iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** VII **Month of publication:** July 2022

DOI: https://doi.org/10.22214/ijraset.2022.45615

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

An Inexpensive Hybrid Machine for Perpetual Motion

Andrew Warjri[1], Pramod E K[2]
[1]*Department of Aeronautical Engineering,* [2]*Department of Architecture , Acharya Polytechnic*

Abstract: ***In this research paper, we wanted to show that a perpetual motion for the shaft of the machine doesn't require expensive energy sources.The infinite amount of external energy supply is achieved; by designing a machine that uses the freely available natural energy from the surrounding, and this machine must be a hybrid one. This hybrid machine contains a mechanical system, an electrical system, and a switching device. The rotating mass is in the vacuum chamber, it rotates on the bearing supports with the energy obtained from the conservative work done due to gravity, the electrical system uses electrical energy, and this electrical energy is for the magnetic force to repel and attract the rotating mass which is attached, with a permanent magnet at its tip.***

This electrical energy must be from the solar cell to charge the battery for the electrical energy. The switching device is for periodically switching on and off; the timing of switching on and off for the electrical circuit is by sensing the position of the permanent magnet; when it is near the electromagnet or within the magnetic field for repulsive or attractive force. And the outcome of this is the continuous supply of shaft power for perpetual motion of the shaft that is an integrated structure with the rotating mass.

I. INTRODUCTION

When we talk about the perpetual motion machine we know that; an infinite amount of external energy is supplied to cause such a motion. The structural strength of the machine is vital because it should not break when operated for an infinite time. From this motion machine much useful work can be assigned and achieved, especially the energy conversion part. In this research paper, we concentrate on how to extract the crude and natural free form of energy which is available infinitely in the surrounding for perpetual motion by using the hybrid machine.

This hybrid machine, as the name suggests is a combination of two or more system that operates on a different principle. According to the energy input, these systems of the machines operate differently; one works only on mechanical energy, whereas the other works on electromagnetism.

The mechanical system has a shaft integrated with a rotating arm, and at the tip of this arm; a permanent magnet is attached. The shaft rotates to convert the potential energy of the mechanical system mass to kinetic energy, and this mechanical system is supported by the bearings that are attached to the main support. The ball bearings are for friction reduction.

The electrical system with the electrical energy input from the battery is charged by the solar cells and has a supporting stand to support the electromagnet. The electromagnet has a core of ferrous metal and winding. This system is also equipped with a sensor switch to on and off the circuit of the electrical system periodically when the rotating arm reaches the space of the magnetic field of the electromagnet.

II. LITERATURE REVIEW

A. Conversion Of Energy

The first law of thermodynamics clearly states that energy can be converted from one form to another, whereas the second law of thermodynamics identifies the energy loss because of friction.

B. Perpetual Motion Machine

There are different types of perpetual motion machines according to thermodynamics. According to the first one: the body is in perpetual motion only if the external energy is continuously supplied. There is a second type also: from this machine we can understand clearly, that there is always a loss of energy whenever there is friction, so an extra amount of energy must be supplied to obtain perpetual motion.

The third perpetual motion machine indicates that frictionless is impossible to achieve, even though we may try to reduce the friction to avoid the extra amount of energy supplied.

©IJRASET: All Rights are Reserved

C. Conservation Of Mechanical Energy

From this theory, we can conclude about the possibility of converting all the potential energy to kinetic energy and all kinetic energy to potential energy if the friction is zero.

D. Stability

From this theory, we can understand clearly that the stability of any mass depends on its center of mass. By changing the center of mass position from any reference point or axis; its stability change.

E. Centre Of Mass, Moment Of Inertia And The Triple Integration

As per this theory, the rotational motion is always affected by the moment of inertia. It also gives the relationship between kinetic energy and the moment of inertia. The bending moment is directly dependent on moment inertia. From the mathematics of triple integration, we can calculate the center of mass and moment of inertia of any shape, and the limit of integration is very important for accuracy.

F. Electromagnetism

From this theory, we can clearly understand the relationship between magnetic field, current, and magnetic force, and also, we can always convert the current flow to the magnetic field.

III. WORKING PRINCIPAL OF MACHINE

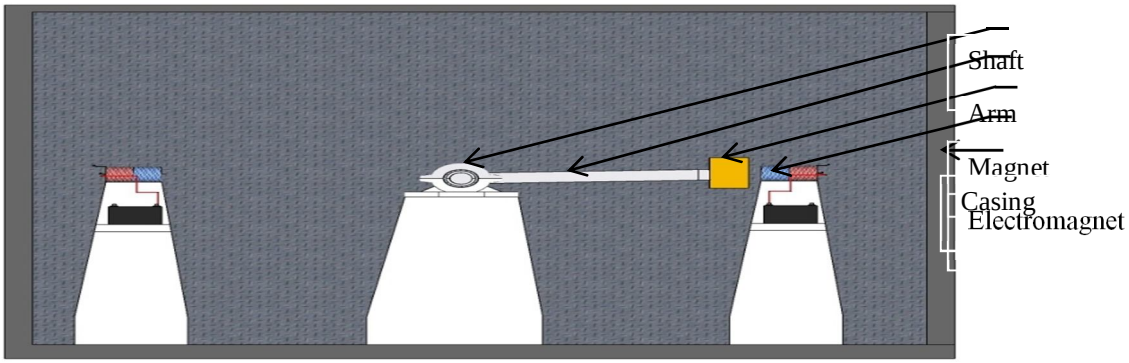


Fig 1. Section of the machine

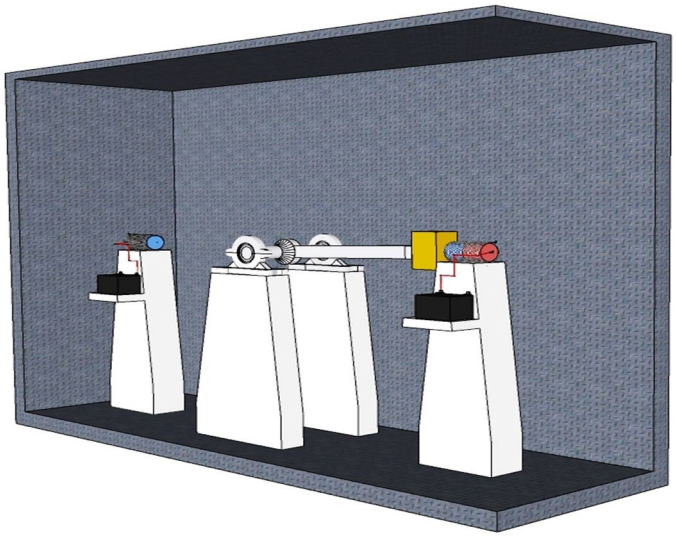


Fig 2. View of the machine

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

IV. WORKING PRINCIPLE

A. Theoretical Working Principle

When we refer to the above diagram, the shaft, the arm, and the permanent magnet is one whole mechanical system. This system will have a center of mass. If we ideally consider the center of mass to be at point A, because of the height; the mechanical system contains potential energy. At point A the center of mass is in static equilibrium condition; now if the center of mass slightly moves in a clockwise direction from point A, it will be in stable equilibrium, therefore, it will start to rotate by converting the potential energy to kinetic energy as stated by the first law of thermodynamics. According to the second law of thermodynamics, the system will lose its energy because of friction, and due to this, the mass's height before and after the rotation will not be the same. Therefore the mass can only travel up to point D, and then it will start to oscillate backward.

$$\Delta KE+\Delta PE=CONSTANT \quad \text{.....(when friction is zero)}$$

From the above equation, if the friction is very negligible then all the potential energy can be covert to kinetic energy and all the kinetic energy can be converted to potential energy, hence the mass's height before and after the rotation must be the same, this means that only a small amount of energy will be required to displace the mass for that very short distance to reach its initial position. This small amount of energy can be from external sources. When the mass can start and end at the same point periodically for an infinite amount of time, this automatically becomes a perpetual machine

B. Practical Working Principle

Just like the hydropower generator or turbine obtained its energy from the flow of water due to the attraction of gravity, this machine also works on the same effect, and the other retraction and repulsion is from the two magnets; one is the permanent attached at the tip of the rotating mass, and the other is the electromagnet which obtained its energy from electrical energy that is supplied by the battery, and the machine is preferably to be in a vacuum because the friction will be minimum. The gravity force will act at the center of mass of the mechanical system, and its location is designed in such a way that it will have the maximum height for the maximum potential energy. Because of the gravity, the mass will free fall, since the air resistance is absent in the vacuum, and this will rotates the shaft.

In this machine, the center of mass will start from one position of stable equilibrium which is of a given height, and moves to another position of stable equilibrium of the same height. In order for the center of mass to reach the same position from which it has started, external energy must be supplied to it; in this machine, the external energy is the electrical energy, and since we need the deflection to change its position, the electrical energy is converted to magnetic force for repulsion and attraction. The friction at the bearing and the support will reduce the total energy of the mechanical system, therefore, an extra amount of electrical energy must be added compared to the energy required theoretically.

To achieve the magnetic work done through a magnetic repulsion force, two magnets of the same pole must face each other along the rotational axis, but one must be an electromagnet. The electromagnet fields must only present at a periodic timing in order to avoid eddy current. Also, the magnetic field of the permanent magnet mustn't cross any point in the volume of the core to again avoid an eddy current. Therefore an electromagnet must only switch on and off periodically using a sensor switch.

V. IMPORTANT CALCULATION

The potential energy of the mechanical system=MgH

Where, M= M1+M2+M3 is the total mass of the rotating mass which included the shaft mass, arm mass, and the magnet

The calculation of the cylindrical mass:

$M = \iiint_{ri}^{ro} \rho r dr d\Theta dz$ (this is for M1,M2)

The calculation of the cuboidal mass:

$M3=lbh\rho$

Since H is the height measured from the center of mass to the datum which is the horizontal tangent of the rotating plane at the bottom. Calculation for the center of mass is required. The structure is symmetric about the Z axis, the location of the center of mass will be along the plane of rotation or in the Z axis. The geometry is regular, therefore

$Z = \sum_{i=1}^{n=3} zi\ \rho i\ Vi\ / \sum_{i=1}^{n=3} MI$

External energy required for the mass to complete the one rotation is again equal to the amount of energy needs to raise the mass at some height, therefore it is the potential energy.

©IJRASET: All Rights are Reserved

If h1 is the final position of the center of mass, when the kinetic energy is totally convert to potential energy, then the extra potential energy required for the center of mass to reach before ti free fall again

PE=Mg(H-h1)

This must be equal to the electrical energy supplied by the solar energy through the battery:

VIt= electrical energy

This electrical energy must be convert to magnetic force F, since we are using solenoid winding for the electromagnet.

F=((NI)2 μ0A)/2g2

This force is acting at the point where the the rotating arm is perpendicular to it, therefore it results into a torque(τ), and the electrical energy is convert to mechanical work done(W)

W= τΘ

From the above equation we can see that the function of mechanical work done is directly a function of torque, but torque is a function of moment of inertia and angular acceleration, also the rotational motion and bending moment is mainly effected by moment of inertia, therefore the calculation of the moment of inertia is also required.

$I=\iiint_{ri}^{ro} r^3 \rho dr d\Theta dz$ this for the cylindrical shape

I=I1+I2+I3

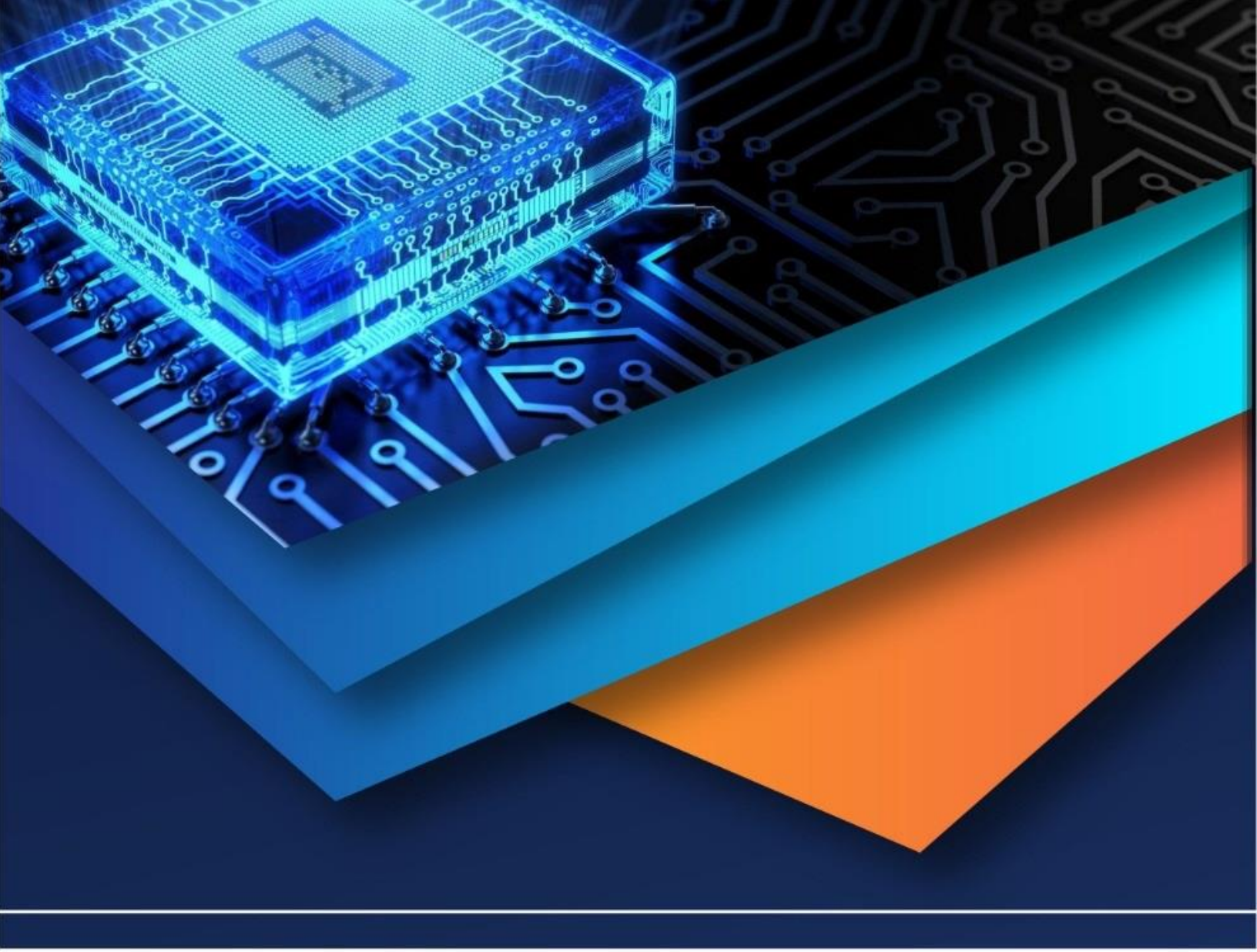
VI. CONCLUSION

We can conclude that a perpetual motion at the shaft is obtainable since the energy supplied is continuous. The shaft mechanical motion is achieved by the supply of potential energy due to gravity. this potential energy is available freely in nature and a small amount of electrical energy can be from a solar cell through a battery. But this perpetual motion is dependent on friction, therefore; the vacuum plays an important role. The specific timing for the switch of the electromagnet is also one of the important requirements.

REFERNCES

[1] Thermodynamics- an engineering approach by Yunus A Cengel.
[2] The Openstax College Physics.
[3] Mechanics of Materials by James M. Gere
[4] Calculus by George B. Thomas, Jr.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)