

ABSTRACT

Electricity is one of the main needs of our society in general. An electrical energy will flow from the plant to the load through the transmission dan distribution channel of electricity. The quality of this channeling system can be determined whether it is received by the consumer. 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.

To solve this problem, so we need to install Distributed generation on the electricity network. Distributed generation (DG) aims to reduce power losses. Determining where the strategic location of DG is important as information data to determine the next policy.

In this final project displays a method to determine DG placement using Particle Swarm Optimization (PSO) method. Optimization model analysis of power plant placement using MATLAB software with a single line diagram of the electrical network distribution system at the Faculty of Electrical Telkom University. Before installation of DG the total power losses was 0.38114 kW, after installation the total power loss decreased significantly, which is 0.017013 kW. The best DG placement is on the 6th bus in Building N. In the analysis of this research, it is found that by optimizing the DG placement can reduce power losses in each building at the Faculty of Electrical Engineering. This placement can also improve the voltage value on each bus compared to before the DG installation.

Keyword: *optimization, electricity , single line diagram, particle swarm optimization.*