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Generation of Hydroelectricity By Sea Waves

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Abstract :. *Oscillation Wave Column (Owc) is generation of electricity and most popular categories of wave energy device. They work on the natural wave action i.e alternate compression & decompression of Trapped Air to generate electricity. In the view of rising population & more consumption of electricity, alternative thinking for generation of electricity for future use is essential. In recent years the application of generation of hydroelectricity (By OWC) in most of the country is widely acceptable. The Main objective of present research work is to provide & popularize the simple, feasible, ecofriendly, renewable source for generation of electricity. OWC technology in such a type of system, which hardness energy from oscillation of seawater into chamber & converts wave energy into electrical energy with low energy impact.*

Keywords - *Hydrology, Hydraulics, Owc, Chamber, Turbine, Energy Conveter.*

I. INTRODUCTION

The demand and dependence of human on energy resources consumption is at the peak level. Majorly the energy resources can be classified as renewable and nonrenewable energy sources. The non-renewable sources can be more appropriately termed as exhaustible sources as these are depleting at an alarm rate. Researchers have shown the major fossil fuels sources namely oil, coal and gas would deplete in another 35, 107, 37 years respectively accounted from 2009 Around 1.4 billion people still lack primary access to electricity, of which around 80% of this community comes from rural divisions]. These concerns have raised a demand for sustainable energy resources which would be practically inexhaustible. Major of these sources include solar energy, wind energy, ocean energy, hydro energy, bio fuels etc Wave energy converters (WECs) are used to harness wave energy. Based on their working principle, wave energy converters are classified as attenuators, surface point absorbers, oscillating wave surge convertor, oscillating water column, overtopping devices and submerged pressure differentials Among wave energy converters column, oscillating water column (OWC)is the widely studied type of wave energy converters . Oscillating water device harnesses wave energy using oscillation of water inside an enclosed chamber due to wave action.

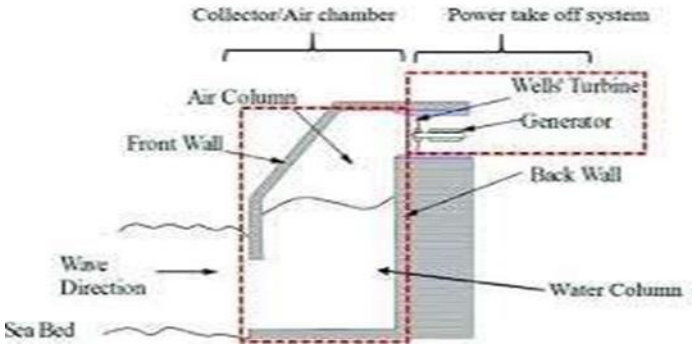
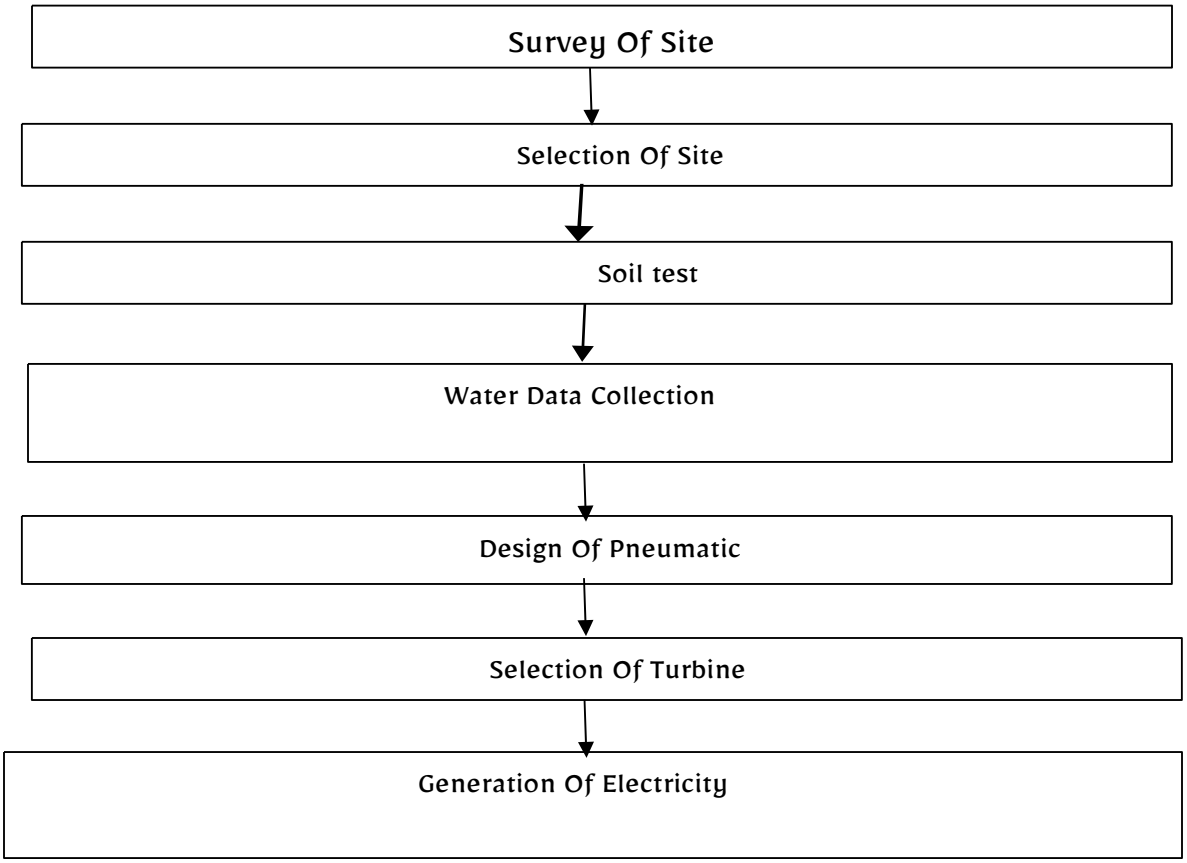


Fig.1.1 Oscillation Wave Column

. Oscillating water column device harnesses wave energy using oscillation of water inside an enclosed chamber due to wave action. An OWC consists of two essential components, an air chamber and a power take off (PTO) system as shown in Figure-1. Air chamber, also known as collector chamber, is a partly submerged hollow assembly made up of concrete or steel. The air chamber transforms wave power into pneumatic power in the form

of air flow, which is produced by the oscillations of the water column. The power take-off system (PTO) system of an OWC consists of a turbine and a generator. The alternating air flow passing from orifice to turbine causes it to rotate, which is further connected to a generator to produce electricity OWCs

I. METHODOLOGY



The Sea water was collected in 1 liter bottle from the beach. The water was from the waves coming to the shore. Various test was conducted on Sea water are pH, Hardness, etc. These test was conducted to known properties of Sea water before design of Owc. The soil sample were collectedfrom the site. The soil was having a mixture of sand, gravel, Silt. 3kg of sand was taken and tested. Various test was conducted on Soil are Sieve Analysis, Plastic Limit Etc. These test were conducted to know the properties of Soil.

II. RESULTS

3.1 RESULTS OF TEST OF SEA WATER SAMPLE

Sr. No.	Parameter	Value
1.	Ph	7.8
2.	Turbidity	667.3 NTU
3.	Hardness	580mg/l
4.	Dissolve d Solids	6800 mg/l

3.2 RESULT OF TEST OF SOIL SAMPLE

SR.NO.	PARAMETER	RESULT
1	PARTICLE SIZE	0-60% GRAVEL 2-97% SAND 3-45% SILT
2	LIQUID LIMIT	49%
3	PLASTIC LIMIT	24%
4	PLASTIC INDEX	25%

3.3 RESULT OF WAVE DATA COLLECTION

For June July
Average Wave Height:- (0.5*23+1*28+1.5*18+2*10+2.5*6+3*2+ 4*1+4.5*1)*(1- 0.09)=1.198m

Average Time Period (5*50+16*14+7*8+8*5+9*1+10*2+11*0 +12*2+13*5)/(50+14+8+5+1+2+0+2+4+5)*(1- 0.09)=6.052 sec

For August Sept. Average Wave Height:- 20263*(1-0.01)=2.24m

Average Time Period 7.47*(1- 0.01)=7.4sec

For Oct.-Nov.
Average Wave Height:- 1.144*(1- 0.05)=1.067m

Average Time Period 7.07*(1-0.05)=6.9sec

Average Wave Height=(1.198+2.24+1.067)/3
=1.052m
Average Time Period=(6.052+7.4+6.717)/3
=6.723sec

III. CONCLUSION

It can be concluded that, Owc is a kind of electricity generating technology with the help of renewable sea waves and it is a successful approach towards alternative resources for electricity by using the tidal waves which gives fair quality results. Moreover, the electricity generated can be applied to

- Worli sea face (In this case)
- Small Industries

1.This type of electricity generation plant is having excellent scope in future, since the operational cost isvery less and more electricity than is obtained than in other treatment process.
2.Efforts are made in many country to acknowledge this resources and built this project.

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