

Model the Off-Shore Ocean-Sea Waves to Generate Electric Power by Design of a Converting Device

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Abstract : In this paper, we will present a mathematical model to design a system able to generate electricity from ocean-sea waves. We will use the basic principles of the transfer of the energy potential of waves in a chamber to force the air inside a vertical or inclined cylindrical column, which is topped by a wind turbine to rotate the electric generator. The present mathematical model included a high number of variables such as the wave, height, width, length, velocity, and frequency, as well as others for the energy cylindrical column, like varying diameters and heights, and the wave chamber shape diameter and height. While for the wells wind turbine the variables included the number of blades, length, width, and clearance, as well as the rotor and tip radius. Additionally, the turbine rotor and blades must be made from the light and strong material for a smooth blade surface. The variables were too vast and high in number. Then the program was run successfully within the MATLAB and presented very good modeling results.

Keywords : water wave, models, Wells turbine, MATLAB program

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