

C-59: An unidirectional turbine to maximise the power output of Oscillating Water Column

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Developing countries are faced with many problems that hinder their development. Among those the lack of energy sources or the inability to harness the available resources of energy are the major threats to third world economy. Hence it is important to identify and exploit energy resources of a country for its effective development. There are several potential energy sources which are often wasted inconspicuously in the environment without any notice of them. For example Solar energy, Wind energy, Wave energy, Ocean thermal energy, Tidal power and so on. Among these energy resources, energy of the sea wave is wasted. The enormous amount of energy yield of the sea waves is still not categorised as an invaluable source of energy for Sri Lanka.

The macro model of energy harnessing device designed by the Faculty of Engineering, University of Peradeniya has 2 projecting side walls which can

focus the waves to increase the efficiency of energy harnessing device. To cut down the cost over a large plant, we have proposed to design a number of small-scale wave harnessing devices, where each has its own generator and turbine and they could be connected together as an energy harnessing network. For major repair and maintenance, the network need not be shut down completely as each generating unit can be repaired separately while the rest function uninterrupted.

This prototype of the unidirectional turbine will be designed after considering the mathematical models of the experiment. The prototype of the plant will be designed to supply electricity to the national grid via a network approach and also single devices could be used to generate electricity for small communities such as fishermen in the sea, for battery charging aspects and lighting etc. Introduction of this new technology to the country will create employment opportunities under construction work of harnessing devices, repair and maintenance of them and also it will be another tourist attraction.