus generated into a battery, which can be utilized whenever needed and he takes the output in swing angles.

S. Nithiya et al. [3], has developed an energy harvesting system using pendulum which is cheap and eco-friendly. In this some of the kinetic energy developed in pendulum is used for producing electrical energy. In this paper the author has proposed low maintenance system which provides voltage output peaks from a reciprocating mechanical structure.

Nebojsa Simin [4], Free Energy of the Oscillating Pendulum-lever System This study explains the effect of creating the free energy in the device made of: a) Oscillating pendulum-lever system, b) System for initiating and maintaining the oscillation of the pendulum, and c) System which uses the energy of the device by damping the oscillation of the lever.

Veljko Milković [5], has invented, patented and developed series of such machines based on two-stage oscillator for producing energy. The operation of the machine is based on forced oscillation of the pendulum, since the axis of the pendulum affects one of the arms of the two-armed lever by a force which varies periodically. Part of the total oscillation energy of the pendulum-lever system is changed into work for operating a pump, a press, rotor of an electric generator or some other user system. The creation of free energy was proved by a great number of physical models.

III. OBJECTIVES ANDMETHODOLOGY

3.1 Objectives

The main objectives behind this project are listed below:

- To reduce the power consumption through renewable source of energy.
- To Apply Solar Energy Technology as the enabling technology for sustainable development.
- The entire setup is designed for the ease of operation.
- Increase productivity; promote liveliwood and social interaction in the community.

3.2 Methodology

The Fig. 1 shows the Flowchart of Methodology

- The Solar Radiation is absorbed and stored in the Battery and when Switched on the Pendulum is actuated and starts Oscillation.
- It is a machine which converts the motion of pendulum i.e. mechanical energy into electrical energy. In this generator the pendulum is attached on a horizontal body frame connected at the point in which it moves freely over the surface.
- The pendulum moves between the fix magnets with similar polarity. And the pendulum will be repelled and the oscillation will be continuous.
- The lever is connected with a rotating disc and the rod due to pendulum movement makes the disc to rotate and the disc is further connected to generator where it also rotates and electricity is obtained as an output.

IV. WORKING PRINCIPLE

The pendulum power generator is the machine which converts the motion of pendulum i.e. mechanical energy into electrical energy. Fig. 2 shows the simple pendulum which oscillates, i.e., the mechanical energy. In this generator the pendulum is attached on a horizontal body frame connected at the point in which it moves freely over the surface. The pendulum moves between the fix magnets with similar polarity.

There are two dominant forces acting upon a pendulum bob at all times during the course of its motion. There is a force of gravity which act on the pendulum bob, It results from the Earth's mass attracting the mass of the bob. And there is a tension force acting upward and towards the pivot point of the pendulum. The tension force results from the string pulling upon the bob of the pendulum.

We will make arrangement in such a way that pendulum get repel and get into motion and moves continuous. The connecting rod is attached to the rotating crank type disc which convert the pro and fro movement of pendulum into rotation. In our discussion, we will ignore the influence of air resistance - a third force that always opposes the motion of the bob as it swings to and fro Generated is attached to the crank disc and hence electrical power is generated. Fig. 3 shows the block diagram of Pendulum motion Power generator.

V. FIGURES

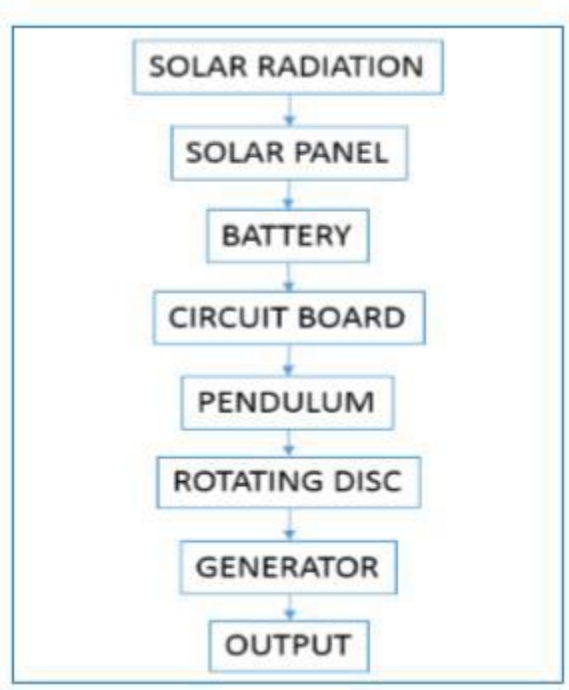


Fig. 1 Flowchart of Methodology

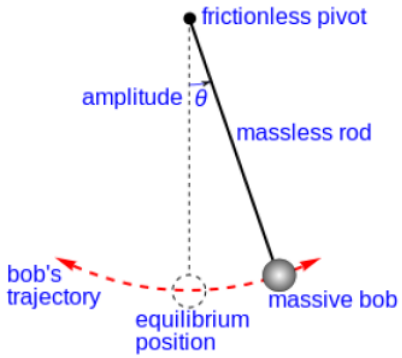
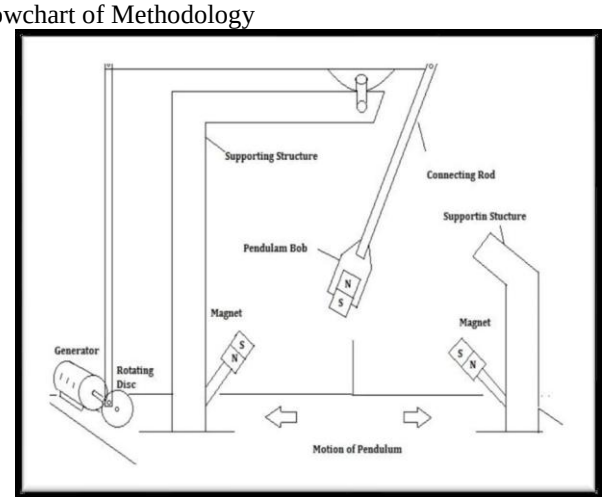


Fig. 2 Simple pendulumFig.



3 Block Diagram of Pendulum Motion Power Generator

V. CONCLUSION AND FUTURE SCOPE OF WORK

6.1 Conclusion

With the demand for energy requirements increasing tremendously, it can be met by alternative energy resources such as Gravity. Particularly, it can generate more power compared to the other type of non-conventional energy. In addition, this alternative energy source offers benefits such as easy deploying, low installation cost and maintenance systems, and less operating cost. In terms of operational lifetime, installation cost and reliability, so a Pendulum Power Generator is considered as a promising alternate for traditional power sources. Energy harvesting is, in itself, an energy resource. At the end of a research we have designed a power generator with a pendulum that employs the concept of reciprocating system. The ambient vibration can be used

in an effective way by converting them to electrical energy. It proposes energy conversion system in terms of generating electricity. The technique of implementing the pendulum power generator is to reduce global warming. The compact model not only provides the accurate result but also gave the computational speed-ups of the generation. In future, maximize version of our setup can be installed to produce power.

6.2 Future Scope of Work

The extent of power generation can be increased by improving the design the charging circuit or by controlling the flexibility of the pendulum it can be designed as weather proofing and also adopt different types of safety measures.The project work can be taken under several modification and researches further and some can be modified on the following basis: -

- Pendulum can be replaced with Swing
- Overall capacity can be increased

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