

ABSTRAK

ANALISIS KINERJA *LIGHTNING ARRESTER* BERDASARKAN ARUS BOCOR DI GARDU INDUK KERAMASAN ULTG KERAMASAN PT. PLN (PERSERO)

(2026 : xvii + 78 Halaman + Daftar Tabel + Daftar Gambar + Daftar Lampiran)

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Lightning Arrester merupakan peralatan proteksi pada sistem tenaga listrik yang berfungsi melindungi peralatan dari gangguan tegangan lebih akibat sambaran petir maupun surja hubung. Penelitian ini bertujuan menganalisis kinerja *Lightning Arrester* berdasarkan nilai arus bocor pada Gardu Induk Keramasan ULTG Keramasan PT PLN Persero. Metode penelitian dilakukan melalui studi literatur, observasi lapangan, pengukuran langsung menggunakan *Leakage Current Monitor* (LCM), serta analisis perhitungan arus bocor resistif. Data pengukuran diperoleh dari beberapa bay transformator dan penghantar 150 kV kemudian dibandingkan dengan standar batas nilai yang diizinkan. Hasil analisis menunjukkan bahwa nilai arus bocor masih berada dalam batas normal sehingga kondisi *Lightning Arrester* dinyatakan masih layak beroperasi. Penelitian ini diharapkan menjadi acuan dalam pemeliharaan preventif guna menjaga keandalan sistem proteksi dan kontinuitas penyaluran tenaga listrik serta mendukung evaluasi kondisi peralatan secara berkala agar potensi penurunan kualitas *arrester* dapat dideteksi lebih dini, sehingga risiko gangguan sistem dapat diminimalkan dan umur operasi peralatan tetap lebih optimal.

Kata kunci: *Lightning Arrester*, Arus Bocor, Gardu Induk, LCM, Sistem Proteksi.

ABSTRACT

ANALYSIS OF LIGHTNING ARRESTER PERFORMANCE BASED ON LEAKAGE CURRENT AT KERAMASAN SUBSTATION, ULTG KERAMASAN, PT PLN (PERSERO)

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Lightning Arrester is a protection device in electric power systems that functions to protect equipment from overvoltage disturbances caused by lightning strikes or switching surges. This study aims to analyze the performance of Lightning Arrester based on leakage current values at Keramasan Substation, ULTG Keramasan, PT PLN (Persero). The research method was carried out through literature study, field observation, direct measurement using a Leakage Current Monitor (LCM), and resistive leakage current calculation analysis. Measurement data were obtained from several transformer bays and 150 kV transmission lines, then compared with the allowable standard limits. The analysis results show that the leakage current value is still within normal limits, indicating that the Lightning Arrester is still feasible for operation. This research is expected to serve as a reference for preventive maintenance in maintaining protection system reliability, continuity of electrical power distribution, and periodic equipment condition evaluation to detect potential arrester performance degradation at an early stage.

Keywords: Lightning Arrester, Leakage Current, Substation, LCM, Protection System.