**C-19: Design of a wave energy harnessing device with maximum effidency**

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In developing countries, the factors that hinder development, include the lack of energy sources or the inability to harness the available resources of energy. Several potential energy sources are often wasted, inconspicuously in the environment. Examples are energy of sea waves, solar energy of sea waves, solar energy and wind energy. Energy of the sea waves is wasted at all times in the ocean. This enormous amount of energy is available throughout the day. Further, the approximate power available from the waves for significant wave height of 1- 1.5 m within a period of 6-11 sec are 3 - 10 kW/m of wave along the crest of the wave.

Presently there are only 4 sea wave power plants operating in the world. They are in the north sea of England, Japan, Sweden and Scotland. Future wave power plants will appear in Indonesia, Tasmania, USA, Greek Island, Spain and Scotland and the above mentioned countries. Also there is, or has been significant research activity in the U.K. Norway and Japan as well as Portugal, Spain, India, Denmark, Sweden, China and USA. As a pioneer work in Sri Lanka, research is being conducted by the Faculty of Engineering, University of Peradeniya.

In seas, the waves appear in a random process, so the device has to be designed to respond to the randomly appearing normal sea waves for maximum efficiency. The energy extraction is governed by factors such as the wave amplitude and period, the geometry and the damping factors of the device. To find the behaviour of the device for the above factors,laboratory wave tank tests are being conducted with the help of Mathematical models. Further, to improve the geometry of whole designs random methods such as the method of Monte Carlo are used and to maximize the efficiency the defined mathematical model is used.