FABRICATION OF WATER PUMP TO LIFT WATER FROM WELL

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ABSTRACT

In rural and undeveloped areas where there is no power grid and more water is needed for agriculture purposes and human uses, the choices for driving water pumps are usually diesel. There are very distinct differences between the two power sources in terms of cost and reliability. This project presents an economic analysis of diesel and PV water pumping systems for irrigation purposes. According to the location parameters, the required water demand, unit cost of different components and fuel cost. The study considered three systems for water pumping; PV only, hybrid PV-Diesel and Diesel only. The study showed the advantages of use photovoltaic energy over that of the diesel generator in terms of the net present cost and the cost of energy. It also concluded that diesel pumps are typically characterized by a lower capital cost but a very high operation and maintenance cost. Solar is the opposite, with a considerably higher capital cost but very low ongoing operation and maintenance costs.

INTRODUCTION:

Water-lifting pump is used to lift water to a height that allows users easy access to water. Water Lifting Pump is a machine or mechanical equipment which is required to lift water from low level to high level or to flow water from low pressure area to high pressure area or as a booster in a piping network system. Principally, pump converts mechanical energy of motor into fluid flow energy.

Why we Selected "Fabrication of Water pump to lift water from well" for project?

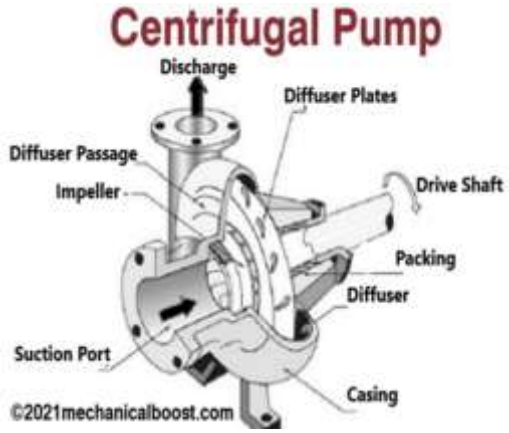
In many areas, a residential water pump is necessary at home to have a steady flow of water for domestic purposes. Whether you need a good pressure for a shower, getting water from a bore well, or even watering a lawn, a home water pump can make it happen. It saves electricity and time too.

Basic Principle or Concept:

All pumps use basic forces of nature to move a liquid. As the moving pump part (impeller, vane, piston diaphragm, etc.) begins to move, air is pushed out of the way. The movement of air creates a partial vacuum (low pressure) which can be filled up by more air, or in the case of water pumps, water. The working principle of a water pump mainly depends upon the positive displacement principle as well as kinetic energy to push the water. These pumps use AC power otherwise DC power for energizing the motor of the water pump whereas others can be energized other kinds of drivers like gasoline engines otherwise diesel.

LITERATURE SURVEY:

The Zürich pewterer H.A. Wirtz invented the pump in 1736. The first published description and mechanical analysis was written by one JH Ziegler twenty years later, in 1766, with Wirtz' consent. Wirtz' original pump was powered by a stream wheel in the Limmat river, to raise water for a dye house.



Construction:

- The most basic components include the hub/pulley, bearing, body/house, seal, and impeller.
- The Hub or Pulley. The water pump's pulley is designed to transfer the drive belt's movement into the bearing spindle.
- Spindle bearing. The bearing comes next in line after the pulley.
- Body.
- Seal.
- Impeller.
- Hub

WORKING:

The working principle of a water pump mainly depends upon the positive displacement principle as well as kinetic energy to push the water. This pump can be energized by diesel engine.

ADVANTAGES:

- Small in size, space saving & less capital costs.
- Easy for maintenance.
- No danger creates if discharge v/v is closed while starting.

LIMITATIONS:

- Extra priming P/P requires.
- Cannot be able to work high head.
- Cannot deal with high viscous fluid.

CONCLUSION:

This project work has revealed that there are multiple suitable locations where this system can be installed. Water pumps meet the water needs at both commercial and domestic levels. More technological innovations and automation in this field of powered water pumping can lead to more efficient and reliable system.

REFERENCES:

[1] https://www.theprocesspiping.com/introduction-to-pumps/

[2] https://www.google.com/search?q=Basic+Principle+or+Concept+water+pump&oq=Basic+Principl 1 Basic Principle or Concept (e+or+ Conce pt+wa ter+pu mp+&aqs= chrom e69i57 j33 i22i2 9i3 0.5 8 56j0j15& sourceid=chrome&ie=UTF-8

[3] https://www.elprocus.com/water-pump-types-and-applications/

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