

ANALYSIS OF VOLTAGE DROP AND SHORT CIRCUIT CURRENT (BREAKING CAPACITY) IN HIGH RISK BUILDING IN HOTEL PROGO YOGYAKARTA BUILDING

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ABSTRACT

This study aims to analyze the voltage drop and short circuit current (breaking capacity) in high-risk buildings, namely the Progo Hotel Building in Yogyakarta. This analysis is important to ensure that electrical installations in high-rise buildings meet safety standards and general requirements for electrical installations (PUIL). The method used in this study uses ETAP (Electrical Transient Analysis Program) software simulation and manual calculations for verification. The data collected includes information on the building's electrical distribution network, panel location, and building electrical load, which is then used to create a single line diagram in ETAP software. The simulation results show variations in voltage drop values depending on the length and cross-sectional area of the cable. The largest voltage drop value is found on the PP Lift 3 panel with a distance of 65 meters and a voltage drop value of 3,880 volts or 1.04% from manual calculations, and 1.29 from ETAP simulations, still within the normal PUIL 2020 limit of 4%. Short circuit current analysis shows the largest value occurs in the transformer installation towards the incoming LVMDP of 19.688 kA. The longer the cable, the smaller the short-circuit current value on the panel. The conclusion of this study confirms that the electrical installation in the Progo Hotel Building meets safety standards. However, because this study was conducted while the building was still under construction, further studies are recommended to compare the simulation results with direct measurements after the building is operational. This study provides an important contribution to the development of science in the field of electrical engineering, especially related to the analysis of voltage drop and short-circuit current in multi-storey buildings.

Keywords: *Voltage drop, short-circuit current, ETAP.*