ABSTRAK

Perbaikan Drop Tegangan dengan Metode Penyisipan Transformator di PT.PLN (Persero) ULP Ahmad Yani
Dibimbing oleh Kartika Tresya Mauriraya, S.Pd., M.Pd.

Energi listrik merupakan kebutuhan vital bagi masyarakat, industri, dan layanan publik, namun peningkatan beban menyebabkan penurunan kualitas tegangan terutama pada ujung jaringan. Berdasarkan pengukuran di wilayah kerja PLN ULP Ahmad Yani, tegangan ujung sebelum perbaikan berada pada kisaran 170–184 V, di bawah standar SPLN No. 1:1978 dan PUIL, dengan panjang JTR ±2 km serta pembebanan gardu TBT-0638 mencapai 82–85%. Penelitian ini menganalisis profil dan drop tegangan serta mengevaluasi efektivitas penyisipan transformator distribusi melalui pengukuran dan perhitungan sebelum dan sesudah perbaikan pada Jurusan A dan B. Hasil menunjukkan tegangan ujung meningkat signifikan dari 170–182 V menjadi 213–215 V dan telah memenuhi standar, seiring berkurangnya panjang JTR efektif menjadi sekitar 1 km sehingga impedansi, arus, dan rugi-rugi daya menurun. Dengan demikian, penyisipan transformator terbukti efektif dalam memperbaiki mutu tegangan dan meningkatkan keandalan pelayanan di bawah koordinasi PT PLN UP3 Banjarmasin.

Kata Kunci : Energi Listrik, ULP Ahmad Yani, Drop Tegangan, Penyisipan, Transformator

ABSTRACT

Hilma Ardika
Voltage Drop Improvement with Transformer Insertion Method at PT.PLN (Persero) ULP Ahmad Yani
Supervised by Kartika Tresya Mauriraya, S.Pd., M.Pd.

Electrical energy is a vital need for society, industry, and public services, but increased loads cause a decrease in voltage quality, especially at the network edge. Based on measurements in the PLN ULP Ahmad Yani work area, the end voltage before the repair was in the range of 170–184 V, below the SPLN No. 1:1978 and PUIL standards, with a JTR length of ±2 km and a TBT-0638 substation loading reaching 82–85%. This study analyzed the voltage profile and drop and evaluated the effectiveness of the insertion of distribution transformers through measurements and calculations before and after the repair in Departments A and B. The results showed a significant increase in the end voltage from 170–182 V to 213–215 V and has met the standard, as the effective JTR length was reduced to approximately 1 km, resulting in reduced impedance, current, and power losses. Thus, the insertion of transformers has proven effective in improving voltage quality and increasing service reliability under the coordination of PT PLN UP3 Banjarmasin. Keywords: Electrical Energy, ULP Ahmad Yani, Voltage Drop, Insertion, Transformer

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