

ANALISIS ALIRAN DAYA PADA JARINGAN DISTRIBUSI 20 KV PENYULANG SMU 4 DAN SMU 9 DI PT. PLN (PERSERO) RAYON WONOSARI MENGGUNAKAN SOFTWARE ETAP

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ABSTRACT

PT. PLN (Persero) is a company engaged in the electricity supply sector. PT. PLN (Persero) will distribute electricity to consumers who are up to tens of kilometres away. With very long distances, disturbances often occur, namely drop voltage and power losses. The research uses the Newton Raphson method at PT. PLN (Persero) Rayon Wonosari high school feeder four due to interference in drop voltage and power losses at the feeder. In reducing drop voltage and power losses, PT. PLN (Persero) Rayon Wonosari built a new feeder, namely SMU 09. The result was that at 10.00, the SMU 04 feeder was connected to SMU 09. The average 20 kV bus drop voltage improves in the drop voltage from 0.32% to -1.28%, busload with a voltage of 380 V has improved from 2.73% to 1.9%, and the average power losses have improved from 4% to 2.2%. At 19.00 the feeder for SMU 04 was connected to SMU 09, the average 20 kV bus drop voltage improves in the drop voltage from 1.89% to - 0.81%. The busload with a voltage of 380 V improves from 5.5% to 2.79%, and the average power losses have improved from 5.9% to 3.46%. At the time outside the peak load of SMU 04 feeders before and after being connected to SMU 09 feeders, the financial loss of power losses is Rp.4.165.980 to Rp.2.322.833 of peak load Rp.2.332.834 to Rp.1.330.140. The SMU 09 feeder's installation with the insertion transformer has an efficiency value according to the SPLN of the capacitor bank with a drop voltage of 1.5%.

Keywords: *Drop Voltage, Power Losses, Insertion Transformer, Capacitor Bank, Newton Raphson.*