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DESIGN AND FABRICATION OF HYDRO POWER GENERATION SYSTEM FROM WASTE WATER

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Abstract : The energy in flowing water is used to produce electricity or mechanical energy in Hydro power systems. This work deals with the power generation with the help of dynamo using pelton wheel turbine. This type of pelton wheel turbine run with the help of waste water, drainage water and can also be run with the help of rain water also. This pelton wheel consists of bowl like arrangement for gaining pressure and velocity from water force.Here we are using the automobile dynamo for power generation, which is packed with the minimum water proof for prevent from water damage.

Key Words: Pelton wheel, water force, power generation

1. Introduction

The Pelton wheel is a water impulse turbine. The Pelton wheel is one among the different impulse Pelton design is the more efficient than its counter parts. [4] Pelton wheel construction is in such a waythat when the rim runs at half the speed of the water jet coming , then water leaves the wheel with low speed, taking maximum energy allowing for a very high efficiency.[1-5]

2. Structure of Pelton Wheel Turbine

The Pelton wheel is a universal component used in hydroelectric power production. The main parts of the Pelton wheel are runner, spray pipe, baffle plate, spiral casting, diversion plate.[6-8]

3. Installation Model Of Pelton Wheel Turbine

To improve the speed and flow, [9-13]two or more nozzles are regularly installed on one runnerand Large and medium-sized Pelton turbine use vertical layout, which will reduce the area of power house andit [17-18] is convenient to installed multi-nozzle. [3]Small and medium-sized Pelton turbine will adopts horizontal arrangement, which will simplify the structure, lower cost with convenient installation.[19]

4. Material for Pelton Wheel Turbine

The main material requirements are high strength, abrasion resistance, casting suitability and ability to withstand extensive use in water.[2] Materials generally used are Aluminum, Copper Alloys, Grey Cast Iron, Stainless Steel and Plastic. [20]

5. Power Production From Waste Water

Electricity from waste energy can be [21]usedfor charging mobile phones in restaurants, coffee shops, hotels or resorts which will have large source of waste water . This can be considered as greenengineering as it is recovering waste energy. Apart from charging mobile phones, another application may be to powerto small lights on pathways. [18-19]

6. Acceptance Rate For A New Product

In testing and implementing this as an new idea and product the acceptance rate as a new product may be 68%, the acceptance rate for its use is nearly 96% and for its innovative nature may be between 45% to 55% and for green energy concept it is 95%. [20-21]All this is by various analysis and survey.

7. Material Specification

The demonstrated model is created as per the below given specifications.

Base Rod Dimensions :

Length of base -1200 mm
Bredth of base -600 mm
Height of base -1050 mm
Width of rod -5 mm

Outer Casing Specification:

Diameter of casing -890 mm

Thickness of casing sheet -1.5 mm
Pelton wheel specification:
Diameter of pelton wheel -700mm
Width of pelton wheel sheet -50mm
Total number of cups attached -12
Motor pump specification:
power -1 HP
Capacity -8000 LITRES/HOUR
Hoses :
Size (dia) -25 mm
Length -2 m
Nozzle:
Material - plastic nozzle
Water inlet - 22 mm
Water outlet -8 mm



Figure 1. Model as per the specification.

8. Conclusion

The working of the unit is very much satisfactory and we can avoid the corrosion.It gives steadiness and good performance due to the metal precision. Thedemo cost is high , if it is implemented on the buildings wastage water Pipelines cost will be reduced.If we want more power generation the choice is accepted by the pelton wheel .Turbine for changing the dynamo and nozzle. We can able to change the size andStructure for pelton wheel due to its speed increases. This is the main advantages of the pelton wheel turbine using waste water.

Reference

[1] Brindha G., Emerging trends of telemedicine in India, Indian Journal of Science and Technology, v-6, i-SUPPL5, pp-4572-4578, 2013.
[2] Vijayalatha S., Brindha G., Emerging employee retention strategies in it industry, International Journal of Pharmacy and Technology, v-8, i-2, pp-12207-12218, 2016.
[3] Karthik A., Brindha G., Green revolution conversion of offline education to online education, International Journal of Pharmacy and Technology, v-8, i-3, pp-15393-15407, 2016.
[4] Padminii K., Venkatramaraju D., Brindha G., A Study on Quality of Women Employees in Medical Transcription, Journal of Health Management, v-18, i-1, pp-13-20, 2016.
[5] Gunaraja T.M., Venkatramaraju D., Brindha G., Organizational climate-pharmaceutical professional, International Journal of Pharmacy and Technology, v-7, i-2, pp-8924-8929, 2015.
[6] Padminii K., Brindha G., Venkatramaraju D., Quality work life â€“ In medical field, International Journal of Pharmacy and Technology, v-7, i-1, pp-8437-8446, 2015.
[7] Gopalakrishnan K., Prem Jeya Kumar M., Sundeep Aanand J., Udayakumar R., Analysis of static and dynamic load on hydrostatic bearing with variable viscosity and pressure, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4783-4788, 2013.
[8] Prem Jeya Kumar M., Sandeep Anand J., Gopalakrishnan K., Satheesh B., Anbazhagan R., Computer modelling of a vehicle system, Indian Journal of Science and Technology, v-6, i-SUPPL5, pp-4620-4628, 2013.
[9] Prem Jeya Kumar M., Gopalakrishnan K., Srinivasan V., Anbazhagan R., Sundeep Aanan J., PC modeling and simulation of car suspension system, Indian Journal of Science and Technology, v-6, i-SUPPL5, pp-4629-4632, 2013.
[10] Jeykar K., Srinivasan V., Performance characteristics of twin cylinder Di diesel engine operated with three different non edible vegetable oil blends with diesel, International Journal of Applied Engineering Research, v-9, i-22, pp-7601-7607, 2014.
[11] Srinivasan K., Gopikrishnan M., Analysis of a reduced switch three phase BLDC drive, International Journal of Applied Engineering Research, v-9, i-22, pp-6633-6637, 2014.
[12] Venkatesan N., Srinivasan V., Fabrication and mechanical properties of natural composite materials, International Journal of Applied Engineering Research, v-9, i-22, pp-7743-7748, 2014.
[13] Mustafa Kamal Basha M., Srinivasan V., Fabrication of AlSic Mmc and analysis of its mechanical properties, International Journal of Applied Engineering Research, v-9, i-22, pp-7621-7626, 2014.
[14] Selvam M.D., Srinivasan V., Sekar C.B., An attempt to minimize lubricants in various metal cutting processes, International Journal of Applied Engineering Research, v-9, i-22, pp-7688-7692, 2014.
[15] Valentina D.S., Ilayaraja K., Ambica A., Spatial distribution of groundwater quality in Selaiyur

village, Chennai, India, Ecology, Environment and Conservation, v-20, i-, pp-S173-S179, 2014.
[16] Ambica A., Tamizharasan V., Venkatraman K., Treatment of domestic waste water by electrochemical method, International Journal of Applied Engineering Research, v-9, i-22, pp-5537-5542, 2014.
[17] Gokul V., Ambica A., An experimental study on high strength concrete with replacement of fine aggregate using welding slag, International Journal of Applied Engineering Research, v-9, i-22, pp-5570-5575, 2014.
[18] Divyaa K., Venkatraman K., Design of flexible pavement for an engineering college, International Journal of Applied Engineering Research, v-9, i-22, pp-5576-5581, 2014.
[19] Venkatraman S., Sathish Kumar K., Effect of glass powder on performance of concrete subjected to sulphate attack, International Journal of Applied Engineering Research, v-9, i-22, pp-5636-5659, 2014.
[20] Iyappan L., Maria Subashini L., Landuse change detection in namakkal taluk using remote sensing, International Journal of Applied Engineering Research, v-9, i-22, pp-5699-5707, 2014.
[21] Ajona M., Maria Subashini L., Eco-friendly concrete with rice husk ash, International Journal of Applied Engineering Research, v-9, i-22, pp-5471-5489, 2014.