

A Review Paper on Spiral Tube Water Wheel Pump.

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ABSTRACT

In most of rural area the farmers are facing problem of cut-off of electricity which is used to run the water pumps. For agricultural equipment there is need of continuous supply of electricity. In our study we are found that the spiral tube water wheel pump is effective device or equipment to pump the water which runs on flow of water. Also there is no any pollution from this equipment because of no use of conventional source of energy .Also we have to focus on degradation of conventional source of energy .This equipment can pump required discharge of water at desired head. The discharge of water is totally depending on the size of model of pump.

Keywords: Discharge, Energy, flow , Spiral tube, Water, Water wheel pump.

I. INTRODUCTION

The spiral tube water wheel pump, as per its name it include water wheel. A wheel on which the spiral tube mounted and it rotate due to force of water flow which is act on pedal of wheel. Due to rotation of wheel the spiral tube take water in at one end of wheel which is open is at periphery of wheel. This water passes towards the center of wheel into the coil as per revolution of wheel. From this center we get water discharge as outlet at desired head.

Spiral tube water wheel pump:

The spiral tube water wheel pump is works on principle that, “The water energy is converted into mechanical or kinetic energy and again kinetic energy is converted into water energy”.

Spiral tube is a pipe which wound over array or scoopsof wheel and to generate coiled shape. It has simple in design to develop spiral tube water wheel pump and the shape of coil is manually generated. To increase head pressure each coil of the tube supp. As the paddles rotate the coil of poly pipe above the water, the lower part is immersed. The open end of the coil takes a small ‘gulp’ of water every time it rotates or ts.



Fig. spiral tube water wheel pump



The spiral pump a high lift slow turning pump Presented by peter tailor.[1]A 6 foot diameter wheel with 160 feet of 1-1/4 inch inside diameter flexible polyethylene pipe is able to pump 3,900 gallons of water per day to a 40 foot head with peripheral speed of 3 feet per second in 13 no. of coil. If the inlet coil takes in half its volume in both air and water, when maximum pressure is developed by the helical pump, the final cumulative pressure head in the discharge coil will be substantially equal to the coil diameter. A helicalWirtz pump can apparently only pump to a limiting head of 54 feet.

Study Of Inclined Water Wheel Pump Presented By JSS Polytechnic Mysore.[2]In that paper he make a different type of two models whose outer coil diameter 1000mm and 800mm. and its pipe diameter is 18mm & 36 mm. By this parameter he take tastes and conclude. The higher size of coils more effective. It can work better as low head low discharge pump.

Manually Operated Spiral Tube Water Wheel Pump ByRajendraMane College of Engineering and Technology &Devrukh.[3]In this paper they says when wheel diameter is 58.5cm and pipe diameter $\frac{3}{4}$ inch and taking test at various speed. Its discharge is maximum when speed of wheel in between 25-35rpm.they said that the size of wheel and applied torque is affectson Discharge and Head.

Designing of spiral pump for irrigation presented by L.C.A. Naegel, J.G. Real, A.M.Mazerado.[4]He construct three model whose wheel diameter is 2.5m, 4m , 5m, and he tests on canal which is 3m wide whose water depth is 1.2 to1.6m. Its velocity is 1.59m/sec. at that time the discharge is depend on speed of pump also revolution of pump vary when water come into the spiral tube.

The Story Of Water Wheel Presented By Peter Morgan.[5]They make one pump whose diameter of wheel is2 m. Length of pipe is 20m and 25 mm in diameter. It discharge is 1.3 liter per turn. It shows the result when number of coil is6 the head developed is8 m. When number of coils is 4 then head developed is 6 m.And when number of coil is 2 then head developed is 4 m.Readings taken on second wheel pump whose diameter of wheel is 4 m and it has 2 numbers of coils and each side has 3 spiral. The pipe diameter is 50mm this wheel results that 4752 liters of water could be delivered to axle level per hour and 3697 litters of water could be delivered per hour to a height of 8 meters above the water level. They measured a canal flow rate of 1m/sec., canal width of 1.93meter; number of wheel paddles was 16. The paddle size was 600mm X 600mm.The wheel turned at 4.2 revolutions per minute when water was delivered at axle level and 3.21 revs/min when water was pumped to 8m.

III. CONCLUSION

- In our study we are found that the spiral tube water wheel pump is effective method to lift the water from flow.
- It can works continuously without any external source of energy.
- In minimum cost we will make this equipment.
- The parameter like Head, Pipe size,Number of coil affects on discharge of pump. Also the weight of wheel, Size of blade Flow velocity affects on revolution of spiral tube wheel.
- The equipment is applicable where natural flow is available.



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