ABSTRAK

STUDI KELAYAKAN PMT SF6 150kV PADA GAS INSULATED SWITCHGEAR (GIS) KOTA BARAT

(2025 : xvii + 76 Halaman + 41 Daftar Gambar + 12 Daftar Tabel + 10 Lampiran)

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Penelitian ini mengevaluasi kelayakan operasi pemutus tenaga (PMT) 150kV SF_6 pada Gas Insulated Switchgear (GIS) Kota Barat, Demang, Palembang berdasarkan pengujian tiga parameter: tahanan isolasi, tahanan kontak, dan keserempakan kontak. Standar acuan meliputi SE.032/PST/1984, VDE 228/4, ELK-04, dan SPLN No. 52-1:1983. Hasil pengujian tahun 2025 dibandingkan dengan data tahun 2023. Nilai tahanan kontak dan keserempakan kontak memenuhi batas standar kelayakan. Namun, tahanan isolasi menunjukkan penurunan performa sebesar 60%–79%, yang mengindikasikan potensi degradasi sistem isolasi. Meskipun demikian, berdasarkan keseluruhan hasil dan standar yang digunakan, PMT 150kV di GIS Kota Barat masih dinyatakan layak beroperasi. Penurunan performa pada isolasi menjadi catatan penting sebagai indikasi awal penuaan material, yang perlu dimonitor secara berkala demi menjaga keandalan sistem kelistrikan.

Kata kunci: PMT 150kV, SF_6, GIS Kota Barat, Gas Insulated Switchgear, kelayakan operasi, tahanan isolasi, tahanan kontak, keserempakan kontak

ABSTRACT

FEASIBILITY STUDY OF 150kV SF_6 CIRCUIT BREAKER IN GAS INSULATED SWITCHGEAR (GIS) KOTA BARAT

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This study evaluates the operational feasibility of a 150kV SF_6 circuit breaker (CB) installed in the Gas Insulated Switchgear (GIS) at Kota Barat, Demang, Palembang, based on three main test parameters: insulation resistance, contact resistance, and contact synchronization. The evaluation refers to relevant national and international standards, including SE.032/PST/1984, VDE 228/4, ELK-04, and SPLN No. 52-1:1983. Test results from 2025 are compared with those from 2023. Both contact resistance and synchronization values meet the required standards. However, the insulation resistance shows a performance decline of 60%–79%, indicating potential degradation of the insulation system. Despite this, the 150kV CB at GIS Kota Barat is still considered operationally feasible based on the overall results and applicable thresholds. The decrease in insulation performance serves as an early warning sign of aging or material degradation, which should be periodically monitored to ensure the continued reliability of the electrical system.

Keywords: 150kV circuit breaker, SF_6, GIS Kota Barat, Gas Insulated Switchgear, operational feasibility, insulation resistance, contact resistance, contact synchronization