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Domestic Purpose Hydro-Turbine

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Abstract*—This From ever since hydro power works with the power of electrical production world-wide. It provides 20% of electricity with the help of small scale hydro, in a case of "Run-of-River", where there is no dam or hydro storage, which is one of the most effective and environmental friendly source of power. Domestic purpose Hydro-Turbine summarizes the entirely utilization of kinetic source is going in vane in our day-to-day life and that can be used to brighten the darkness in different ways. Our project brings brightness on a very small and easy kind of machine. As we use harnessing, the power present in the flow of water in house hold pipes and change it in to a useable form of power, which can be used to lighten up the homes at darkness and power ails. Thus, creating greener environment by consuming less electricity in public sector.

***Keywords*—— Hydro Power, Water Turbine, Recycle, Eco-friendly**

I. INTRODUCTION

Basically, Impulse and Reaction are two types turbines available. The difference between both the turbines are change of head. In reaction turbine, water impinges on the blade and head swap or pressure falls inside the runner. In Impulse turbine, changing of water head rigorously, through a nozzle into high velocity jet, which hits the bucket at a single position and moves on. The runner passages do not fill completely and the jet flow passes the buckets at constant pressure and the turbine used here is an impulse turbine.

Using these guidelines we sat down and brainstormed a device to harness the energy going waste daily when a family of 4 members fills their overhead water tank i.e. the discharge at the pipe output in the tank has enough kinetic energy to work an impulse turbine and draw back some power to rotate a DC Generator which will then charge a 12V 5amps battery which can power 4 LED light modules enough to light up 500sq.ft of area or 4 rooms of a decent side home.

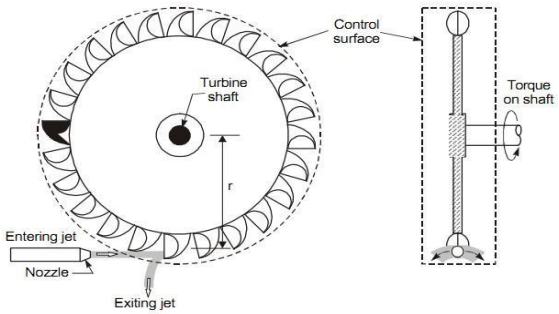

Fig. 1.1 Pelton turbine

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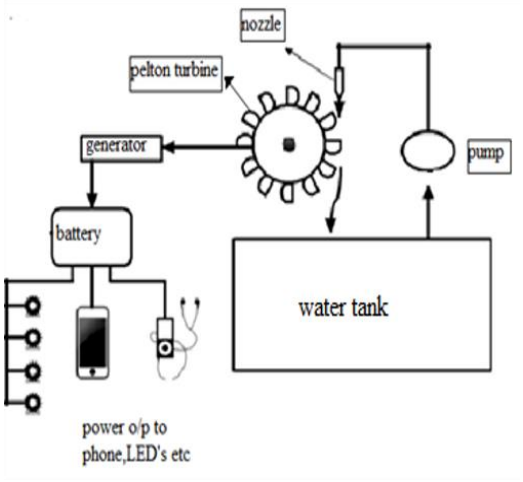

Fig. 1.2 Hydro Turbine Setup

II. HYDRO-TURBINE SETUP

An The water storage tank on a multi storage building can be used for domestic purpose, that water contains potential energy because of created head which will be converted into useful mechanical energy by means of turbine. By using water flow or velocity, A turbine can be moved and electrical energy is produced. By this project will generate DC power by means of DC generator, one end of the shaft is connected to the generator.

A DC generator is attached beside the turbine casing. The output from the generator is connected to the circuit, which will be balancing the varying output and charges the battery smoothly. The output from battery is then linked to the supplier circuit, which distributes the current to LED's, that has high efficiency and brighter power. Each LED individually turned ON or OFF.

III. WORKING PRINCIPLE

The Pelton turbine consists of three basic components a stationary inlet nozzle which converts high velocity fluid and low pressure at exit, from both casing and a runner. Runner has multiple cups, welded on rotating wheel, which is also known as impeller. where the impeller is being housed on a shaft. When the water strikes on the cups the impeller rotates and gain some momentum and thus tends to rotate the shaft and enhance the mechanical energy into electric energy.

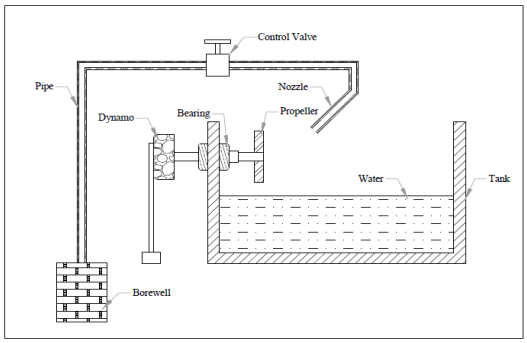

Fig. 3.1 Working Principle of Hydro Turbine

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***IV. SPECIFICATIONS*:**

1) Sheet Metal

2)Motor

3)DC Generator

4)Press fit type ball bearing

5)Mild Steel Polish Bar

6)Elbow1”

7)GI Pipe 6”

8)PVC Pipe 1”

9)Battery (12V 7Amps)

10)Dynamo

11)Turbine

12)Wires

***V .THE MANUFACTURING PROCESS OF THE HYDRO TURBINE*:**

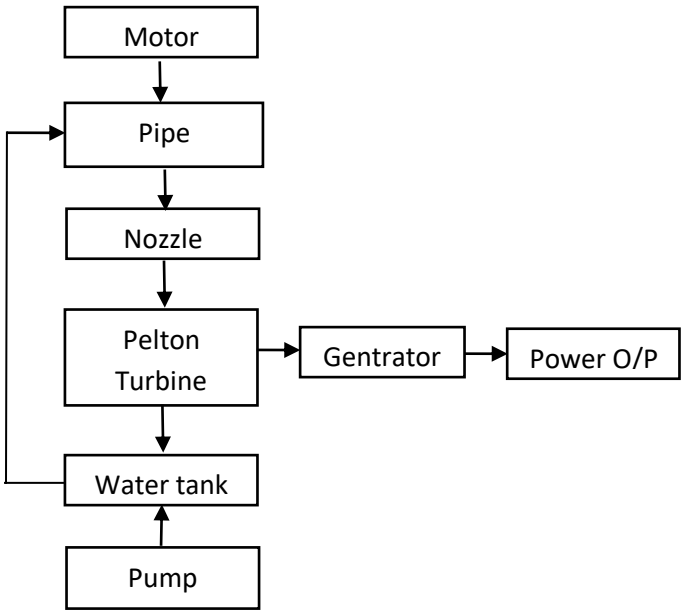

Fig. 4.1 Manufacturing process of Hydro Turbine

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As per shown in above diagram it consists basic process without any complication and error.

This project consists of simple structure and the process to get the final output. Proper working of model is defined by its working process and this model stands for its good quality product and for high efficiency.

VI. RESULT AND PERFORMANCE:

As the result, the domestic purpose hydro turbine has given a maximum output of 7V DC during testing span. The detailed data is shown in graph for better understanding of potential energy of water. As shown in graph, it can be observed that hydro turbine achieves the maximum output voltage of flowing water at the flowrate of 7lit/min. At the lowest flow, for example 1lit/min, the system produces voltage of 5.5V DC by considering another point of view, the value of electrical energy produced by the domestic purpose hydro turbine. T charge battery current becomes important aspects to find the capacity of a system. While there is no load which means there is no connection made to generator. Then rest of the current charges a battery. Note for indication of charging the LED remains ON.

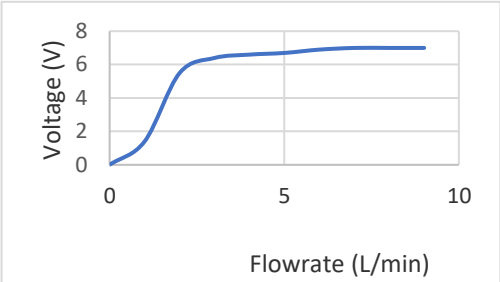

Fig.5.1 Change in Current over Discharge of water

VII.CONCLUSION:

The water from the overhead tank falling on the turbine generates the electricity which is enough to develop the adequacy, related to electric power. Evolvement of renewable energy with a sustainable manner is being used.

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