ANALYSIS OF PENDULUM MOTION DUE TO PONTON MOTION IN OCEAN WAVE POWER PLANT PENDULUM SYSTEM

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ABSTRACT
Utilization of ocean wave energy was firstly performed by Mr. SY Zamrisya from the Electricity Research and Development State Electricity Company (Persero). The concept design was named PLTGL-SB or Ocean Wave Power Plant Pendulum System. Development of ocean wave power plant need processing of acceleration so that the necessary process scale-up through increased capacity PLTGL-SB to 20 KW (kilowatt). By providing a simple pontoon design can accommodate this research. The system is limited to the pitching motion. By using the Lagrange equation, obtained two equations which is used in this research. There are three variations to determine the continuity of pendulum motion. Such variations are wave period, the length of the pendulum arm, and high of poles pendulum. Pendulum’s mass does not exceed of 48.1 kg, because the pendulum movement is almost non-existent in this condition. The bigger wave period not only give affect of pontoon motion, but also makes the greater angle of intersection of the pendulum. Therefore, the recommended system is conditioned by a period of eight seconds, the length of the pendulum arm 0.25 of pontoons length, pendulum mass 0.09% of pontoon mass and high pendulum pole at 1.15 of the high pontoon.

Keyword: Ocean Wave, Pendulum, Pontoon, Power Plant