PERFORMANCE ANALYSIS OF PNEUMATIC WAVE ENERGY CONVERTER (WEC) USING OSCILLATING WATER COLUMN (OWC)

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Abstract

Ocean wave energy conversion system is a system that captures wave energy to be converted into energy such as electricity. One type of wave energy converter (WEC) that is widely used such as Oscillating Water Column or OWC. The Working Principle of this WEC is change the movement of the rise and fall of the waves on the cylindrical column of air to produce compressed air which is then used to drive a turbine and electrical generator. This study aimed to determine the performance of the Oscillating Water Column (OWC) to capture wave energy. To be able to do this study required some equipment makers that manufacture equipment configuration and capture waves energy containing of a buoy and cylinder Oscillating Water Column (OWC). This experiments were performed by varying the length and height of the waves on the water flow channel with openings set on pneumatic speed control. From the experimental results we can get that the most effective performance is obtained at a wavelength of 0.9 m and 0.23 m wave height. On the characteristics of the wave contains pressure, velocity and volume of air in cylinder Oscillating Water Column (OWC) are 1.11 bar, 39.39 m/s dan 0.0057 m³. From the experiment got time to filling pressure vessel during 100 minutes in pressure 3 Psi.

Keywords : Ocean Wave Energy, Wave Energy Converter, Oscillating Water Column (OWC), Wave Maker.
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