

ANALYSIS OF THE IMPACT OF THE ENTRY OF PHOTOVOLTAIC POWER PLANTS ON POWER LOSSES IN THE 220 V DISTRIBUTION NETWORK AT THE FATMAWATI ULP PRABUMULIH REFILLER

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ABSTRACT

The capacity of photovoltaic solar power plants in Indonesia continues to increase, with capacities ranging from small to MegaWatt. Medium or large capacity solar power plants are generally installed in low and medium voltage distribution networks, especially in island areas or outside the city. The author discusses a study of power reduction analysis on the 220V distribution network at the Fatmawati ULP Prabumulih feeder. This study applies a quantitative approach. Data collection is carried out through observations of research subjects, which are then presented as research material in quantitative form. This study aims to solve the problem of power shortages at the Fatmawati ULP Prabumulih feeder and calculate the amount of power lost both before and after the addition of solar power plants. This study will use ETAP 19.0.1. In this study, there are two scenarios. The first scenario involves the addition of 1 solar power plant with a large capacity, the second scenario where the area with the most load is expected to be able to help the area with the most load that does not lack voltage, then 26,000 panels are divided into 31 predetermined places, in one place containing 83 panels to see the difference in losses from scenario one and losses scenario two. The results of the study show that in the first scenario, losses can be compared during existing conditions with after the first scenario with large capacity, which obtained a very drastic decrease in losses with a figure of 0.195 MW or 0.358 Mvar. The condition of the first scenario is very good, there is a decrease in losses with a result of 38.51% while the results of the second scenario study on each busbar with the aim of increasing power in areas with the most loads with a power loss value of 0.267 MW or 0.620 Mvar it can be concluded that this condition has increased power losses, but the increase in question is not a large increase and can still be said to be less than 5% after the second scenario compared to the existing conditions at the Fatmawati ULP Prabumulih feeder.

Keywords: *Photovoltaic generators, Power losses, Distribution networks.*