ABSTRACT

Indonesia is maritime country with 3,257,483 km^2 water area. This has a potential for renewable energy. One possible alternative is using linear generator which converts sea waves into electrical energy. This study has designed prototype of linear permanent magnet generator using Neodymium magnets with 0.55 Tesla magnetic strength and copper coil with 10000 to 43000 windings. The simulation of sea wave performed with sea wave simulator that generates frequency at 1.5 Hz and amplitude of 30 mm, 40 mm, and 50 mm.

The output voltages of generator are 6.3 volt up to 17 volt for 10000 to 43000 windings, respectively. The resistance of coils are large between 0.97 kΩ and 3.47 kΩ for 10000 to 43000 windings, respectively. Those cause low currents which are less than 8 mA. This generator generates small output power (≈ 15 mW) with capacity that can be stored in A3 battery for two hours is 0.724 mAh.

Keywords: *Generator, permanent magnet linear generator, magnetic induction, sea wave simulator*