

ABSTRAK

Lossis terjadi karena energi yang dibangkitkan hilang pada saat penyaluran ke konsumen. Penelitian ini bertujuan untuk mengetahui profil tegangan dan rugi-rugi daya pada JTM Penyulang Batu Begigi dan Penyulang Sokan PT PLN (Persero) ULP Nanga Pinoh yang dilakukan pada pengujian pada kondisi eksisting, penambahan pembebanan 50%, variasi pembebanan 50% dan 80%, dan perluasan jaringan. Perhitungan menggunakan Metode Newton Raphson dengan aplikasi ETAP 19.0.1. Hasil pengujian Penyulang Batu Begigi pada Kondisi Eksisting jatuh tegangan 0,51%, rugi-rugi daya 1,14%, dan rugi-rugi energi 1.020 kWh. Kondisi Pembebanan 50% jatuh tegangan 0,970%, rugi-rugi daya 1,81%, dan rugi-rugi energi 2.490 kWh. Kondisi Pembebanan Variasi 50% dan 80% jatuh tegangan 1,15%, rugi-rugi daya 2%, dan rugi-rugi energi 2,955 kWh. Kondisi Perluasan Jaringan jatuh tegangan 1,405%, rugi-rugi daya 1,59%, dan rugi-rugi energi 1.815 kWh. Hasil pengujian Penyulang Sokan pada Kondisi Eksisting jatuh tegangan 2,36%, rugi-rugi daya 2,57%, dan rugi-rugi energi 2.655 kWh. Kondisi Pembebanan 50% jatuh tegangan 4,180%, rugi-rugi daya 4,4%, dan rugi-rugi energi 6,930 kWh. Kondisi Pembebanan Variasi 50% dan 80% jatuh tegangan 4,495%, rugi-rugi daya 4,74%, dan rugi-rugi energi 7.905 kWh. Kondisi Perluasan Jaringan jatuh tegangan 2,925%, rugi-rugi daya 2,91% 3.270 kWh. Hasil simulasi menggunakan ETAP 19.0.1 menyatakan bahwa profil tegangan penyulang Batu Begigi dan penyulang Sokan masih normal sesuai dengan SPLN Nomor 72 tahun 1987 jatuh tegangan yang diizinkan 5% dan SPLN Nomor 1 tahun 1995 rugi-rugi daya 10%.

Kata Kunci : Jatuh Tegangan, Rugi-Rugi Daya, Rugi-rugi Energi, ETAP.

ABSTRACT

. Loss occurs because the generated energy is lost when distribution to consumers. The purpose of this research to know the profile of the voltage and power losses at the JTM Batu Begigi Feeder and the Sokan Feeder PT PLN (Persero) ULP Nanga Pinoh which was carried out in the tests existing conditions, 50% additional loading, 50% and 80% loading variations, and network expansion. The result of calculations using the Newton Raphson method with the ETAP 19.0.1 application. Batu Begigi Feeder test result the existing conditions 0.51% voltage drop, 1.14% power losses, and 1,020 kWh energy losses. Loading conditions 50% voltage drop 0,970%, power losses 1.81%, and energy losses 2,490 kWh. Loading Conditions 50% and 80% voltage drop is 1.15%, power loss is 2%, and energy loss is 2,955 kWh. Condition of Network Expansion voltage drop is 1.405%, power loss 1.59%, and energy loss is 1.815 kWh. Sokan Feeder test results the Existing condition voltage drop is 2.36%, power loss is 2.57%, and energy loss is 2.655 kWh. Loading conditions 50% voltage drop 4.180%, power losses 4.4%, and energy losses 6.930 kWh. Loading Conditions variations 50% and 80% voltage drop, 4.495%, power losses, 4.74%, and energy losses are 7,905 kWh. Condition of Network Expansion voltage drop 2.925%, power losses 2.91% 3.270 kWh. The simulation results using ETAP 19.0.1 stated that, the voltage profile of the Batu Begigi feeder and the Sokan feeder is still normal according to SPLN No. 72 of 1987, the allowable voltage drop is 5% and SPLN No. 1 of 1995 power loss of 10%.

Keywords: Voltage Drop, Power Loss, Energy Loss, ETAP.