

RINGKASAN

ANALISIS SISTEM PROTEKSI DIFFERENTIAL RELAY DAN OVERCURRENT RELAY PADA TRANSFORMATOR 5 60/MVA DI GARDU INDUK 150 KV KALIBAKAL

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Transformator/trafo adalah sebuah alat untuk menaikkan atau menurunkan tegangan AC, bekerja berdasarkan prinsip induksi elektromagnet. Salah satu gangguan yang umum terjadi pada sistem di trafo adalah gangguan arus hubung singkat. Untuk mengatasi gangguan arus hubung singkat pada sistem di transformator 5 gardu induk kalibakal dapat menggunakan sistem proteksi yang dipasang pada *incoming* trafo dan *outgoing* trafo. Pada Transformator memiliki pelindung berupa *Differential relay* serta memiliki OCR (*Over Current Relay*) yang berfungsi untuk melindungi transformator dari gangguan hubung singkat (*short circuit*) pada transformator belitan, untuk mengatasi gangguan tersebut maka dilakukan perhitungan, arus hubung singkat 3 fasa sebagai dasar erja relai, setting relai differential, setting relai OCR. Serta melakukan perhitungan arus nominal trafo, perhitungan rasio ct, hingga mencari arus setting yang tepat, lalu dilakukan perbandingan antara perhitungan dan simulasi apakah setting relai sudah tepat. Tidak lupa pula dilakukan simulasi diluar dan didalam setting relai pada trafo untuk menguji keandalan trafo dalam hal mengisolir bagian yang diproteksinya saja. Pada setting awal relai terdapat relai yang bekerja secara bersamaan dalam hal ini tidak sesuai standar. Maka dilakukan Setting relai untuk menyesuaikan kerja relai sesuai standar PLN atau IEC 60255.

Kata kunci : Gardu Induk, *Differential Relay*, *Over Current relay*, Transformator

SUMMARY

THE ANALYSIS OF PROTECTION SYSTEM DIFFERENTIAL RELAY AND OVERCURRENT RELAY ON TRANSFORMERS 5 60/MVA IN KALIBAKAL SUBSTATION 150 KV

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Transformer / transformer is a device to increase or decrease AC voltage, works based on the principle of electromagnetic induction. One of the most common disruptions to the system in the transformer is short-circuit current disruption. To overcome the short-circuit current disturbance in the system in the transformer 5, the Kalibakal substation can use a protection system that is installed on the incoming transformer and outgoing transformer. The transformer has a protective in the form of a differential relay and has an OCR (Over Current Relay) that serves to protect the transformer from short circuit interference (short circuit) on the transformer winding, to overcome these disturbances, the calculation is performed, 3 phase short circuit current as the basis for relay work, differential relay settings, OCR relay settings. As well as calculating the nominal current of the transformer, ct ratio calculation, to find the right setting current, then do a comparison between calculation and simulation whether the relay settings are correct. Also do not forget to do simulations outside and inside the relay settings on the transformer to test the reliability of the transformer in terms of isolating the protected part only. In the initial setting of the relay there are relays that work simultaneously in this case not according to the standard. Then relay settings are performed to adjust relay work according to PLN or IEC 60255 standards.

Keyword: Substastion, Differential Relay, OverCurrent relay, Transformer