

ABSTRAK
ANALISIS DINAMIKA THERMAL ISOLATOR PORSELIN 20KV
TERHADAP WAKTU DAN TINGKAT POLUSI ABU BATUBARA DI
PT BEST TANJUNG ENIM
2026

(2026: xvi + 59 Halaman + Daftar Gambar + Daftar Tabel + Daftar Lampiran)

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Penelitian ini bertujuan untuk menganalisis dinamika thermal isolator porselin 20 kV terhadap waktu dan tingkat polusi abu batubara di PT BEST Tanjung Enim. Pengambilan data dilakukan menggunakan kamera termal dan *environment meter*, kemudian dianalisis dengan metode *Time Series Analysis* menggunakan MATLAB. Hasil penelitian menunjukkan bahwa suhu permukaan isolator mengalami peningkatan dari 32,5°C hingga mencapai suhu maksimum 39,9°C, dengan suhu rata-rata sebesar 37,39°C. Perubahan suhu dipengaruhi oleh suhu udara, intensitas cahaya, dan kelembapan lingkungan. Endapan abu batubara pada permukaan isolator diketahui memengaruhi proses pelepasan panas dan berpotensi menimbulkan *hotspot* lokal. Hasil peramalan (*forecasting*) menunjukkan adanya kecenderungan fluktuasi suhu pada periode pengamatan berikutnya. Dengan demikian, waktu pengamatan dan tingkat polusi abu batubara berpengaruh terhadap dinamika thermal isolator porselin serta dapat memengaruhi keandalan operasinya.

Kata Kunci: Isolator porselin, dinamika thermal, polusi abu batubara, analisis deret waktu, MATLAB.

ABSTRACT

THERMAL DYNAMICS ANALYSIS OF 20KV PORCELAIN INSULATORS AGAINST TIME AND COAL ASH POLLUTION LEVEL AT PT BEST TANJUNG ENIM 2026

(2026: xvi + 59 Page + List of Figures + List of Tables + List of Appendix)

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This study analyzes the thermal dynamics of 20 kV porcelain insulators in relation to time and coal ash pollution levels at PT BEST Tanjung Enim. Data were collected using a thermal camera and an environment meter, then analyzed using the Time Series method in MATLAB. The results show that the insulator surface temperature increased from 32.5°C to a maximum of 39.9°C, with an average temperature of 37.39°C. Temperature variations were influenced by ambient temperature, light intensity, and humidity. Coal ash deposits on the insulator surface were found to affect heat dissipation and potentially cause localized hot spots. Forecasting results indicate a tendency for temperature fluctuations in subsequent observation periods. Therefore, observation time and coal ash pollution significantly influence the thermal dynamics of porcelain insulators and may affect their operational reliability.

Keywords: *Porcelain Insulator, Thermal Dynamics, Coal Ash Pollution, Time Series Analysis, MATLAB.*