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DESIGN FABRICATION AND ANALYSIS OF PNEUMATIC OCEAN WAVE ENERGY CONVERTOR

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ABSTRACT

Renewable energy sources are the energies generated from natural sources like solar, wind, biomass, hydro power, geothermal and ocean resources which are considered as a technological options for generating clean energy. The renewable energies are better than the energy produced by fossil fuels, however, electricity generation by utilizing wave energy by using floats and cylinders is to be studied and improved for maximum utilization. This paper presents the Wave energy converter system that harnesses the renewable energy from sea or ocean to generate electricity. This system mainly uses pneumatic cylinder to convert wave energy from the ocean. As the float reciprocates pneumatic cylinder actuates and compresses the air in to the air tank to the required pressure. Then the compressed air is let on to the turbine which is connected to the dc dynamo to generate electricity. This wave energy converter system is implemented in such areas where power cut-off is regular which are near to the sea shore.

INTRODUCTION

Wave energy or wave power is essentially power drawn from waves. When wind blows across the sea surface, it transfers the energy to the waves. They are powerful source of energy. The energy output is measured by wave speed, wave height, and wave length and water density. The stronger the waves, the more capable it is to produce power. The captured energy can then be used for electricity generation in powering plants or pumping of water. It is not easy to harness power from wave generator plants and this is the reason that they are very few wave generator plants around the world. When you look out at a beach and see waves crashing against the shore, you are witnessing wave energy. It's not being harnessed or used for the benefit of anyone in that state, but it is there without producing any power. And some enterprising individuals would say it is just waiting to be used to make our lives better and our energy consumption cleaner and cheaper. The potential of generating electricity from the wave energy is great and still at its early stages. The Ocean is huge resource and being able to exploit the energy carried by the waves would be a great and positive step towards meeting the targets of renewable green energy of any nation.

METHODOLOGY

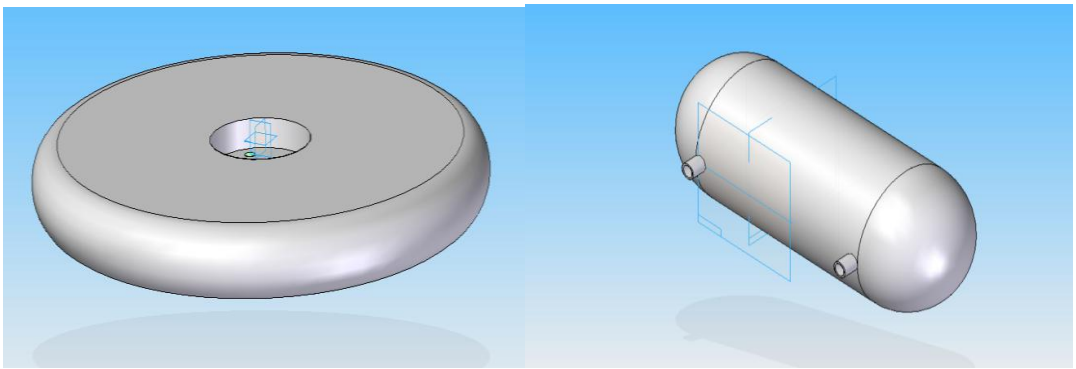
The important part of a project is its methodology, with which the project is being carried out. Planning of methodology is necessary to carry out the process efficiently and effectively. A methodology describes and gives information about the entire process carried during the project.
Methodology of the project is,

1) Material selection.
2) Design of Floats.
3) Selection of materials of float.
4) Assembly of parts.

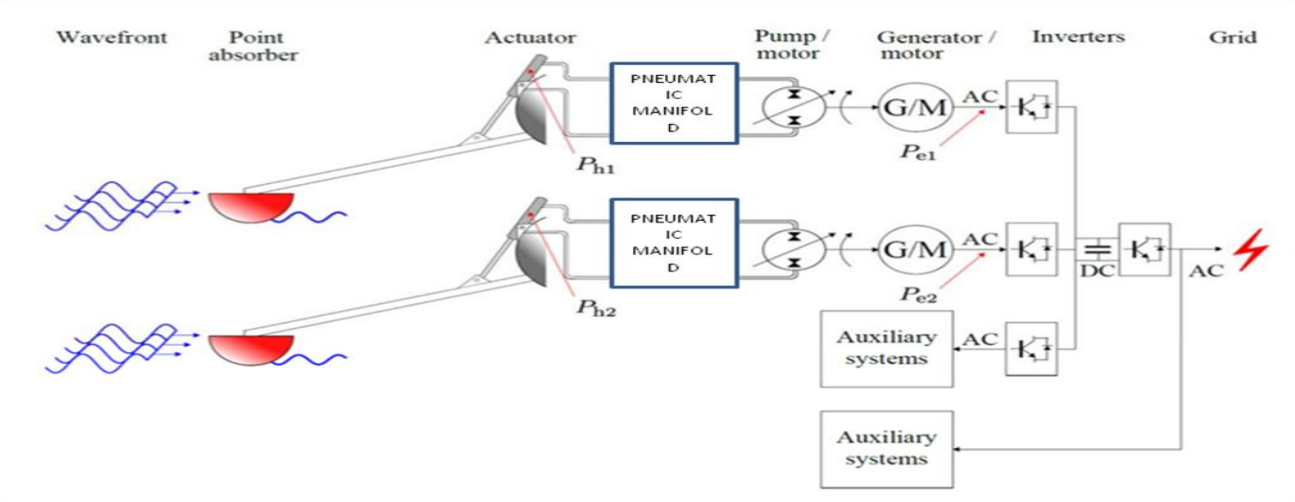
OBJECTIVES

From the literature survey and after studying both types and understanding the advantages and disadvantages of HAWT and VAWT, we got to know HAWT is more efficient and produces more power than VAWT. Hence for our project we have used HAWT, which will be a working prototype.

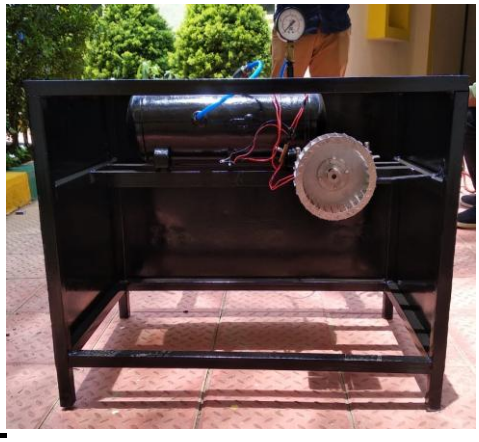
COMPONENTS



SYSTEM ARCHITECTURE



FABRICATED MODEL



CONCLUSION

The need of electricity or energy in the future would be much greater if present conditions are considered. Wave energy can fulfill this growing need of energy. Presently, traditional fossil fuels are employed for energy generation but there are various problems associated with fossil fuels.

In our project, we have modeled a wave energy converter on a new line to harness the waves, predominantly its reciprocating motion. The model has been evaluated for its feasibility and efficiency. It was found that at most sea states the depth although varies with wave amplitude but can be statistically reliable for long term wave capturing at most depth greater than the wave base.

Another important aspect of our project is to decide whether the float should be made of plastic or wood and what type of actuators are better for harnessing the wave energy available in the sea.

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