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On 21st & 22nd March, Organized by

Sri Krishna College of Engineering & Technology, Kuniamuthur, Coimbatore-641008, Tamilnadu, India

An Experimental Study Energy Multiplication by Using Turbine Setup

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ABSTRACT: This is innovative idea to produce electricity. Now a day's world mostly depends up on the electricity, why means all industry machinery are run by source of electricity. In summer time don't get the wind and water energy properly. So this time electricity demand are occur .so this kind of problem 50% satisfied the project.This system produces two outputs give one input. The system consists two circuits are primary and secondary circuits. To give input energy to the primary circuits and produced mechanical energy. This Mechanical Energy applied to the secondary circuit. The secondary circuits produce the two output energy. The two output energy is work and electrical energy. Finally DC generator produce 4kw and also work are done. This project using small scale industry means get many profits.

Key words: (pelton wheel turbine, kinetic energy, mechanical energy, electricity, work, water tank, pentastock)

1.INTRODUCTION

What is importance of electricity in daily life? , Electricity is an integral utility in modern society, with links to everything from a human's subconscious fear of the dark to the practical need for working illumination in an industrialized world. The entire world essentially runs on electricity, in one form or another ,and while combustibles are essential at the present time as well, their time is nearing an end. Electricity is not only ingrained in modern life, it is also critical for its continued existence, as electricity will soon be the main source of power produced world-wide. All of the modern energy alternatives are focused on creating electricity by renewable means, such as wind turbines, solar arrays and geometric heating .ultimately using steam to turn the large turbines, creating electricity. Electricity is the future but it is also the past and present, as without a continuous power supply, many living with assistance would not be able to cope. Most of the modern medical treatment that are commonplace today, would be extremely risky if not impossible, without modern power and lighting.

Lighting alone is the backbone of civilization, paving the way for extended work capabilities, development and comfortable living .without proper lighting, travel would be a life-threatening process at every step, risking collisions, getting lost frequently and impact with stationary object, even with the modern, high-power headlights on vehicle today.

Electric power run the world, with governments, corporations, and financial institution replying on it daily for communication, commerce and even direct trading. The grip of electric power also extend to the smallest and seemingly insignificant aspects of the average citizen, from mobile communication to the ability to cook indoors. Electric power is and will continue to be. One of the most important energy forms available to the human race as a hole and as fossil fuels steadily run out, more and more dependence upon the it will become the standard but now a day electricity demand are occur in Tamil Nadu, so this kind of problem 50% solved by this project.

2. EXPERIMENTAL METHODS

2.1 CONSTRUCTION:

The constructions have two circuits. The two circuits are primary and secondary circuits. The primary circuits consist of water tank, pump(2HP), pentastock, blade setup. The blade setup has a pelton wheel turbine.

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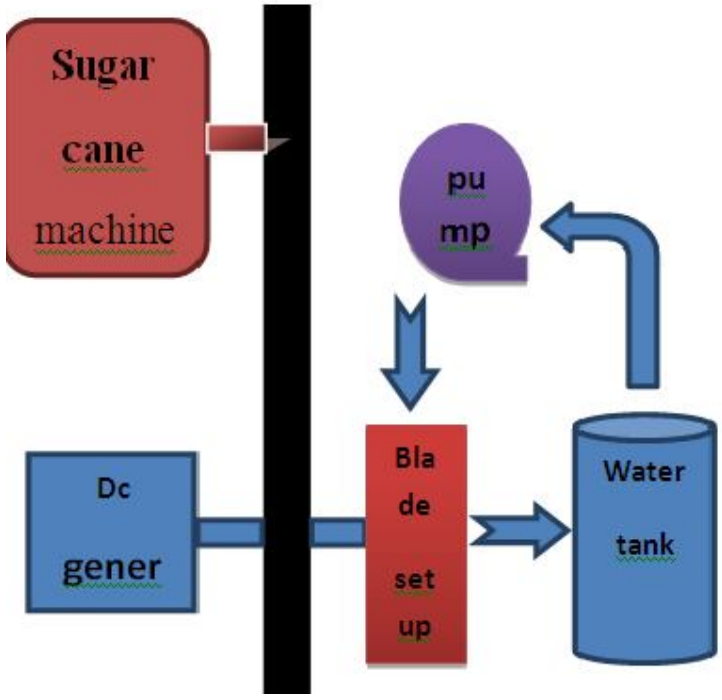
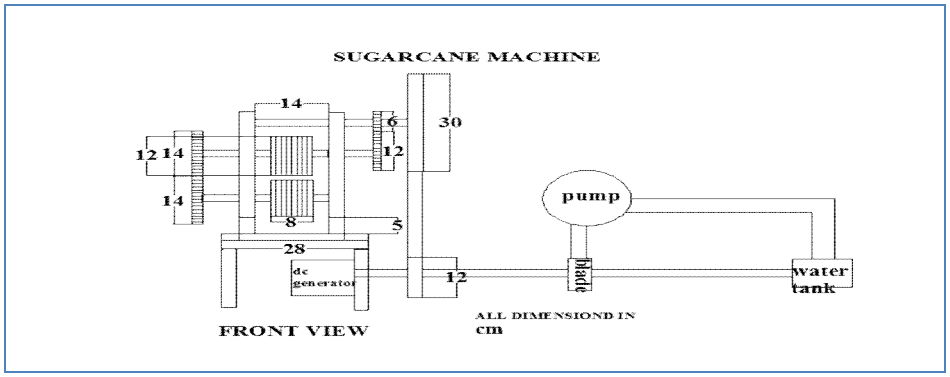


3. 2-DIMENSIONAL VIEWS

The pelton wheel turbine shaft connected to the secondary circuit. The secondary circuits have sugarcane machine, dc generator (5HP). The generator are coupled to the pelton wheel turbine and also sugarcane machine pulley connected to the generator pulley using belt.



The 2-dimensional view of total process has shownbelow..

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4.WORKING

Initially the electric motor (2HP) switch will be ON. The motor will be rotate and also rotate the pump. The Pump suck the fluid in water tank in way of pentastock and discharge the fluid in blade setup. The blade setup having the pelton wheel turbine. The water will strike to the pelton wheel(input energy).

The pelton wheel will be rotate(1750rpm). It has shaft coupled to the dc generator and rotate (1750rpm) and produce electricity (5KW) and also the rotation of dc generator is transmitted to the sugarcane machine pulley through the belt.

The machine run means work are done. The process are continued. It is also called cyclic process.

5.CALCULATION

SPECIFICATION OF PUMP:

1. Diameter of the impeller D_1 : 200mm
2. External diameter of the impeller D_2 : 400mm
3. Speed N : 1200rpm

ASSUME DATA:

1. Angle made by relative velocity at inlet (θ) : 20(deg)
2. Angle made by relative velocity at outlet ($\varnothing$) :30
3. Angle made by absolute velocity at inlet (α) :90
4. Whirl velocity of inlet (Vw_1):0
5. Velocity of flow (vf_1) =(vf_2)

CALCULATION FOR OUTLET VELOCITY OF WATER:

✓ Tangential velocity of impeller inlet(u_1):

$$U_1 = \frac{\pi D_1 N}{60}$$

$$= \frac{\pi \times 0.2 \times 1200}{60}$$

U_1 = 12.56m/sec

✓ Tangential velocity of impeller outlet(u2):

$$U_2 = \frac{\pi D_2 N}{60}$$

$$= \frac{\pi \times 0.4 \times 1200}{60}$$

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U_2 = 25.13m/sec

VELOCITY OF FLOW AT INLET (VF_1):

$$\tan \theta = \frac{vf_1}{u_1}$$

$$= \tan \theta * u1$$

Vf_1=4.57m/sec.

WHIRL VELOCITY AT OUTELT (VW_1):

$$\text{Tan } \phi = \frac{vf_2}{u_2 - vw_2}$$

Vw_2=17.215m/sec

OUTLET VELOCITY OF PUMP:

$$V_2 = \frac{vw_2}{\cos \beta}$$

V_2=20m/sec

WORK DONE:

$$W = \frac{VW_2 * U_2}{G}$$

$$= \frac{17.215 * 25.13}{9.81}$$

W =44.1 NM/N

NOZZLE

$$A_I V_I = A_2 V_2$$

$$\left(\frac{\pi}{4}\right) * (0.80)^2 * 20 = \left(\frac{\pi}{4}\right) * (0.30)^2 * V_2$$

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V2=142.22m/sec

6. CONCLUSION

Thus the experimental setup and that specification are identified. By using the water tank, pump, blade setup, generator, and sugarcane machine produce the electricity. Furthermore we will research the related work and execute the idea for the future work.

7. ACKNOWLEDGEMENT

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