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(54) Title: NON-CONVENTIONAL SOURCE FOR POWER PRODUCTION USING STAGNANT WATER

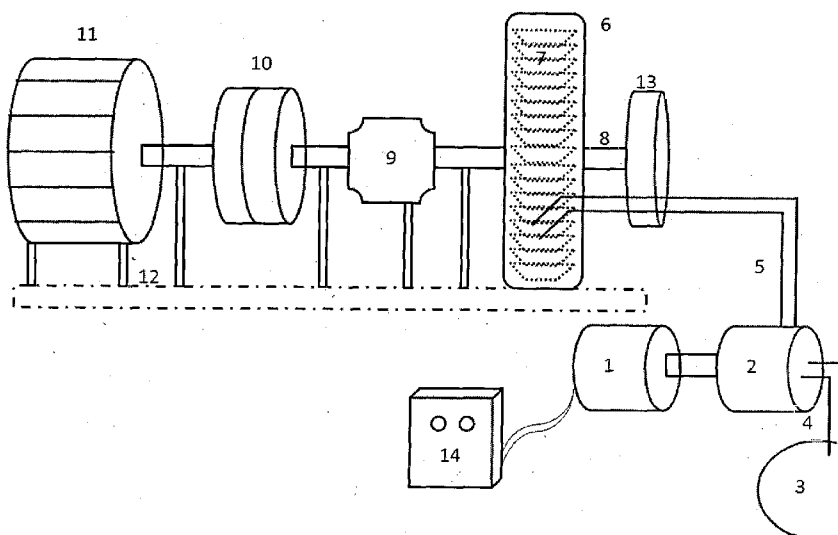


Fig 1

(57) Abstract: A hydro electric generation system that uses electricity from an outer source in the initial stage to produce electricity from stagnant water and becomes self powered after the production starts. The stagnant water used to rotate the turbine is splashed on it in such a way or direction (horizontal or oblique) that requires less input of electric power and give more amount of electric power or electric energy. The stagnant water used in the system can be recycled, and this makes the system easily implemented anywhere or in any place where we get stagnant water easily and round the year.

Specification

TITLE OF THE INVENTION

- 5 Non-conventional source for power production using stagnant water.

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority from the provisional patent application number 2178/CHE/2010 filed on 30.07.2010.

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FIELD OF THE INVENTION

[0001] The present invention relates to hydro power generation systems and more particularly to a hydro electric system that uses stagnant water for its power production and becomes self-powered after the production starts.

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BACKGROUND OF THE INVENTION

[0002] Hydroelectric energy has been used for many years to produce electrical power. It is a system in which kinetic energy is extracted from flowing pressurized water and used to rotate a generator to produce electric power.

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[0003] Many sources of hydroelectric power like river and dams, involve water flowing through the water systems which drive the electrical generators producing thousands of megawatts of power using millions of gallons of flowing water. Such, conversion of the kinetic energy in the flowing water to electric power may include
25 significant inefficiencies and yet still provide an economical and acceptable level of performance. Also these sources involve water flowing through piping and water systems and suffer from the drawback that large dams and large elevation changes are required for sufficient head pressure to produce hydroelectric power.

[0004] Low-head hydroelectric generating systems usually within spillways would effectively utilize the water flowing there through for electric generation purposes, however, during the river flood stages which annually occur such hydroelectric
5 generating systems would interfere with the flow of water through the spillways, functioning as a gate, and seriously affect the flood control purpose of the dam. For this reason, hydroelectric generating systems have not been utilized with low-head dams and spillways of the flood control type in view of the problems arising during high water.

10 [0005] Also, as the size of the hydro-electric power generation equipment becomes smaller, the magnitude of electric power produced also becomes smaller. In addition, the amount of flowing water from which kinetic energy may be extracted becomes less. Therefore, the efficiency of the conversion of the kinetic energy in the flow of
15 water to electric power becomes significant. Since, there is too much inefficiency, only small amounts of kinetic energy are extracted from the pressurized flowing water.

[0006] Therefore the present invention relates to a hydroelectric system which has
20 sufficient head pressure, but does not require large dams or large elevation changes.

SUMMARY OF THE INVENTION

[0007] The present invention is a type of hydro electric system where we use stagnant water (non-conventional source) for power or electricity production. In the
25 present invention, we use an electric motor to pump the available stagnant water forcefully into the turbine in a horizontal or oblique direction which makes the turbine to rotate. The turbine converts the kinetic energy of the water into mechanical energy by rotating at a required RPM(Revolutions Per Minute) and the

gear box increases the mechanical energy or velocity produced by the turbine by three times and gives it to the generator for power production. The mechanical energy produced by the turbine is transferred to the generator by means of fly wheels after it is magnified by the gear box.

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[0008] Further, the water pumped into the turbine is again sent back into the available stagnant water, so that it can be recycled. We can also construct a tank and pump the water into the system and recycle it. This recycling of water makes the system as one that can be easily implemented for power production anywhere or in any place where we get stagnant water easily and round the year. Thus the present system is easier, economical and environment friendly.

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[0009] After the turbine starts to rotate at a certain RPM, and the production in the system has been started, we can use the change over switch to make the unit self running or self powered. That is, change over switch is used to change the out rate current and makes the system self dependent.

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[0010] The sources of stagnant water for the present hydro electric production system are natural ponds or lakes, banks of river, stream, dams, water catchments area of dams, back waters of sea, a constructed pond with a small stream support, flowing water and streams which are live round the year (that is, the water body should not dry).

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[0011] The main object of the present invention is to provide a hydro electric system that uses stagnant water for its power production.

[0012] It is another object of the present invention to provide a hydro electric system that is easier, economical and environment friendly.

[0013] It is a further object of the present invention that the hydroelectric system is self-powered or self dependent.

- 5 [0014] It is also an object of the present invention that the stagnant water used in the system is recycled back so that it can be easily implemented anywhere or in any place where we get stagnant water easily and round the year.

BRIEF DESCRIPTION OF THE DRAWINGS

- 10 [0015] Fig. 1 Schematic representation of the hydro electric system of the present invention

DETAILED DESCRIPTION OF THE INVENTION

- 15 [0016] The non-conventional source for power production by the hydro electric system of the present invention is stagnant water. As the natural high headed water is not available in all the places and in all seasons we use electric motors to pump the available stagnant water forcefully into the turbine in a horizontal or oblique direction which turns the turbine and produces electricity.

- 20 [0017] In an embodiment of the present invention (Fig. 1) the hydro electric system includes an electrical motor (1) fitted to a pump (2) which draws water from a non-conventional source or stagnant water (3). The motor is started by supplying electricity and once the pump is started, it sucks water through a suction pipe (4) from the stagnant water source and splashes it in a horizontal or oblique manner by means of a water inlet pipe (5) into the buckets (7) of the turbine (6) by opening the
25 gate valve.

[0018] Once the water is splashed on the buckets of the turbine it starts rotating and simultaneously rotates the central shaft (8) at a constant speed (the required RPM). The speed of the shaft is further increased or magnified three times by means of a ratio-differentiation gear box (9) such that if the RPM of the turbine is 500 the RPM delivered by the gear box to the generator (11) will be 1500, which is the required speed for the generator usually for an alternator to start the production of electricity. That is, the turbine converts the kinetic energy of water into rotary motion, which is magnified by the gear box and transferred to the generator by means of eccentric or fly wheels (10 and 13). These wheels support the motion of the turbine.

[0019] In an embodiment of the present invention, for the purpose of electricity generation we can use an AC alternator as per the requirement (The alternator used in the present system is with a capacity of 110 kva). It consists of a stator around a rotating rotor, which gets magnetized and starts producing electricity. All the components listed above were assembled on a metal frame (12) in a series for power production. Further, the system consists of a change over switch (14) to connect the electric motor to the production line by withdrawing from the outer source.

[0020] In a conventional hydro electric system water is thrown on a turbine through a penstock from a head. In these systems the pressure head is usually proportional to the height of the water behind the dam or reservoir or the source. Therefore the kinetic energy of the water is converted into mechanical energy to rotate the turbine and thus produce electricity. But in the present invention, stagnant water is pushed forcibly (either horizontally or obliquely) as per the force required to rotate the turbine at a desired speed.

[0021] When the turbine receives the required discharge of high pressure water, the turbine starts to rotate slowly and at the same time the fly wheels (10 and 13) also

start to move giving a mechanical velocity to the turbine. The gear box used in the present invention has a gear ratio of 1:3 which is transformed to the generator by means of fly wheels after which the generator rotates at a constant RPM for power generation. After the power generation has begun, by operating the change over switch (14), the electric motor is connected to the production line making it self-powered or self dependent.

[0022] The present invention of power production has the following advantages: (i) No fuel is burnt for power production, (ii) Not necessary to search for or create high headed water or construction of check dams, since stagnant water is available in all places, (iii) Instant power production system (irrespective of a suitable place) can be constructed near the grid to avoid transmission losses, (iv) The flow of water from the pump can be designed as per the requirement or even the turbine can be designed as per the water flow (both are negotiable), (v) The system of the present invention can also be used in automobiles (using compressed air as the pressure source), locomotives and very easily in ships and streamers (marine engineering).

[0023] Usually hydro electric systems depend upon the force of water and the quantity of water. So by using suitable electrical motors and pumps we create the required pressure and discharge of water to rotate the turbine and thus produce electricity. The more the number of pumps, the production obtained is also more. That is, the more the number of like pumps with uniform discharge (LPS) and uniform pressure (kg/cm²) (PSI) we obtain more force discharge. Thus, every addition in the number of pump creates more and more force discharge.

EXAMPLE

EXAMPLE I

Calculation of power production

[0024] In this method to get head of water (pressure in kg/cm² or PSI) and water discharge, we use heavy electric motors with high discharge and high pressure.

[0025] Suppose if we use 10 numbers of electric pumps each with a capacity of 100HP, 350 feet of head and a discharge of 40 liters/second, these 10 numbers of pumps in a series can create 3500 feet head (1067 meters) and discharge 400 liter/second (0.4 cubic meter/second). Now as per the formula where $\text{power} = \frac{hrgk}{1000}$ (where h is the head of the water flow in meters, r is the rate of water flow in cubic meters, g is the gravitational effect (9.8) and k is the efficiency of the equipment to be considered around 80% (0.8)) an input of 750 kw produces 3346 kw or 3.3 mw. In this method, the addition of pumps is like $P_1 + P_2 + P_3 + \dots + P_{10}$.

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CLAIMS

What is claimed is:

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1. A hydro electric system comprising:

(a) an electric motor which provides the initial power supply to start the system;

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(b) a pump powered by said electric motor to draw water from an available stagnant water source through a suction pipe;

(c) a turbine with a plurality of buckets rotatable around a central shaft, driven by the water which is discharged from the pump through a water inlet pipe;

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(d) a generator rotated by said turbine for the purpose of electricity production;

(e) a gear box interposed between the turbine and the generator to increase the rotational velocity created by the turbine before it is transferred to the generator;

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(f) a change over switch to make the system self powered by withdrawing said electric motor from the outer source and connecting it to the production line immediately after the production starts;

whereby the available stagnant water is discharged forcefully in a horizontal or oblique direction into the buckets of the turbine by means of the water inlet pipe from the pump powered by the electric motor.

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2. A system according to claim 1, wherein the water pumped into the turbine is again sent back into the available stagnant water source to be recycled into the system.

3. A system according to claim 1, wherein the stagnant water is discharged into the buckets of the turbine as per the force required to rotate the turbine at a desired speed.
- 5 4. A system according to claim 1, wherein suitable or suitable number of electrical motors and pumps can be used to create the required pressure and discharge of water to rotate the turbine at the desired speed.
- 10 5. A system according to claim 1, wherein the rotational velocity in the central shaft of the turbine is transferred to the generator by means of fly wheels after it is magnified by the gear box.
- 15 6. A system according to claim 1, wherein the gear box provides a gear ratio of 1:3.
7. A system according to claim 1, wherein the generator is an alternator as per the requirement.
- 20 8. A system according to claim 1, wherein the sources of stagnant water are natural ponds, lakes, banks of river, stream, dams, water catchments area of dams, back waters of sea, a constructed pond with a small stream support and any type of flowing water which are live round the year.
- 25 9. A system according to claim 1, wherein the system of the present invention can also be used in automobiles with compressed air as the pressure source, locomotives and in ships and streamers or marine engineering.

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Sheet 1 of 1

Non-Conventional Source for Power production using Stagnant Water

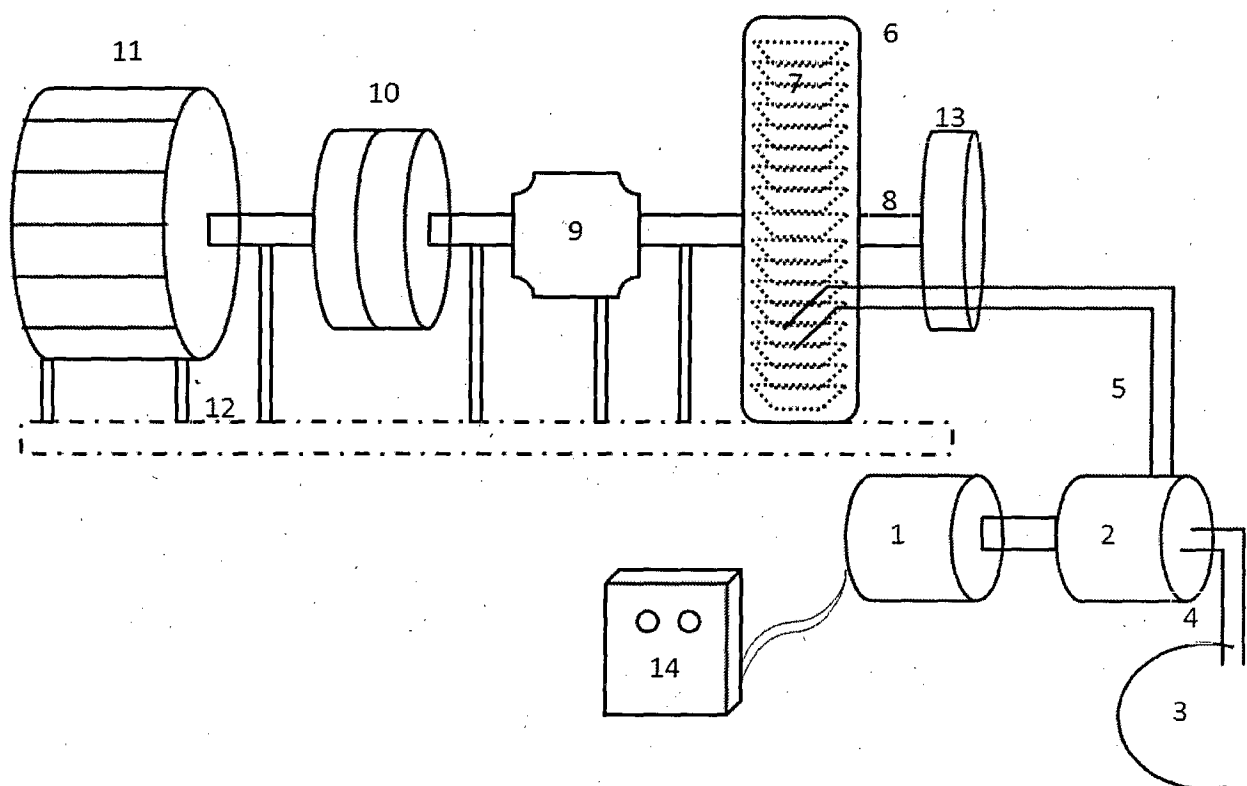
Schematic representation of the hydro electric system of the present invention

Fig 1