

ABSTRAK
ANALISIS TINGKAT KEANDALAN SISTEM DISTRIBUSI
MENGUNAKAN METODE SAIDI DAN SAIFI PADA UP3
DI PT PLN (PERSERO) UID S2JB
2026

(2026: xiv + 59 Halaman + 21 Daftar Gambar +15 Daftar Tabel + Lampiran)

M. AFLAH MATAHIR
062330310474
JURUSAN TEKNIK ELEKTRO
PROGRAM STUDI DIII TEKNIK LISTRIK
POLITEKNIK NEGERI SRIWIJAYA

Sistem distribusi tenaga listrik merupakan bagian penting dalam penyaluran energi listrik dari gardu induk hingga sampai kepada pelanggan. Gangguan pada sistem distribusi dapat menyebabkan pemadaman listrik dengan durasi dan frekuensi yang berbeda pada setiap wilayah pelayanan. Penelitian ini bertujuan untuk mengetahui tingkat keandalan sistem distribusi tenaga listrik pada UP3 di PT PLN (Persero) UID S2JB menggunakan indeks SAIDI dan SAIFI serta mengetahui penyebab gangguan yang mempengaruhi keandalan sistem distribusi. Metode penelitian yang digunakan adalah metode deskriptif kuantitatif dengan pengumpulan data sekunder dari PT PLN (Persero) UID S2JB. Data yang dianalisis meliputi jumlah pelanggan, jumlah pelanggan padam, durasi gangguan, serta data gangguan pada masing-masing UP3. Hasil analisis menunjukkan bahwa nilai SAIDI dan SAIFI pada setiap UP3 memiliki perbedaan karena dipengaruhi oleh frekuensi gangguan, durasi pemadaman, jumlah pelanggan terdampak, serta kondisi jaringan pada wilayah pelayanan. Berdasarkan data gangguan, penyebab gangguan paling dominan berasal dari faktor eksternal, terutama pohon yang berada di sekitar jaringan distribusi. Selain itu, gangguan akibat pekerjaan pihak ketiga, binatang, komponen JTM, dan peralatan JTM juga mempengaruhi tingkat keandalan sistem distribusi. Oleh karena itu, pemeliharaan jaringan dan pemangkasan pohon secara rutin perlu dilakukan untuk meningkatkan keandalan sistem distribusi tenaga listrik.

Kata Kunci: Sistem Distribusi, Keandalan, SAIDI, SAIFI.

ABSTRACT

ANALYSIS OF DISTRIBUTION SYSTEM RELIABILITY USING SAIDI AND SAIFI METHODS AT UP3 OF PT PLN (PERSERO) UID S2JB 2026

(2026: xiv + 59 Pages + 21 List of Figures + 15 List of Tables + Appendices

M. AFLAH MATAHIR

062330310474

DEPARTMENT OF ELECTRICAL ENGINEERING

**DIPLOMA III PROGRAM IN ELECTRICAL ENGINEERING STATE
POLYTECHNIC OF SRIWIJAYA**

The electric power distribution system plays an important role in delivering electrical energy from substations to customers. Disturbances in the distribution system can cause power outages with different durations and frequencies in each service area. This study aims to determine the reliability level of the electric power distribution system at UP3 of PT PLN (Persero) UID S2JB using the SAIDI and SAIFI indices, and to identify the causes of disturbances that affect distribution system reliability. The research method used in this study is a descriptive quantitative method using secondary data obtained from PT PLN (Persero) UID S2JB. The analyzed data include the number of customers, the number of interrupted customers, outage duration, and disturbance data for each UP3. The results show that SAIDI and SAIFI values in each UP3 vary due to differences in disturbance frequency, outage duration, the number of affected customers, and network conditions in each service area. Based on the disturbance data, the most dominant cause of interruptions comes from external factors, especially trees located around the distribution network. Other causes, such as third-party work, animals, medium-voltage network components, and medium-voltage equipment, also affect the reliability level of the distribution system. Therefore, regular network maintenance and tree trimming are needed to improve the reliability of the electric power distribution system.

Keywords: Distribution System, Reliability, SAIDI, SAIFI.