

## ABSTRACT

Load growth on the distribution system must be followed by sufficient and reliable power supply. However, the current problem is how to generate sufficient electrical energy and the distribution of electrical energy towards minimizing power losses. There are several ways to achieve this goal, such as line reconfiguration, installation of capacitor banks and installation of distributed generator (DG) units [1].

Distributed generator (DG) is a small capacity generator located in an electric power distribution system. DG can be placed on buses that are directly connected to the load [2]. With DG installation, there are advantages achieved, such as increasing system efficiency and reliability as well as improving power quality and voltage levels [1]. But DG also causes losses, for example increasing the number of short-circuit current sources in the event of a disturbance in the system. Therefore, there are several parameters that must be considered in the installation of DG, such as the amount of short-circuit current, voltage level, and losses in the system.

What also needs to be considered in the discussion of DG is the determination of the optimal location and capacity of a DG. The location and capacity of DG are said to be optimal if it results in additional short-circuit currents and minimal power losses and voltage levels that are between the minimum and maximum values [1]. Therefore, we need a method that can solve the problem of optimizing the location and capacity of the DG by taking into account these requirements.

In this study, the genetic algorithm is the method used to solve a value search in the optimization problem of determining the location of DG. This method is applied to a radial distribution line. The expected result later is to get the smallest power loss.

Keywords: Distributed Generator, Radial Distribution System, Optimization Technique, Genetic Algorithm, Power Loss