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AN EXPERIMENTAL DESIGN OF UNIDIRECTIONAL TURBINE FOR GENERATING POWER FROM THE SEA WAVES.

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Developing countries are faced with so 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 waves is wasted round the clock in the ocean without any notice of it. It has been already calculated the enormous amount of energy yield of the sea waves is still not categorized as an invaluable source of energy for Sri Lanka.

Strong wind blowing for some time(monsoon season) over a long stretch of water will generate large waves with a significant energy yield. Wave energy can be considered as a stored and concentrated form of solar energy since wind patterns mostly arise from solar radiation.

When considering the environment pollution caused in burning fossil fuel to generate energy, hydropower and wave power generation are far more superior by being hazardous free. Hence we should pay more attention to discover feasible and more economical ways of harnessing energy from identified resources. Hence it is the ideal time to launch a program to introduce the wave harnessing system to the country.

Oscillating water column (OWC) has become the most common of the prototypes, manifesting a simple but robust design concept. A self rectifying air turbine is used to extract the enrage since it has better matching to the incident wave motion, does not require rectifying valves and can run at high speed and so produce electricity on a generator fixed directly on its shaft.

Generally turbines are designed with hubs to which blades are fixed. Air flows on to the turbine blades and the hub area. The blades rotate by converting wind energy in to mechanical energy. Airflow is resisted by the hub area and thereby it reduces the rotational power of the turbine. This problem exists in all the air flow operated turbine where the hub occupies a larger proportion of the swept area.

In order to overcome energy losses at the hub area, a hollowed shaft is designed for the middle of the turbine instead of a hub. This invention shows that the airflow through the hollowed shaft without any energy loss when compare with turbines with hub.