

Design and Fabrication of Electro Education by on Road Dynamic and Fluids

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Abstract:- This project mainly deals with the production of the electricity in an innovated technique in order to cater to the problem our country is facing in its recent days. This project deals with a unique technique for the continuous production of electricity without any input of any energy. The project deals with the basic theory called as the electromagnetic induction. The electromagnetic induction principle is used in a different scenario and in a different setup for the continuous production of the electricity.

DESCRIPTION

Our project deals with a unique technique for the continuous production of electricity without any input of any energy. The project deals with the basic theory called as the electromagnetic induction. The electromagnetic induction principle is used in a different scenario and in a different setup for the continuous production of the electricity.

We have just innovated the electric generation in a new setup which is used in the normal national high ways for the continuous production of the electricity. The electric generation is mainly depends upon the number of flux lines that the metal could able to cut in case of the electromagnetic induction. We have just used this to a maximum extent in order to improve the electricity generation to the maximum extent.

The force which is acting over the blades of this electric blade is more when compared to that of the force that normally occurs on the wind turbines. Hence this would be a replacement for the present energy crisis.

1. PARTS EXPLANATION

1.1 ELECTROMAGNETIC INDUCTION

- Electromagnetic induction is the production of a potential difference (voltage) across a conductor when it is exposed to a varying magnetic field.
- Michael Faraday is generally credited with the discovery of induction in 1831 though it may have been anticipated by the work of Francesco Zantedeschi in 1829. Around 1830 to 1832, Joseph Henry made a similar discovery, but did not publish his findings until later.
- Faraday's law of induction is a basic law of electromagnetism predicting how a magnetic field will

interact with an electric circuit to produce an electromotive force (EMF). It is the fundamental operating principle of transformers, inductors, and many types of electrical motors, generators and solenoids.

1.2 HYDRO-ELECTRIC GENERATORS

The hydro electric generators are all works on the principle on the electromagnetic induction. The hydro electric generators are all built in the dams and these are all uses the kinetic energy of the liquid flow in the dams for rotating the blades of the turbines therefore the rotation of the turbine blades results in the production of the electric generation by the use of the electromagnetic induction.

The electromagnetic power generation and the process which involved in the typical dam are clearly explained as follows. The power generation is shown in fig 1.2.

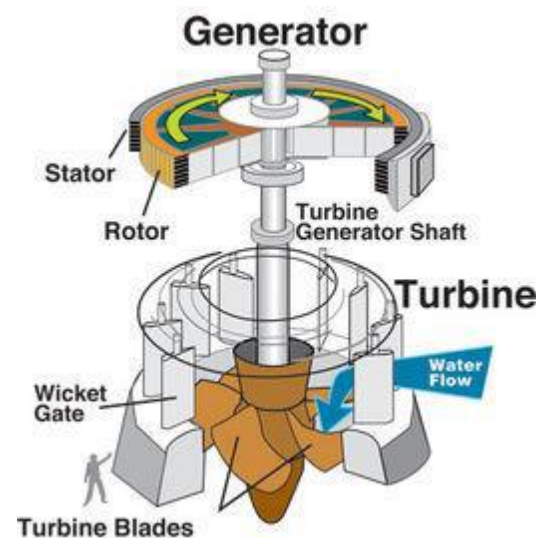


Fig 1.2 Electromagnetic generator

The effectiveness of the turbine are completely depends upon various criteria which includes the area of the blade, the force exerted by the fluid flowing through the blades. The typical hydraulic plant is shown in fig 1.2.1.

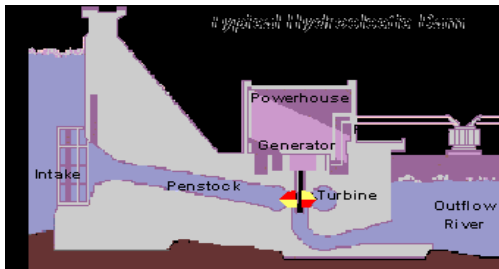


Fig 1.2.1 Typical hydraulic dam

1.3 COMPOSITE MATERIAL

Composite materials (also called composition materials or shortened to composites) are materials made from two or more constituent materials with significantly different physical or chemical properties, that when combined, produce a material with characteristics different from the individual components. The individual components remain separate and distinct within the finished structure. The new material may be preferred for many reasons: common examples include materials which are stronger, lighter or less expensive when compared to traditional materials. The representation of composite material is shown in fig 1.4.

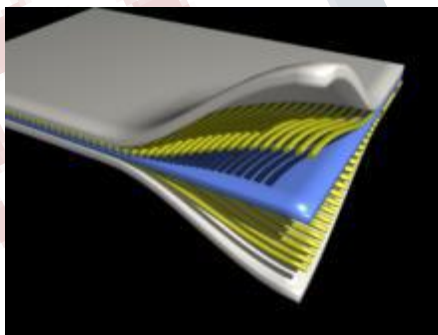


Fig 1.3 Composite material

Typical engineered composite materials include:

- Composite building materials such as cements, concrete
- Reinforced plastics such as fiber-reinforced polymer
- Metal Composites
- Ceramic Composites (composite ceramic and metal matrices)

Composite materials are generally used for buildings, bridges and structures such as boat hulls, swimming pool panels, race car bodies, shower stalls.

1.4 SILICON CARBIDE

The Chemical Formula of Silicon Carbide, which is also known carborundum, is SiC. It is produced by the carbothermal reduction of silica to form an ultra-hard covalently bonded material. It is extremely rare in nature but can be found in the mineral moissanite, which was first discovered in Arizona in 1893.

1.5 VALVES

A valve is a device that regulates, directs or controls the flow of a fluid (gases, liquids, fluidized solids, or slurries) by opening, closing, or partially obstructing various passageways. Valves are technically valves fittings, but are usually discussed as a separate category. In an open valve, fluid flows in a direction from higher pressure to lower pressure.

The simplest, and very ancient, valve is simply a freely hinged flap which drops to obstruct fluid (gas or liquid) flow in one direction, but is pushed open by flow in the opposite direction. This is called a check valve, as it prevents or "checks" the flow in one direction. The representation of one way value is shown in fig 1.5

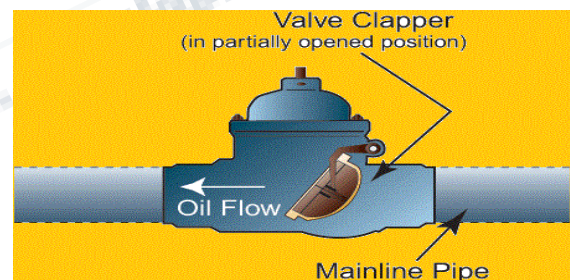


Fig 1.5 One way control valve

Valves have many uses, including controlling water for Irrigation, industrial uses for controlling processes, residential uses such as on / off & pressure control to dish and clothes washers & taps in the home. Even aerosols have a tiny valve built in. Valves are also used in the military & transport sectors.

Valves are found in virtually every industrial process, including water & sewage processing, mining, power generation, processing of oil, gas & petroleum, food manufacturing, chemical & plastic manufacturing and many other fields.

People in developed nations use valves in their daily lives, including plumbing valves, such as taps for tap water, gas control valves on cookers, small valves fitted to washing machines and dishwashers, safety devices fitted to hot water systems, and poppet valves in car engines.

1. WORKING PRINCIPLE

There are lots of projects done in the electric generation. But still those projects are lack in some where that’s why we have narrowed our vision in making some innovation technique or setup in order to overcome those hurdles of generating electricity. Our project mainly involves in improving the power generation to the maximum level by eliminating the lack of proper flow of fluids in the setup. Our innovated setup has got the enough technique to cope up with the proper flow of liquid at any point of time.

There is a huge demand for electricity now a day. We need an alternative setup other than the present day techniques to adopt with the increased demand in power consumption. Hope our innovation would take a lead over the power crisis to shoulder the pains of present day techniques of power generation.

3. EXPERIMENTAL SETUP:-

The entire setup of our idea is given below. The setup consist of the four one way valves, composite bed, rotor connected to the blades, generator. This could be clearly seen from the following diagrammatical representation. The working principle is based on the hydraulic power plant. The ultimate power is produced due to the electromagnetic induction.

The amount of power produced in the generator depends on various factors as discussed earlier. Such it depends on the blade area, load on the blade, rpm produced in the rotor. The voltage produced in the generator also depends on the magnetic field used for cutting the flux lines. The entire idea of our design is shown below in the Figure. The experimental set up is shown in Fig3.1.

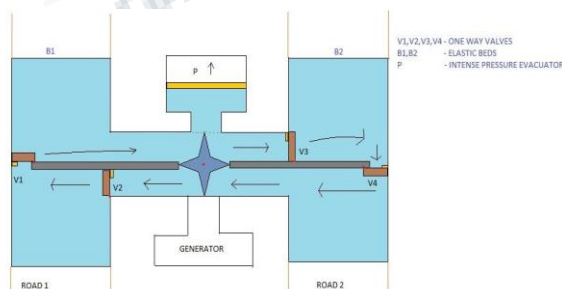


Fig 3.1 Experimental layout

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