

ABSTRAK

**ANALISA KINERJA *LIGHTNING ARRESTER TRAIN LOADING STATION*
SEBAGAI PENGAMAN PERALATAN LISTRIK
PT. BUKIT ASAM Tbk.
(2025)**

**PANCA KUSUMA
062230310545**

**Jurusan Teknik Elektro
Program Studi Teknik Listrik
Politeknik Negeri Sriwijaya**

Sistem pengaman (*Protection*) merupakan salah satu komponen penting dalam sistem tenaga listrik karena berfungsi sebagai pengaman terhadap peralatan dan keselamatan manusia dari bahaya tegangan lebih dan arus gangguan. Penelitian ini bertujuan untuk menganalisis kinerja dari *Lightning Arrester* pada *Train Loading Station 1* (TLS) sebagai pengaman di PT Bukit Asam Tbk. dengan cara membandingkan hasil pengukuran di lapangan dengan hasil perhitungan teoritis, serta mengevaluasi tegangan sentuh dan tegangan langkah terhadap standar PUIL 2011. Metode yang digunakan meliputi studi *literatur*, observasi, wawancara, dan pengukuran langsung menggunakan *Earth Tester*. Berdasarkan hasil pengukuran selama tiga hari, nilai tahanan pentanahan berada pada kisaran 0,26–0,43 Ω , sedangkan hasil perhitungan teoritis menghasilkan nilai 0,54 Ω . Nilai tegangan sentuh yang diperoleh sebesar 101,5 volt dan tegangan langkah sebesar 106 volt, keduanya masih jauh di bawah batas aman sesuai standar. Dari hasil tersebut dapat disimpulkan bahwa kinerja dari *Lightning Arrester* di PT. Bukit Asam Tbk telah memenuhi standar keamanan, efektif dalam menyalurkan arus gangguan, serta mampu melindungi peralatan dan personel dari risiko listrik berbahaya.

Kata Kunci: *Lightning Arrester*, *Train Loading Station*, Tahanan Pentanahan, Tegangan Sentuh, Tegangan Langkah, PUIL 2011.

ABSTRACT

**PERFORMANCE ANALYSIS OF TRAIN LOADING STATION
LIGHTNING ARRESTER AS ELECTRICAL
EQUIPMENT SAFETY DEVICE
PT. BUKIT ASAM Tbk.
(2025)**

**PANCA KUSUMA
062230310545**

*Department of Electrical Engineering
Electrical Engineering Study
Program State Polytechnic of Sriwijaya*

The protection system is one of the important components in the electric power system because it functions as a safeguard for equipment and human safety from the dangers of overvoltage and fault currents. This study aims to analyze the performance of the Lightning Arrester at Train Loading Station 1 (TLS) as a safety device at PT Bukit Asam Tbk. by comparing the results of field measurements with the results of theoretical calculations, as well as evaluating the touch voltage and step voltage against the PUIL 2011 standard. The methods used include literature studies, observations, interviews, and direct measurements using an Earth Tester. Based on the results of measurements over three days, the grounding resistance value is in the range of 0.26–0.43 Ω , while the results of theoretical calculations produce a value of 0.54 Ω . The touch voltage value obtained is 101.5 volts and the step voltage is 106 volts, both of which are still far below the safe limit according to the standard. From these results, it can be concluded that the performance of the Lightning Arrester at PT. Bukit Asam Tbk has met safety standards, is effective in channeling fault currents, and is able to protect equipment and personnel from dangerous electrical risks.

Keywords: *Lightning Arrester, Train Loading Station, Grounding Resistance, Touch Voltage, Step Voltage, PUIL 2011.*