

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 2, February 2020

Fabrication and Characteristics Analysis of Gracity

S.Parvathi Sankar^{1*}, N.Suresh¹, Palani Bharath.M¹, K.Shanmugam¹, G.Vairamani², K.Robinston Jeyasingh²

Final year Students, Department of Mechanical Engineering, Francis Xavier Engineering College, Tirunelveli,
Tamil Nadu, India

Professor, Department of Mechanical Engineering, Francis Xavier Engineering College, Tirunelveli, Tamil Nadu, India

*Corresponding author

ABSTRACT: Even today, after advancement of science and technology, more than 1 billion people do not have access even to basic electricity. That is almost 1 among every 5 people. These people use other costly and harmful resources like kerosene to light their homes. Gravity being one of the fundamental forces of nature, is available everywhere across the Earth. Currently it is a dream to meet all energy requirements of the world. But when we have a light that gives free, clean energy at least the basic requirement of millions of people will be fulfilled. The overall setup of gravity light can be operated indoor just by hanging some weight to gear train which in turn rotates generator which generates light. The gravity light requires only initial investment and no running cost.

KEYWORDS: DC Motor, Electricity Generation, Gear Train, Gravitational Energy, Sustainable.

I. INTRODUCTION

The gravitational based power generation is an emerging field in the powerplant engineering, and various researches are being done to implement a system which can produce electricity only through gravity and our project is a concept that the potential energy being produced by gravitational pull can be utilized into electricity generation by converting the potential energy into kinetic energy and further into electrical energy

II. EXPERIMENTAL

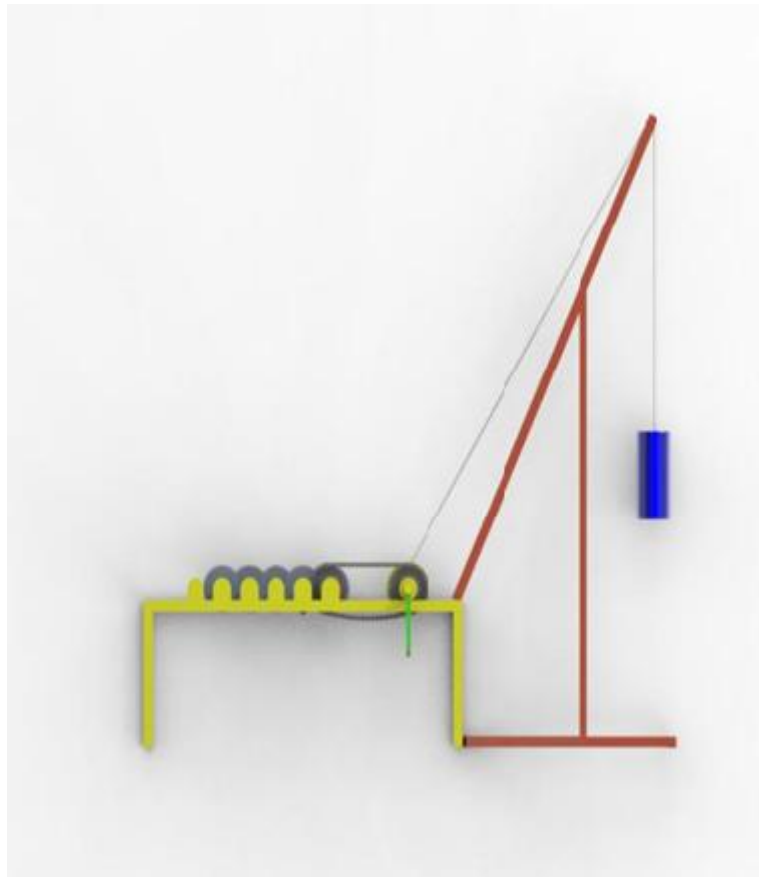
Electricity generation is the process of generating electric power from sources of primary energy. For electric utilities in the electric power industry, it is the first stage in the delivery of electricity to end users, the other stages being transmission, distribution, energy storage and recovery, using the pumped-storage method.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 2, February 2020



III. RESULT

The lifting was simplified by increasing the length of the handle, by increasing the length proportionally the torque requirement is reduced. And for the disengagement of gear arrangements, the sprocket and chain arrangement from the basic bicycle which is incorporated in the system to reduce the effort of lifting the mass. And so, this system was selected.

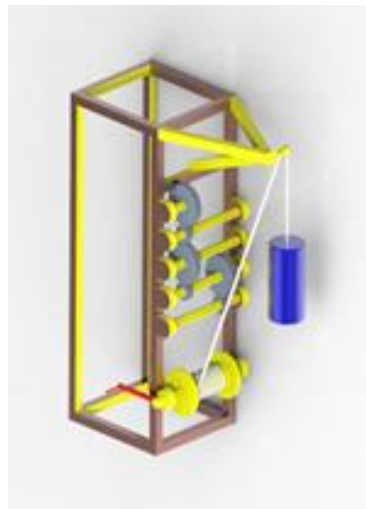
International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 2, February 2020

IV. PROJECT LAYOUT



V. PRINCIPLES

The hand crank must be initially rotated to setup the mass at a required potential level. To simplify the manual work done to the system, the radius of the hand crank is increased to reduce the effort to be made to rotate and thus the heavy mass in a stress-free manner. Drum and pulley along with the free wheel (sprocket and chain) arrangement is provided to increase the mechanical advantage by reducing the mechanical effort given to the system to reduce the mechanical work manually given to the system.

After setting up the load at the required datum head level, the mass is set to freefall due to its own acceleration due to gravity. The datum head provides the potential energy to the system, and when the mass is set to freefall the mass gives a kinetic energy to the system with a large amount of torque. The torque is then converted into speed (rpm) by incorporating a speed increaser system.

The end gear's shaft is coupled with a gear motor which acts as a generator. The generator obeys the Faraday's first law which states that, "when change in magnetic field cuts the coil, emf is induced" and thus electricity is produced in this system.

MERITS:

- Just a work of lifting a load for 5 seconds we can light up a room for more than 5mins.
- The source of power generation is constant all over the globe.
- It's easy to maintain and replacing of parts.
- It is cost efficient.
- The installation process is easy and simple.

APPLICATIONS:

- This can be the replacement to the traditional kerosene lamps and candles used to light up the homes.
- In modern age homes it can have a place in toilets where the power requirement time is less and the period of generation is also less.
- It will be a replacement to the traditional renewable energy resources such as solar and wind powerplants.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 2, February 2020

- It may be a game changing one for those who are interested in clean and sustainable energy to make this world a better place to live in.

VI. JOURNAL PAPER

TITLE: GRAVITY LIGHT IN NIGERIA

AUTHOR: Martin Riddiford, Jim Reeves.

The above illustrated literature is about the solution for the problems faced by the Nigerian lower-class people due to the abundance of electricity because of which they are using kerosene lamps to light up their homes which's cost varies with the necessity and is a pollution forming content and also cause asthma and other breathing issues to the people and children having the usage of kerosene lamps.

Their interest in the field of mechanical as well as the electrical engineering and their interest towards providing electricity even to the lowest grade of people on the environment made them to conclude to the solution of the gravity light. The new innovative concept in the field of powerplant engineering as well as the renewable energy resources which deals with power generation purely through gravitational pull where there is no source of pollution forming content and no cost for power generation.



TITLE: DESIGN AND FABRICATION OF GRAVITY POWERED LIGHT

AUTHOR: Chun-chao Wang, Yuh-suiang Wang.

In the time line of the innovation of the gravity light, the innovation of the mechanism for the gravity light is mile stone and it was innovated by the Japanese scientists Chun-Chao Wang Yuh-Suiang Wang. The mechanism for quite simplified from the previous generation of gravity light, which is having the similar type of operations involved to make power generation. The input load for the system was also reduced in a tremendous amount in 1:12 ratios. The simple mechanism consisted of the basic mechanical components such as the bicycle wheel, chain, sprocket, belt, pulley, frame and generator for the power generation.

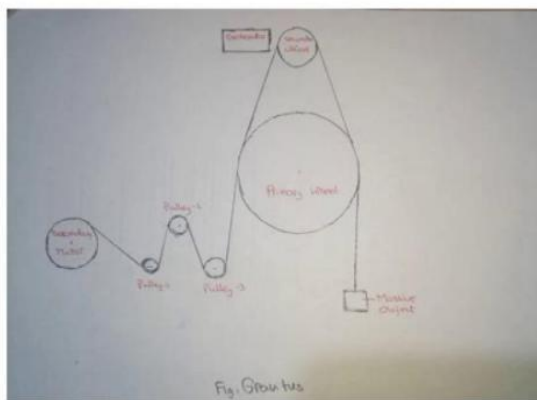
International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 2, February 2020

Gravitus



TITLE: CHANGING PERSPECTIVE: GRAVITY LIGHT

AUTHOR: PankajGode, AnkitJadhav, KalpeshGardi, S.R Bhandari.

We think we live in modern world but there are still areas which have limited or no supply of electricity. Most of this area is located in mountains where we cannot provide electricity generated from tidal, hydroelectric, thermal energy by grid connectivity as they are situated in very remote places. They still depend on kerosene lamp which we consider as obsolete. So how to provide electricity in such places? You might think of solar or wind energy. But the problem with solar energy is it varies from places to places which are same with wind energy. So we've to think a better alternative to get rid of this question and which is also viable.

TITLE: GENERATION OF ELECTRICITY USING GRAVITY

AUTHOR: PrathameshNatu, Sameer Nadkar and AbhishekBadgujar

Even today, after advancement of science and technology, more than 1 billion people do not have access even to basic electricity. That is almost 1 among every 5 people. These people use other costly and harmful resources like kerosene to light their homes. Gravity being one of the fundamental forces of nature, is available everywhere across the Earth. Currently it is a dream to meet all energy requirements of the world. But when we have a light that gives free, clean energy at least the basic requirement of millions of people will be fulfilled.

REFERENCES

1. Haus, H.A. and Melcher, J.R. (2014) Electromagnetic Fields and Energy. (Massachusetts Institute of Technology: MIT Open Course Ware).
2. Arumugam, D.D. (2011) Position and Orientation Measurements Using Magneto-quasistatic Fields. ProQuest Dissertations and Theses, Order No. 3516108, Carnegie Mellon University, Pittsburgh, 159.
3. Bloomer, T.M. (1948) Westinghouse Industrial Electronic Reference Book, Chapter 24. John Wiley & Sons, Inc., New York.
4. Bullard, S.E. and Gellman, H. (1954) Homogeneous Dynamos and Terrestrial Magnetism, Philosophical Transactions of the Royal Society of London. Series A, *Mathematical and Physical Sciences*, **247**, 213-278.
5. Maxwell, J.C. (1855) On Faradays Lines of Force. *Transactions of the Cambridge Philosophical Society*, **5**, 180-183.
6. Maxwell, J.C. (1861) On Physical Lines of Force. *Philosophical Magazine*, **90**, 11-23.



ISSN(Online): 2319-8753
ISSN (Print): 2347-6710

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 2, February 2020

7. Maxwell, J.C. (1865) A Dynamical Theory of the Electromagnetic Field. *Philosophical Transactions of the Royal Society of London*, **155**, 459-512.
8. Elsasser, W. (1958) The Earth as a Dynamo. *Scientific American*, **198**, 44-48.
9. Einstein, A. (1960) Relativity, the Special and General Theory. Routledge, London.
10. Seeds, M. (2009) The Solar System. Thomson Higher Education, Belmont, 83