Studi Penyetelan Rele Diferensial sebagai Proteksi Generator dalam Mitigasi Nuisance Trip Akibat Gangguan Eksternal = Study of Differential Relay Settings as Generator Protection in Mitigating Nuisance Trips Due to External Fault

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Abstrak

Rele diferensial merupakan sistem proteksi tenaga listrik untuk mencegah gangguan internal. Namun, terjadi trip yang tidak diharapkan oleh rele diferensial akibat gangguan eksternal di jaringan transmisi. Gangguan tersebut didasari oleh layangan yang menyebabkan hubung singkat pada sisi jaringan transmisi. Sebagai mitigasi awal sistem proteksi PLTP, diperlukan pertimbangan ulang setelan eksisting untuk menjaga keandalan rele diferensial. Informasi komponen resistansi burden transformator arus dan setelan arus eksisting dibutuhkan sebagai basis kalkulasi setelan ulang rele. Berdasarkan kalkulasi dengan memperhitungkan faktor kesalahan, penggunaan kabel 4mmsq untuk CT lebih disarankan. Selain itu, nilai setelan 87#1 untuk arus pickup 1.125A, slope 17%, dan waktu tunda 2 siklus lebih disarankan akibat ditemukan faktor kesalahan pada komponen pendukung rele. Sehingga, beroperasinya rele diferensial diluar kehendak dapat diminimalisasi.

.....Differential relays are an electrical power protection system used to prevent internal fault. However, an unexpected trip occurred by the differential relay due to external fault in the transmission network. The fault was based on a kite which caused a short circuit on the transmission network side. As an initial mitigation for the PLTP protection system, it is necessary to reconsider the existing settings to maintain the reliability of the differential relay. Information on current transformer burden resistance components and existing current settings is needed as a basis for relay reset calculations. Based on the calculation that took account for error factors, the use of 4mmsq cable for CT is more recommended. Aside from that, the setting value of 87#1 for a pickup current of 1.125A, a slope of 17%, and a delay time of 2 cycles is recommended as a result of an error factor found in the relay supporting components. Thus, the operation of differential relays without intention can be minimized.