

# Analisis pengujian rele proteksi urutan fasa negatif dan rele gangguan stator ground pada generator 400 mw unit 1 2 pltu pt Indonesia power up Suralaya = Testing analysis of negative phase sequence protection relay and stator ground fault relay on 400 mw generator unit 1 2 pt Indonesia power up Suralaya

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## Abstrak

[<b>ABSTRAK</b><br>

Sistem pembangkitan merupakan sumber utama penghasil energi listrik, baik untuk kebutuhan industri maupun kebutuhan publik lainnya. Dari pembangkit listrik didistribusikan ke sistem interkoneksi se-Jawa-Bali melalui saluran udara tegangan ekstra tinggi 500 kV. Namun dalam kenyataannya, sistem pembangkitan sering mengalami gangguan, salah satunya yaitu gangguan ketidakseimbangan beban dan gangguan sistem itu sendiri. Oleh karena itu, untuk mencegah gangguan tersebut diperlukan adanya sistem proteksi yang memenuhi persyaratan dan semuanya bergantung pada ketepatan penyetelan peralatan proteksinya. Peralatan proteksi untuk mencegah terjadinya ketidakseimbangan beban dan gangguan sistem itu sendiri yaitu rele urutan fasa negatif dan rele gangguan stator-ground. Penyetelan yang baik untuk rele urutan fasa negatif yaitu ketahanan generator untuk menahan arus urutan negatif secara kontinyu adalah 8% dan nilai K adalah 10, serta setting arus untuk definite time sebesar 0,827 kA dan setting arus untuk inverse time sebesar 0,946 kA. Rele 27TN memproteksi generator dari 0-30%. Pada generator ini, keluaran dari rele berupa alarm. Proteksi yang kedua adalah rele tegangan lebih netral 59N, rele ini memberikan proteksi 90% sehingga secara perhitungan bahwa kombinasi kerja dari rele 27TN dan 59N akan memberikan proteksi 100% pada stator. Penyetelan rele 59X sebagai proteksi backup adalah 28.95% yaitu 55 V dengan waktu tunda 6 detik ditujukan untuk berkoordinasi dengan rele 59N. Rele urutan fasa negatif dan rele gangguan stator ground mempunyai persentasi kesalahan yang sangat kecil, yaitu berkisar antara 0 -1.67%.

<b>ABSTRACT</b><br>

Generation system is the main source of electrical energy producer, both for industry and other public needs. From distributed power generation systems to interconnect Java-Bali through extra high voltage overhead line 500 kV. But in fact, the generation system is often disturbance, one of which is a load imbalance disorders and disorders of the system itself. Therefore, to prevent such disturbance is necessary to meet the requirements of the protection system and everything depends on the precision of protection equipment settings. Protection equipment to prevent the occurrence of load imbalance and disturbance of the system itself that is negative phase sequence relay and stator ground fault relay. The good setting to relay negative phase sequence generator that resistance to withstand the continuous negative sequence current is 8% and the value of K is 10, and the current setting for the definite time of 0.827 kA and the current setting for inverse time amounted to 0,946 kA. 27TN relay protects the generator from 0-30%. At this generator, the output of an alarm relay form. The second protection is more neutral voltage relay 59N, these relays provide protection of 90% so that the calculations that combined the work of rele 27TN and 59N will provide 100% protection on the stator. Setting relay 59x as backup protection is 28.95%, ie 55 V with 6 seconds delay time is intended to coordinate with the relay 59N. Rele rele sequence and negative phase stator ground

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