

Gravity Power Generator

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ABSTRACT

Conserving energy has become the biggest issue in present scenario. Due to the development and modernization the electricity demand is increasing at high extent. To fulfil this demand globally which is without any harmful effect on environment is possible by using gravity power generation. The reason behind generating power by using gravity is that it is available all over the earth.

Our aim is to create a solution that is affordable - without locking people into on- going costs – but not at the expense of quality or elegant design. Gravity Light offers people an opportunity to break the fuel poverty cycle cause by kerosene lamps. This starts a positive cycle - of money saved, increased productive hours and improved health. In parallel, by replacing kerosene lamps, Gravity Light eliminates the carbon dioxide and black carbon these emit. 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. In this project, the gravitational energy of a heavy particle is converted to the electrical energy. When the heavy particle falls down from a higher altitude to a lower one, its potential energy is converted into the kinetic energy. Then this energy is converted to electricity by using a synchronous motor. With the increasing of the altitude of the load, the lighting time increases. If load increases, power production also increases, but the lighting time decreases.

INTRODUCTION

During the last few decades power requirement has reached to high extent, for various purposes, due to ever increasing population, development and modernization. Power can be harnessed through various methods using Renewable energy source or Non-Renewable energy source. But all this method used to produce electricity, have their own limitations and energy can be grasped only in a specific quantity and only for some

extent. Therefore there is vital need for having a source which would generate power overcoming these limitations. Gravity is one such source which can

serve our purpose. Gravitational force is force that attracts any object with mass. The primary objective is to provide a gravity power generation mechanism which can continuously convert gravity potential energy into kinetic energy. This motion is converted into circular motion and is then converted into electricity using a generator. Thus in this paper we are mainly concerned with study of power generation using a technique which produces power from gravity force. Gravity engine is a free energy generator that apparently harnesses power of gravity and use it to make mechanical work.

Despite the fact that successful isolated system perpetual motion devices are physically impossible in terms of the current understanding of the laws of physics, the pursuit of perpetual motion remains popular.

There are many ways to convert gravitational energy into electrical energy. Gravita lamp is one of the mechanism.

METHODOLOGY

When a body is at certain height from the ground, it possesses potential energy. Due to gravitational pull the body falls down. In this process, potential energy is converted to kinetic energy in the form of torque. And this converted into electrical energy using generator. The electrical energy is supplied to the LEDs, where

electrical energy is converted into light energy. Gravity lamp and Gravity Generator follows the same mechanism.

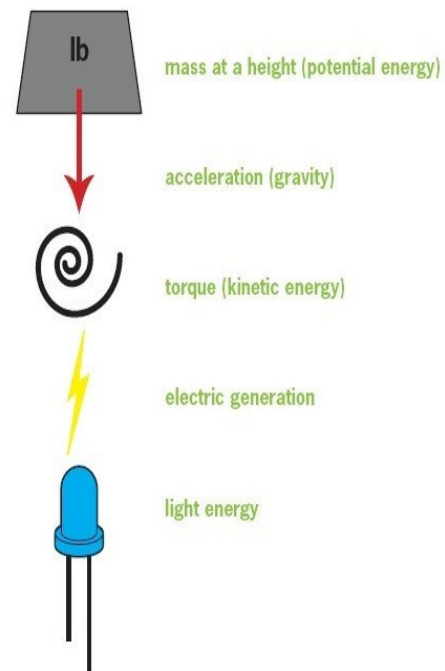


Fig :1 Functional block diagram of gravity power generation

- From the generated DC power will feed it to the battery through the battery charging circuit.
- And then this battery stored power is inverted to AC and given to the external loads.

WORKING MECHANISM

1. A gravity power generation mechanism comprising:
A gravity energy conversion unit including a transmitting member, the transmitting member circulating correspondingly to a direction of gravity and being installed with a plurality of

single directional swing arms outside thereof, the gravity energy conversion unit producing a larger positive torque by casting the single directional arms outwards and producing a smaller negative torque by cooperating with an inward-folding action of the single directional swing arm, so as to continuously

cast the single directional arms by means of gravity, after being cast, the single directional swing arm, under the action of gravity, continuously descends from high to low, so as to make the connected transmitting member continuously operate too, thus converting gravity potential energy into kinetic energy and then transmit the kinetic energy out to perform an energy conversion power generation.

2. The gravity power generation mechanism as claimed in claim 1 further comprising a power generating unit, the power generating unit including a generator which is driven by the transmitting member of the gravity energy conversion unit, and the power generating unit converting energy to generate electricity by use of the generator.

3. The gravity power generation mechanism as claimed in claim 2, wherein the gravity energy conversion unit includes:

- at least two wheel members which are pivotally disposed along the direction of gravity.
- at least one transmitting member which is installed on the wheel members; and

- a plurality of single directional swing arms which are positioned outside the transmitting member by single directional pivot seats, and the single directional pivot seats only allow the respective single directional arms to pivotally rotate in opposite direction of the transmitting

member.

4. The gravity power generation mechanism as claimed in claim 3, wherein the single directional swing arms are equidistantly positioned outside the transmitting member by use of the single directional pivot seats.

5. The gravity power generation mechanism as claimed in claim 3, wherein the single directional pivot seats only allow the respective single directional swing arms to be pivotally folded 90 degrees in opposite direction of the transmitting member, and the respective single directional swing arms freely rotate within a horizontal and vertical angle with respect to the transmitting member.

6. A gravity power generation mechanism comprising: a gravity energy conversion unit including a transmitting member, the transmitting member utilizing a plurality of wheel members to circulate correspondingly to a direction of gravity, the transmitting member being installed with a plurality of single directional swing arms outside thereof, the gravity energy conversion unit produces a

larger positive torque by casting the single directional arms outwards and produces a smaller negative torque by cooperating with an inward-folding action of the single directional swing arms, so as to make the transmitting member continuously self-generate energy; and a power generating unit including a connecting shaft and a generator, one end of the connecting shaft being connected to the wheel members of

the gravity energy conversion unit and driven by the wheel members, the connecting shaft transmits rotational kinetic energy to the generator, at this moment, the generator rotates to generate electricity.

7. The gravity power generation mechanism as claimed in claim 7, wherein a configuration path of the wheel members and the transmitting member of the gravity energy conversion unit is allowed to be similar to a round shape, an elliptic shape, a rectangular shape or a triangular shape and is designed correspondingly to the direction of gravity.

8. The gravity power generation mechanism as claimed in claim 7, wherein the transmitting member and the wheel members of the gravity energy conversion unit are designed as a cooperation of a chain and chain wheels, a cooperation of a belt and pulleys or a cooperation of a wheel rail belt and driving delivery wheels.

Fig 2: Block diagram of gravity power generation

CALCULATIONS

The diagram above has A_r , B_r and C_r are:

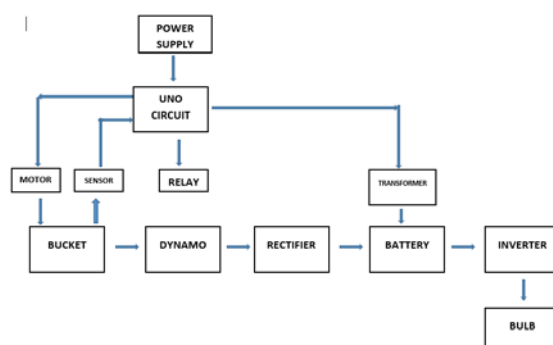
A_r = rotational speed of the small pulley A with the generator attached,

B_r = rotational speed of the large pulley B

C_r = rotational speed C_r of the small sprocket C that's attached to the large pulley .

By starting with the generator, in this case a synchronous motor is used. When it is turned the shaft of a motor, the motor acts like a generator, producing electricity. There is a small pulley that is attached to the generator shaft and its diameter is 5.25 cm. and circumference is 16.5 cm.

Now there needs a rotational speed for the small pulley of 5-6 RPM to find some combination of large pulley with attached small pulley (or sprocket in this case), and possibly more than one of them that would cause a mass to fall at a reasonably slow speed for long enough to light the LED for a reasonably long



Using 1 kg of load, the potential energy of the load for an altitude of 145cm, $E_p = \text{mass} \times \text{gravity constant} \times \text{height of the load} = mgh = 1\text{kg} \times 9.81 \text{ ms}^{-2} \times 1.45\text{m} = 14.23 \text{ J}$
 This potential energy is converted to the electrical energy by the generator.

Hence,

Generator output = Voltage \times Current flow \times time of load landing = $VIt = 3.2 \text{ V} \times 12 \text{ mA} \times 42 \text{ s} = 1.62 \text{ J}$

The height from where the load is falling by the gravity is, $h = 145\text{cm}$.

Time required to fall the load, $t = 42 \text{ s}$.

Hence, velocity of the falling mass, $v = 3.45 \text{ cm per second}$.

Efficiency = $(\text{Output energy} / \text{Input Energy}) \times 100\%$

$$= (1.62\text{J}/14.23\text{J}) \times 100\% = 11.23\%$$

Fig 3: project picture

Fig 4: project picture

ADVANTAGES:

- Renewable Sources Of Energy

A renewable natural resource is one that can be renewed, or replenished in a reasonable amount of time (in years or a human-life span), once it has been used. Renewable energy is generated from natural sources (sun, wind, rain, tides, and vegetation) and can be generated again and again when needed. It is generally replenished naturally. For example, trees are a renewable resource because once a tree is removed and used, a new tree can grow in its place

- Pollution free and ecofriendly.
- This energy source will remain forever.
- Available 24*7..
- Utilize at any place on earth.

RESULT:

The gravity power generation mechanism of the present invention utilizes a gravity energy conversion unit to which can provide a continuous and stable operation continuously convert the gravity potential energy into kinetic and then to electrical energy so as to perform a long time , effective and stable energy output. The present invention not only can independently generate electricity but can be parallel connected to the wind power and solar power generating systems to generate electricity .

That produces power from gravity having a simplified structure as well as eco-friendly and which would overcome present pollution problems and global warming faced by existed generation methods.

For 1kg of load from a height of 1.45m the input energy is 14.23 J and the output by the generator is 1.62J. Hence the efficiency of gravity powered light is 11.23%.

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