

ABSTRAK

ANALISA KINERJA PEMUTUS TENAGA (PMT) 70 kV PADA SISTEM PROTEKSI DI GARDU INDUK KERAMASAN PT.PLN

(2026:xvii + 79 Halaman + 27 Gambar +11 Tabel + Lampiran)

Adib Baginda

062330310485

Jurusan Teknik Elektro

Progam Studi D3 Teknik Listrik

Politeknik Negeri Sriwijaya

Pemutus Tenaga (PMT) 70 kV merupakan peralatan utama pada sistem proteksi gardu induk yang berfungsi menghubungkan dan memutus rangkaian listrik pada kondisi normal maupun saat terjadi gangguan. Penelitian ini bertujuan menganalisis kondisi PMT 70 kV di Gardu Induk Keramasan berdasarkan hasil pengujian tahanan isolasi, tahanan kontak, dan keserempakan kontak, serta membandingkannya dengan hasil perhitungan parameter pendukung untuk menilai kelayakan operasinya. Metode penelitian yang digunakan adalah deskriptif kuantitatif dengan data yang diperoleh melalui observasi lapangan, studi literatur, dan dokumentasi hasil pengujian. Analisis dilakukan dengan menghitung arus bocor, rugi-rugi daya, dan selisih waktu operasi, kemudian membandingkan hasilnya dengan standar pemeliharaan PMT. Hasil penelitian menunjukkan nilai tahanan isolasi sebesar 39.900–110.500 M Ω , tahanan kontak 44–51 $\mu\Omega$, dan selisih waktu operasi maksimum 1 ms. Seluruh hasil memenuhi standar yang ditetapkan sehingga PMT 70 kV di Gardu Induk Keramasan berada dalam kondisi baik, layak, dan andal untuk dioperasikan.

Kata Kunci: Pemutus Tenaga, Tahanan Isolasi, Kontak, Keserempakan Kontak, Gardu Induk

ABSTRACT

PERFORMANCE ANALYSIS OF 70 kV CIRCUIT BREAKER (CB) IN THE PROTECTION SYSTEM AT PT.PLN'S KERAMASAN SUBSTATION

(2026: xvii + 79 Pages +27 Pictures + 11 Table + Atteachment)

Adib Baginda

062330310485

DEPARTMENT OF ELECTRICAL ENGINEERING

DIPLOMA III PROGRAM IN ELECTRICAL ENGINEERING

STATE POLYTECHNIC OF SRIWIJAYA

The 70 kV Circuit Breaker (CB) is a vital component of a substation protection system that functions to connect and disconnect electrical circuits under normal operating conditions and during faults. This study aims to analyze the condition of the 70 kV CB at Keramasan Substation based on insulation resistance, contact resistance, and contact synchronism test results, and to compare them with calculated supporting parameters to evaluate its operational feasibility. A quantitative descriptive method was employed using data collected through field observations, literature review, and test documentation. The analysis included calculations of leakage current, power loss, and operating time difference, which were then compared with the applicable circuit breaker maintenance standards. The results showed insulation resistance values of 39,900–110,500 M Ω , contact resistance of 44–51 $\mu\Omega$, and a maximum operating time difference of 1 ms. These findings indicate that the 70 kV CB at Keramasan Substation complies with maintenance standards and remains in good, reliable, and serviceable operating condition.

Keyword: *Circuit Breaker, Insulation Resistance, Contact, Contact Simultaneity, Substation*