

ABSTRAK

SISTEM PROTEKSI PADA *GAS TURBINE GENERATOR* 3006 J PUSRI III MENGGUNAKAN RELAY ARUS LEBIH DI PT PUPUK SRIWIDJAJA PALEMBANG

(2025: xvi + 76 Halaman + Daftar Gambar + Daftar Tabel + Daftar Lampiran)

M. ZAIDAN HAFIZH

062230310410

JURUSAN TEKNIK ELEKTRO

PROGRAM STUDI DIII TEKNIK LISTRIK

POLITEKNIK NEGERI SRIWIJAYA

Gas Turbine Generator 3006 J di PT Pupuk Sriwidjaja Palembang membutuhkan sistem proteksi yang andal untuk mencegah kerusakan akibat gangguan arus lebih. Penelitian ini membahas penyetelan *Over Current Relay* (OCR) GE Multilin 889 berdasarkan data yang didapatkan seperti daya 21.588 kVA, tegangan 13,8 kV, dan arus nominal 903,1 A dengan CT 200:5. Penyetelan dilakukan dengan perhitungan arus *pick-up* dan waktu kerja relay berbasis karakteristik *inverse time*. Berdasarkan pengujian, perhitungan dan analisis pada *Gas Turbine Generator* 3006 J di Pusri III, didapatkan hasil saat arus mencapai nilai sebesar 29,35 A, waktu kerja relay tercatat sebesar 0,321 detik. Nilai ini merupakan waktu tunda terlama. Kemudian seiring meningkatnya arus menuju angka 53,73 A, waktu kerja relay terus menurun hingga mencapai angka 0,179 detik. Penurunan berlangsung secara bertahap dan teratur melalui titik-titik lainnya, seperti 0,281 detik pada arus 30,48 A hingga mencapai 0,192 detik pada arus 42,9 A. Pola ini menunjukkan adanya kesinambungan dan kestabilan dalam karakteristik kerja relay, yang menjadi indikator bahwa sistem proteksi bekerja sesuai dengan rancangan yang diharapkan.

Kata kunci : Proteksi, Generator, Relai, Waktu, Karakteristik.

ABSTRACT

PROTECTION SYSTEM ON GAS TURBINE GENERATOR 3006 J PUSRI III USING OVER CURRENT RELAY AT PT PUPUK SRIWIDJAJA PALEMBANG

(2025: xvi + 76 Pages + List of Figures + List of Tabels + List of Appendices)

M. ZAIDAN HAFIZH

062230310410

DEPARTMENT OF ELECTRICAL ENGINEERING

DIPLOMA DIII PROGRAM IN ELECTRICAL ENGINEERING

STATE POLYTECHNIC OF SRIWIJAYA

The Gas Turbine Generator 3006 J at PT Pupuk Sriwidjaja Palembang requires a reliable protection system to prevent damage caused by overcurrent disturbances. This study focuses on the setting configuration of the Over Current Relay (OCR) GE Multilin 889 based on technical data such as a power rating of 21,588 kVA, voltage of 13.8 kV, and nominal current of 903.1 A, with a current transformer ratio of 200:5. The relay setting was performed through calculations of pick-up current and operating time based on inverse time characteristics. From testing, calculations, and analysis on the Gas Turbine Generator 3006 J at Pusri III, it was found that when the current reached 29.35 A, the relay operating time was recorded at 0.321 seconds, which represents the longest delay time. As the current increased to 53.73 A, the operating time steadily decreased to 0.179 seconds. The decline occurred gradually and consistently at other key points, such as 0.281 seconds at 30.48 A and 0.192 seconds at 42.9 A. This pattern demonstrates continuity and stability in the relay's performance characteristics, indicating that the protection system operates as designed and effectively responds to overcurrent conditions.

Keyword : Protection, Generator, Relay, Time, Characteristic