

## ABSTRACT

*Electrical energy is one of the basic needs for everyday life. Sea wave energy is one of renewable energy sources that have a higher availability, least data variation per hour, and higher power potential compared to other renewable energy resources. In this final project, a sea wave power plant simulator is designed and built using a slider-crank system to move the magnet for a linear permanent magnet generator that can generate electric power. And electric power that generated by a linear permanent magnet generator is measured to see the output using continuous data input.*

*Sea waves will be simulated with data changes in surface height every 0.5 second which is the input for stepper motors. The movement of the stepper motor will move the slider-crank which converts the rotation motion into linear motion for the magnet that moves in the generator core. The generator consists of two separate windings with the same number of turns. The number of turns used is 5000 and 7500 turns. The EMF then measured by using multimeter.*

*Based on data-acquiring, a sea wave simulator can be run using gear angle shifting data which is translated into the Arduino programming language then defined to steps and rotation direction. The percentage of similarity between the original data with the data for the simulation of sea waves reaches 88.3%. The Linear Permanent Magnet Generator produces an AC voltage in the range of 4.1 mV to 68.2 mV, where the highest point is obtained in the 5000 coil experiment when coil B is active.*

**Keywords:** *Stepper motor, Sea wave simulator, slider-crank, linear generator.*