

ABSTRAK
ANALISIS MEKANISME DEGRADASI PERMUKAAN ISOLATOR
***OUTDOOR* AKIBAT POLUSI DEBU UREA**
DI PT PUPUK SRIWIDJAJA

(2026 : xv + 45 halaman + 8 Daftar Gambar + 5 Daftar Tabel + 4 Lampiran)

VERRYAL RAVA ANDHIKA
062330310585
JURUSAN TEKNIK ELEKTRO
PROGRAM STUDI TEKNIK LISTRIK
POLITEKNIK NEGERI SRIWIJAYA

Penelitian ini bertujuan menganalisis mekanisme degradasi permukaan *Outdoor Station Post Insulator* 13,8 kV akibat polusi debu urea melalui pengukuran aktivitas *partial discharge* (PD) dan arus bocor di PT Pupuk Sriwidjaja (Pusri) Palembang. Pengukuran PD dilakukan menggunakan Megger PD Scan dengan sensor ultrasonik, sedangkan arus bocor diukur menggunakan tang ampere. Data PD dianalisis menggunakan MATLAB untuk memperoleh pola *Phase Resolved Partial Discharge* (PRPD) dan *Time Frequency Partial Discharge* (TFPD). Hasil penelitian menunjukkan aktivitas PD dengan nilai ultrasonik berkisar antara -5 dB hingga 4 dB, dengan intensitas tertinggi pada Reactor P4. Pola PRPD mengindikasikan *surface discharge* berintensitas rendah akibat kontaminasi permukaan, sementara pengukuran arus bocor tidak menunjukkan nilai yang signifikan. Hasil tersebut menunjukkan bahwa kondisi isolasi masih baik sehingga metode pengukuran PD dan arus bocor efektif digunakan untuk mengevaluasi kondisi isolator akibat polusi debu urea.

Kata kunci: *partial discharge*, arus bocor, isolator *outdoor*, polusi debu urea, Megger PD Scan.

ABSTRACT
ANALYSIS OF THE SURFACE DEGRADATION MECHANISM OF
OUTDOOR INSULATORS DUE TO UREA DUST POLLUTION AT
PT. PUPUK SRIWIDJAJA

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VERRYAL RAVA ANDHIKA
062330310585
DEPARTMEN OF ELECTRICAL ENGINEERING
DIII ELECTRICAL ENGENIRING STUDY PROGRAM
SRIWIJAYA STATE POLYTECHNIC

This study aims to analyze the surface degradation mechanism of a 13.8 kV Outdoor Station Post Insulator caused by urea dust contamination through partial discharge (PD) and leakage current measurements at PT Pupuk Sriwidjaja (Pusri) Palembang. PD measurements were conducted using a Megger PD Scan with an ultrasonic sensor, while leakage current was measured using a clamp ammeter. The PD data were analyzed using MATLAB to obtain the Phase Resolved Partial Discharge (PRPD) and Time Frequency Partial Discharge (TFPD) patterns. The results showed ultrasonic PD values ranging from -5 dB to 4 dB, with the highest PD activity detected at Reactor P4. The PRPD pattern indicated low-intensity surface discharge caused by surface contamination, while the leakage current measurement showed no significant leakage current. These findings indicate that the insulation condition remains in good operating condition, and that PD and leakage current measurements are effective methods for evaluating insulator surface degradation due to urea dust contamination.

Keywords: *Outdoor Station Post Insulator, Partial Discharge, Leakage Current, Surface Degradation, Urea Dust Pollution.*