MODELING AND SIMULATING THE SEA WAVE ELECTRIC GENERATOR EXCITED BY HARMONIC FORCE (PENDULUM-FLAT PONTOON MODEL)

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ABSTRACT
Indonesia has plenty of sea potential resources because Indonesia is the biggest group of archipelago in the world. One of them is sea wave potential energy. Its development has reached sea wave electric generator model with pendulum-flat pontoon system. In this model, the sea wave will incline the flat pontoon. Which in turn, it will rotate the pendulum and be converted into electricity with the generator. Non linear pendulum response model has been validated with linear one by comparing pendulum response period error for small gap. After validating, It will be tested and then analyzed with 0,005 N.m.s/rad of torsional damping, 5, 10, 15, and 20 kg of pendulum mass variations, 1, 1,5, 2, and 2,5 m of pendulum length variations, and 0,111, 0,167, and 0,333 Hz of slope frequency variations. These solutions are simulated with Simulink Matlab. The non linear pendulum response simulation results showed small period error when compared to the linearization results so that the simulation is valid with smaller initial angular deviation. The pendulum mass affects the pendulum response insignificantly, especially at small torsional damping. The longer pendulum length will make the maximum pendulum angular velocity and acceleration response value smaller. The higher slope frequency of flat pontoon will make the angular velocity and acceleration greater for beginning. The simulation results irregular pendulum response because of steady position and initial angular deviation changes.
(HALAMAN INI SENGADA DIKOSONGKAN)