WATER WHEEL FREE ENERGY DEVICE

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ABSTRACT *Water wheel is one of the oldest source of power This paper is going to present about the device that takes the advantage of flowing and falling water to generate power and watering of agricultural farms and watering of agricultural farms by using a set of pedals mounted around the wheel It consists of large wooden wheel with a number of buckets arranged on the outside rim farming the driving surface .It has three types – horizontal ,overshot and undershot .It generates at least two kilo watts of power and daily at least 24 kilo watt per hour .In this mechanism water drops down from a water source above onto the wheel .A device with buckets i.e., rotated by moving water converting the potential energy of water into the mechanical movement . As the rotation of wheel pedals will grab the water from bottom onwards to agriculture farm.*

INTRODUCTION: It is a device that converts motive power (mechanical energy) into electrical power for use in an external circuit. Sources of mechanical energy include steam turbines, gas turbines, water turbines, internal combustion engines, wind turbines and even hand cranks. The first electromagnetic generator, the Faraday disk, was invented in 1831 by British scientist Michael Faraday. Generators provide nearly all of the power for electric power grids.

The reverse conversion of electrical energy into mechanical energy is done by an electric motor, and motors and generators have many similarities. Many motors can be mechanically driven to generate electricity and frequently make acceptable manual generators.

He also built the first electromagnetic generator, called the Faraday disk; a type of homopolar generator, using a copper disc rotating between the poles of a horseshoe magnet. It produced a small DC voltage.

Another disadvantage was that the output voltage was very low, due to the single current path through the magnetic flux. Experimenters found that using multiple turns of wire in a coil could produce higher, more useful voltages. Since the output voltage is proportional to the number of turns, generators could be easily designed to produce any desired voltage by varying the number of turns. Wire windings became a basic feature of all subsequent generator designs.

Self excitation

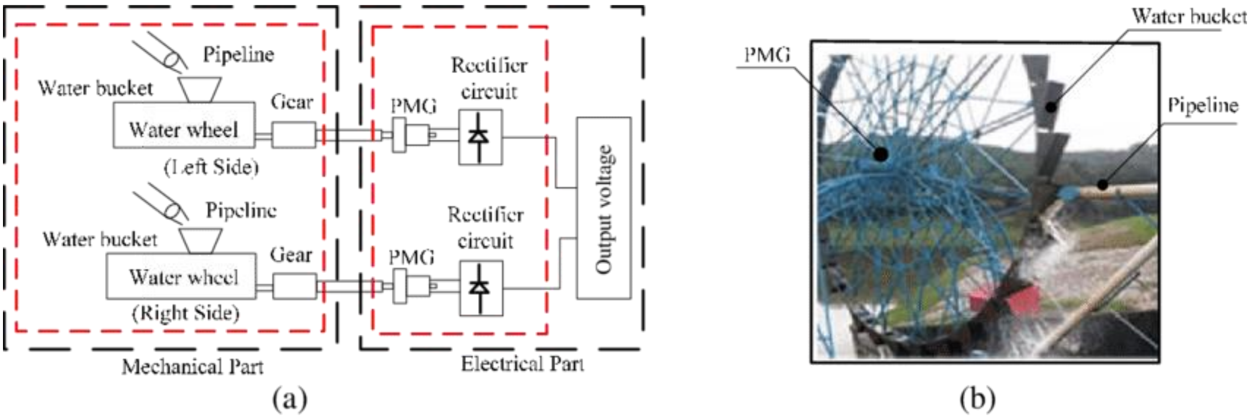
As the requirements for larger scale power generation increased, a new limitation rose: the magnetic fields available from permanent magnets. Diverting a small amount of the power generated by the generator to an electromagnetic fieldcoil allowed the generator to produce substantially more power. This concept was dubbed self-excitation.

When the generator Very large power station generators often utilize a separate smaller generator to excite the field coils of the larger. In the event of a severe widespread power outage where islanding of power stations has occurred, the stations may need to perform a black start to excite the fields of their largest generators, in order to restore customer power service.

Direct current

important class of direct-current generators are the dynamos.—these are electrical machines with commutators to produce (DC) direct current, and are self excited—their field electromagnets are powered by the machine's own output. Other types of DC generator use a separate source of direct current to energize their field magnets.

BLOCK DIAGRAM OF WATER WHEEL SYSTEM



Fig(1)

fig(2)

(Homopolar generator)

A hmopolar generator is a DC electrical generator comprising an electrically conductive disc or cylinder rotating in a plane perpendicular to a uniform static magnetic field. A potential difference is created between the center of the disc and the rim (or ends of the cylinder), the electrical polarity depending on the direction of rotation and the orientation of the field.

It is also known as a **unipolar generator**, **acyclic generator**, **disk dynamo**, or **Faraday disc**. The voltage is typically low, on the order of a few volts in the case of small demonstration models, but large research generators can produce hundreds of volts, and some systems have multiple generators in series to produce an even larger voltage.

Magnetohydrodynamic (MHD) generator

A magnetohydrodynamic generator directly extracts electric power from moving hot gases through a magnetic field, without the use of rotating electromagnetic machinery. MHD generators were originally developed because the output of a plasma MHD generator is a flame, well able to heat the boilers of a steam power plant.

Electric generator may be classified by considerations such as power source type, internal construction, application and type of motion output. In addition to AC versus DC types, motors may be brushed or brushless, may be of various phase (see single-phase, or three phase), and may be either air-cooled or liquid-cooled. General-purpose motors with standard dimensions and characteristics provide convenient mechanical power for industrial use.

The largest electric motors are used for ship propulsion, pipeline compression and pumped storage applications with ratings reaching 100 megawatts. Electric motors are found in industrial fans, blowers and pumps, machine tools, household appliances, power tools and disk drives. Small motors may be found in electric watches.

. **Bearings**

The rotor is supported by bearings, which allow the rotor to turn on its axis. The bearings are in turn supported by the motor housing. The motor shaft extends through the bearings to the outside of the motor, where the load is applied. Because the forces of the load are exerted beyond the outermost bearing, the load is said to be overhung. A bearing is a machine element that constrains relative motion to only the desired motion, and reduces friction between moving parts.

The design of the bearing may, for example, provide for free linear movement of the moving part or for free rotation around a fixed axis; or, it may prevent a motion by controlling the vectors of normal forces that bear on the moving parts. Most bearings facilitate the desired motion by minimizing friction. Bearings are classified broadly according to the type of operation, the motions allowed, or to the directions of the loads (forces) applied to the parts.

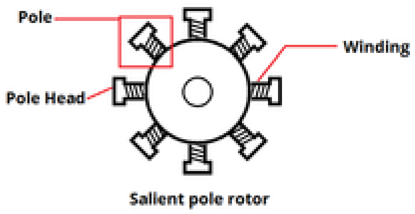
Stator

Depending on the configuration of a spinning electromotive device the stator may act as the field magnet, interacting with the armature to create motion, or it may act as the armature, receiving its influence from moving field coils on the rotor. The first DC generators (known as dynamos) and DC motors put the field coils on the stator, and the power generation or motive reaction coils on the rotor. This is necessary because a continuously moving power switch known as the commutator is needed to keep the field correctly aligned across the spinning rotor. The commutator must become larger and more robust as the current increases.

The stator of these devices may be either a permanent magnet or an electromagnet. Where the stator is an electromagnet, the coil which energizes it is known as the field coil or field winding.

The coil can be either iron core or aluminum. To reduce loading losses in motors, manufacturers invariably use copper as the conducting material in windings.Aluminum, because of its lower electrical conductivity, may be an alternate material in fractional horsepower motors, especially when the motors are used for very short durations.

It consists of a steel frame enclosing a hollow cylindrical core (made up of laminations of silicon steel). The laminations are to reduce hysteresis and eddy current losses.



Fig(3)

Air gap

The distance between the rotor and stator is called the air gap. The air gap has important effects, and is generally as small as possible, as a large gap has a strong negative effect on performance. It is the main source of the low power factor at which motors operate. The magnetizing current increases with the air gap. For this reason, the air gap should be minimal. Very small gaps may pose mechanical problems in addition to noise and losses.

In rotors

The squirrel-cage rotor consists of laminated steel in the core with evenly spaced bars of copper or aluminum placed axially around the periphery, permanently shorted at the ends by the end rings. This simple and rugged construction makes it the favorite for most applications. The assembly has a twist: the bars are slanted, or skewed, to reduce magnetic hum and slot harmonics and to reduce the tendency of locking. Housed in the stator, the rotor and stator teeth can lock when they are in equal number and the magnets position themselves equally apart, opposing rotation in both directions. Bearings at each end mount the rotor in its housing, with one end of the shaft protruding to allow the attachment of the load. In some motors, there is an extension at the non-driving end for speed sensors or other electronic controls. The generated torque forces motion through the rotor to the load.

Wound rotor

The rotor is a cylindrical core made of steel lamination with slots to hold the wires for its 3-phase windings which are evenly spaced at 120 electrical degrees apart and connected in a 'Y' configuration. The rotor winding terminals are brought out and attached to the three slips rings with brushes, on the shaft of the rotor. Brushes on the slip rings allow for external three-phase resistors to be connected in series to the rotor windings for providing speed control.The external resistances become a part of the rotor circuit to produce a large torque when starting the motor. As the motor speeds up, the resistances can be reduced to zero

Salient pole rotor

The rotor is a large magnet with poles constructed of steel lamination projecting out of the rotor's core. The poles are supplied by direct current or magnetized by permanent magnets. The armature with a three-phase winding is on the stator where voltage is induced. Direct current (DC) , from an external exciter or from a diode bridge mounted on the rotor shaft, produces a magnetic field and energizes the rotating field windings and alternating current energizes the armature windings simultaneously.

Non-Salient rotor

The cylindrical shaped rotor is made of a solid steel shaft with slots running along the outside length of the cylinder for holding the field windings of the rotor which are laminated copper bars inserted into the slots and is secured by wedges.The slots are insulated from the windings and are held at the end of the rotor by slip rings.

An external direct current (DC) source is connected to the concentrically mounted slip rings with brushes running along the rings. The brushes make electrical contact with the rotating slip rings. DC current is also supplied through brushless excitation from a rectifier mounted on the machine shaft that converts alternating current to direct current.

Electric machines come in two basic magnet field pole configurations: salient- and nonsalient-pole configurations. In the salient-pole machine the pole's magnetic field is produced by a winding wound around the pole below the pole face.

Commutator

Fig(4)

A commutator is a mechanism used to switch the input of most DC machines and certain AC machines. It consists of slip-ring segments insulated from each other and from the shaft. The motor's armature current is supplied through stationary brushes in contact with the revolving commutator, which causes required current reversal, and applies power to the machine in an optimal manner as the rotor rotates from pole to pole.

In absence of such current reversal, the motor would brake to a stop. In light of improved technologies in the electronic-controller, sensorless-control, induction-motor, and permanent-magnet-motor fields, externally-commutated induction and permanent magnet are displacing electromechanically-commutated motors.

The reverse conversion of electrical energy into mechanical energy is done by an electric motor, and motors and generators have many similarities. Many motors can be mechanically driven to generate electricity and frequently make acceptable manual generators.

Turbine

A **turbine** is a rotary mechanical device that extracts energy from a fluid flow and converts it into useful work. The work produced by a turbine can be used for generating electrical power when combined with a generator A turbine is a turbo machine with at least one moving part called a rotor assembly, which is a shaft or drum with blades attached. Moving fluid acts on the blades so that they move and impart rotational energy to the rotor. Early turbine examples are windmills and water wheels.

gas, steam, and water turbines have a casing around the blades that contains and controls the working fluid. Credit for invention of the steam turbine is given both to Anglo-Irish engineerSir Charles parson (1854–1931) for invention of the reaction turbine, and to Swedish engineer Gustaf (1845–1913) for invention of the impulse turbine. Modern steam turbines frequently employ both reaction and impulse in the same unit, typically varying the and impulse from the blade root to its periphery.

Water wheel

water wheel is a machine for converting the energy of flowing or falling water into useful forms of power, often in a water mill. A water wheel consists of a wheel (usually constructed from wood or metal), with a number of blades or buckets arranged on the outside rim forming the driving surface.

Water wheels were still in commercial use well into the 20th century but they are no longer in common use. Uses included milling flour in grist mills, grinding wood into pulp for paper making, hammering wrought iron, machining, ore crushing and pounding fiber for use in the manufacture of cloth.

Some water wheels are fed by water from a mill pond, which is formed when a flowing stream is dammed. A channel for the water flowing to or from a water wheel is called a Mill race. The race bringing water from the mill pond to the water wheel is a **headrace**; the one carrying water after it has left the wheel is commonly referred to as a **tailrace**.

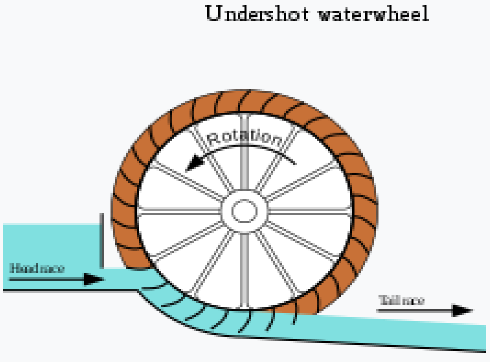
Water wheels come in two basic designs:

- a horizontal wheel with a vertical axle; or
- a vertical wheel with a horizontal axle.

Most water wheels in the and are (or were) vertical wheels rotating about a horizontal axle, but in the Scottish islands and parts of southern mills often had a horizontal wheel (with a vertical axle).

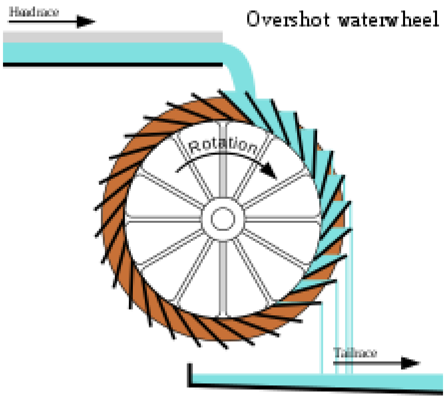
Undershot

Vertical wheel with horizontal axleThe water hits the wheel low down, typically in the bottom quarterDriving surfaces – blades – flat prior to 18th century, curved thereafterWater – large volume, low headEfficiency – about 20% prior to 18th century and later 50 to 60%



fig(5)

OvershotVertical wheel with horizontal axleThe water hits near the top of the wheel and in front of the axle so that it turns away from the head raceDriving surfaces – bucketsWater –



low volume, large headEfficiency – 80 to 90% **fig(6)**

The Basics of Lead-Lag Configurations

Using multiple pumps that run in sequence—also known as running a lead-lag system—is a common way to meet varying pump system demand. Cycling of the lead pump adds reliability in the form of redundancy and increases the lifespan of the system. In a traditional lead-lag system, the lead pump runs until the demand on the system is too great for the pump to meet, at which point the lag pump(s) initiates until demand is met.

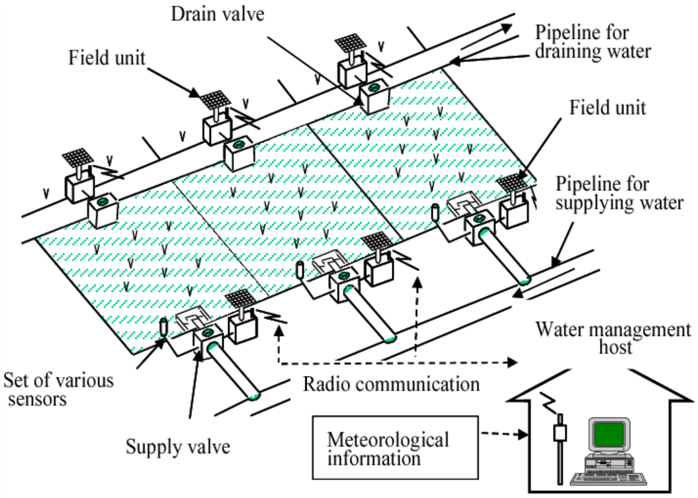
A lead-lag system can consist of any number of pumps, and they are often alternated to ensure even wear. An extra pump in the system for the purpose of redundancy is known as a standby pump. If the pumps are alternated, however, the system will not have a single standby pump. Instead , each of the pumps in the run sequence will take a turn as the standby pump

Lead-lag alternating motor starter with control modules (Courtesy of Franklin Control Systems)

Many applications require a lead-lag configuration. Some configurations use across-the-line starters, while others use variable frequency drives (VFDs). Two general applications—a pressure tank and an irrigation system—exemplify how lead-lag configurations are used, the function of various motor controls in these types of systems and the basic differences between starters and VFDs in lead-lag applications.

.RESULT

water tank is a container for storing water. The need for a water tank is as old as civilized man, providing storage of water for drinking water, irrigation agriculture, fire suppression, agricultural farming, both for plants and livestock, chemical manufacturing, food preparation as well as many other applications.



Fig(7)

Water tank parameters include the general design of the tank, and choice of construction materials. Various materials are used for making a water tank: plastics, fiberglass, concrete, stone, steel, Earthen ponds function as water storage.

CONCLUSION

A "Generating wheel " is a device for spinning thread or yarn from fibres. It was fundamental to the cotton textile industry prior to the Industrial Revolution. It laid the foundations for later machinery such as the spinning jenny and spinning frame, which displaced the spinning wheel during the Industrial Revolution.

In general, the spinning technology was known for a long time before being adopted by the majority of people, thus making it hard to fix dates of the improvements. In 1533, a citizen of Brunswick is said to have added a treadle, by which the spinner could rotate her spindle with one foot and have both hands free to spin. Leonardo da Vinci drew a picture of the flyer, which twists the yarn before winding it onto the spindle. During the 16th century a treadle wheel with flyer was in common use, and gained such names as the Saxony wheel and the flax wheel. It sped up production, as one needn't stop spinning to wind up the yarn.

According to Mark Elvin, 14th-century Chinese technical manuals describe an automatic water-powered spinning wheel. Comparable devices were not developed in Europe until the 18th century. However, it fell into disuse when fibre production shifted from hemp to cotton. It was forgotten by the 17th century. The decline of the automatic spinning wheel in China is an important part of Elvin's high level equilibrium trap theory to explain why there was no indigenous industrial Revolution in China despite its high levels of wealth and scientific knowledge.

Electric spinning wheels or e-spinners are powered by an electric motor rather than via a treadle. Some require mains power while others may be powered by a low-voltage source, such as a rechargeable battery. Most e-spinners are small and portable.

One of the attractions of an e-spinner is that it is not necessary to coordinate treadling with handling the fibre (drafting), so it is generally easier to learn to spin on an e-spinner than a traditional treadle-style spinning wheel. E-spinners are also suitable for spinners who have trouble treadling for various reasons.

WATER SUPPLY TO FIELDS

Irrigation is the application of controlled amounts of water to plants at needed intervals. ... Sources of irrigation water include groundwater, through springs or wells, surfacewater, through rivers, lakes, or reservoirs, or even other sources, such as treated wastewater or desalinated water.

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