

## ABSTRACT

*Electricity is one of the main needs of society in general. An electrical energy will flow from the plant to the load through the transmission and distribution channels of electricity. The quality of this channeling system can be determined whether it is received by the customer. The further the power plant will lead to a reduction in power. This power reduction is due to the process of sending power from the plant to the consumer through the transmission network and distribution network where there are power losses and voltage reduction.*

*Distributed Generation or commonly referred to as DG is a small and medium-scale generator that is connected directly to the distribution network or close to the load center. Dg installation aims to reduce power loss and improve voltage. The use of DG has several advantages, among others in terms of economy because it saves energy usage, is environmentally friendly, and in terms of techniques to improve the stability and reliability of electric power systems. In the creation of this Final Task using dg 33 bus system*

*In this final task displays a method to determine DG placement optimization and determines the capacity of DG using optimization particle swarm method. Analysis modeling optimization placement and distribution quality of generators using MATLAB with the object of research system distribution of IEEE 33 bus generators. This analysis will be compared to a different method, genetic algorithm. Results in this test showed DG before installed active power losses of 219.2 kW, after the installation of DG active power losses of 66,103 kW. It is proven that after the installation of DG can reduce active power losses by 153,091 kW. By comparing the PSO method with DE more efficiently using the DE method, with power losses after DG installation of 48.8 kW. Optimization of placement using pso methods in DG 6,24,13, and 14.*

**Keywords:** *optimization, power flow, DG IEEE 33 bus, Particle swarm optimization method*