Power Generation by Gravity

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Abstract: ***There are various types of non-renewable and renewable resources present on our planet. Many of them are being utilized in the generation process. Now a day the need of electrical energy is increasing vigorously and hence we must have to increase our generation capacity of electrical energy. But as maximum generation is done using renewable resources which are the limited source of energy. Hence the need of new kind of resource is increasing which must be constant and never ending resource of energy, so the Gravity or Gravitational energy is the aid for this need of resource. It is limitless form of energy present all over the earth. It can be utilized in the form of energy resource and can be converted in the electrical form of energy.***

Keywords: Gravity; Gears; Weight: Power Generation

1. Introduction

Non-renewable we are avoiding as they are decreasing renewable energy. Non-renewable energy sources are those sources that drain fossil reserves deposited over centuries. This result in depletion of these sources and are currently suffering from the side effects of drilling these energy reserves from deep underground. Example of these countries includes china and India these are many places in the world that are experiencing fast degradation of non-renewable sources in terms of fossil fuel.

Soon there will be none left is appropriate measures are not take into consideration. This is a trend that has to be reserved if the world is to survive the degradation process that going or happening at a much rapidly. As non-renewable sources burst, pollution increases and or one layer decreases day.

Now "renewable energy "is any naturally occurring, theoretically inexhaustible sources of energy that is not derived from fossil or nuclear fuel. These sources include bio-mass, solar, wind, geo-thermal, tidal, wave, hydroelectric power, gravity etc. In the past five years, Indian has made tremendous strides in the use of wind, bio-fuel, solar and biomass resources; furthermore, India has used manufacturing skills to become an integral part of these energy industry supply chain. Gravity power generation is a step towards being an integral part of these energy industry supply chain and provide pollution free generation.

2. Principle

An apparatus which generates electric power from the gravitational forces is sole concept of this project. The weight in the right section of the system is these sources of potential energy. This potential energy is converted into kinetic energy of the gears. At initial the weights is placed on height and hang to chain then it provides acceleration to dynamo through gears and power is generated. Generation by gravity is a new concept. in which generation is done with the help of gravity. a dead Wight is main part of the principle without it the system can't be run. When the dead weight is hanged to height then it attract or pulled by gravity in linear motion at downward motion. This motion is converted in rotary motion and this motion is given to dynamo. Then dynamo generates electricity. Here, as the weight increase, the generation will increase Dead weight α generation

3. Construction

In our paper assembly gears are placed. This gears are arranged in such a manner that the gears make a gear train system. Sometimes, two or more gears are made to mesh with each other to transmit power from one shaft to another such a combination is called as gear train or train of toothed wheels. The nature of train use depends on the velocity ratio required and the relative position of axes of shaft. a gear train is consist of spur bevel or spiral gears This system converts the rotation from lower to higher value.

At the higher rotating side of the gears train a dynamo is coupled with the gears while at the lower rotating side of the gears train a free wheel is connected which is mechanical part commonly used in cycle mechanism.

The chain is mechanically placed on the freewheel teeth which is hanging towards the ground with both end of the chain open.

The loading end of the chain is connected with the weight which acts as a load and is hanged vertically. The whole gear train system and the loading system is placed between two plywood plates having the area 2.1*2.1 sq. ft. and the whole assembly is mounted on a stand which is on 5 ft.

Gears

Two meshing gears transmitting rotational motion. Note that the smaller gear is rotating faster. Although the larger gear is rotating less quickly, its torque is proportionally greater. One subtlety of this particular arrangement is that the linear speed at the pitch diameter is the same on both gears.

A gear or cogwheel is a rotating machine part having cut teeth, or cogs, which mesh with another toothed part to transmit torque. Geared devices can change the speed,

torque, and direction of a power source. Gears almost always produce a change in torque, creating a mechanical advantage, through their gear ratio, and thus may be considered a simple machine. The teeth on the two meshing gears all have the same shape.[1] Two or more meshing gears, working in a sequence, are called a gear train or a transmission. A gear can mesh with a linear toothed part, called a rack, thereby producing translation instead of rotation.

The gears in a transmission are analogous to the wheels in a crossed belt pulley system. An advantage of gears is that the teeth of a gear prevent slippage.

When two gears mesh, if one gear is bigger than the other, a mechanical advantage is produced, with the rotational speeds, and the torques, of the two gears differing in proportion to their diameters.

In transmissions with multiple gear ratios—such as bicycles, motorcycles, and cars—the term "gear" as in "first gear" refers to a gear ratio rather than an actual physical gear. The term describes similar devices, even when the gear ratio is continuous rather than discrete, or when the device does not actually contain gears, as in a continuously variable transmission. linear toothed part, called a rack, thereby producing translation instead of rotation.

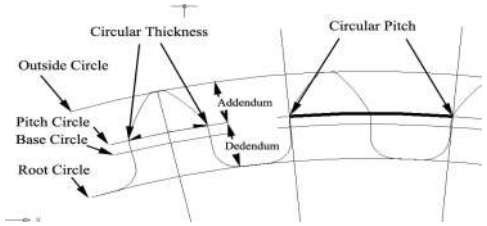

Figure 1: Gear tooth

Term Definition Calculation

Pitch Diameter (D) The diameter of the Pitch Circle from which the gear is designed. An imaginary circle, which will contact the pitch circle of another gear when in mesh. P

D = N **Diametral Pitch (P)** A ratio of the number of teeth per inch.

4. Operation

The system of power generation by gravity is as shown in fig. the assembly consists of gears, shaft s and chain. Gears are also called as cogwheel. It is a rotating machine parts having cut teeth, or cogs which mesh with another toothed parts to transmitted torque. Geared devices can change the speed, torque and direction of power source. The teeth on the two meshing gears all have the same shape. Two or more meshing gears, working in sequence are called a gear train. These gears are mounted on shaft. Stainless steel, also known as inox steel or inox from French "inoxydable", Stainless steels resistance to corrosion and staining, low maintenance and familiar lustre make it an ideal material for many applications like shafts. Gears, sprocket, bearing, etc are mounted on the shaft.

On these shafts spur and pinion gears are mounted. There are three spurs and four pinion gears. Spur gears are used to make compound gear train. A compound gear train is a system in which there are no. of gears fix together and mounted in gear box. When there are two gears are connected solidly on a single shaft then it is called compound gear train. Normally this type of compound gear train is used to change the revolutions of the system either from higher revolutions to lower or from lower to higher revolutions.

We used compound gear train to convert lower revolution to higher revolutions. On low rotation side a free wheel is solidly connected to gear, on which a chain is placed. A dead weight is hanged to chain. on this dead weight gravitational pull will act, because of gravitational pull the dead weight will move in linear motion i.e. from higher attitude to lower attitude.

This movement of dead weight is converted into rotary rotation by gear train, and convert its lower rotation is converted into higher revolution and given to dynamo. Then dynamo generates electricity which is further used for many applications.

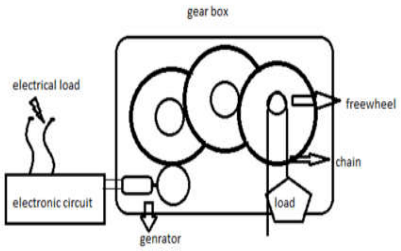

Figure 2: Block diagram of system

Figure 3: Power generation of system by gravity

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5. Advantages

- No fuel consumption.
- Less Maintenance cost.
- Less time for installation.
- No air Pollution & Water Pollution.
- Less initial Cost.

6. Conclusion

By such arrangements, the gravity power generation mechanism not only has the advantages such as: more simplified structure, higher conversion ratio and more environment-friendly but only needs a little starting energy to perform a long time energy conversion and stable energy output. The other main advantage of the gravitational power generation mechanism is that it can independently generate electricity and it can be parallel connected to the wind power and the solar power generation systems to generate electricity.

References

[1] Vidhan Srivastava, Sumit Chaudhary, Shailesh M. Pandey, Kulvinder Rana“Gravity Power Generation” IJMRS’s International Journal of Engineering Sciences, Vol. 01, Issue 03, September 2012.
[2] George O. Schur, “Gravity actuated thermal motor”, United States Patent number: 4121420.
[3] Richard P Feynman, Robert B Leighton, Matthew Sands “Lecture on physics”, Narosa book disributirs ltd., volume 1.
[4] Chun-chao Wang, Yuh-suiang Wang “Gravity Power Generation Mechanism” United States patent number: 20090115195 A1 App No.11/935,228 May, 2009.
[5] Victor Rene AnguloValpreda, Mayra Palomares Coral US 8344537 B2 App No. 12/668,757 January, 2013.
[6] David Hatcher Childress Anti-gravity and the Unified field Adventures Unlimited press Pages: 6, 38, 106, 204, 545 May, 1990.