ABSTRAK

Pita Elisa Pratiwi Siahaan: *Analisis Setting Rele Arus Lebih pada Bay Trafo Daya 2 di PT.PLN Gardu Induk Lamhotma*. Skripsi. Fakultas Teknik Universitas Negeri Medan 2024.

Besarnya arus gangguan hubung singkat yang mungkin terjadi didalam suatu sistem kelistrikan perlu diketahui sebelum gangguan yang sesungguhnya terjadi. Nilai besaran arus hubung singkat yang diketahui akan digunakan untuk penyetelan rele proteksi. Tujuan penelitian ini untuk mengetahui settingan rele berdasarkan arus besaran arus gangguan hubung singkat di penyulang LH3 gardu induk Lamhotma sesuai analisis perhitungan dan simulasi pada penelitian ini. Metode panjang penyulang digunakan untuk menganalisis arus gangguan yang mengalir sepanjang penyulang. Semakin besar nilai arus gangguan hubung singkat semakin cepat waktu pemutusan rele. *Setting* rele proteksi dilakukan agar kontinuitas sistem kelistrikan dapat terjaga dan gangguan yang terjadi dapat diamankan secara selektif dan akurat. Hasil perhitungan arus hubung singkat terbesar di jarak terdekat 0% di penyulang LH3 sebesar 5296.78A dan besaran arus gangguan hubung singkat terkecil dijarak terjauh 100% sebesar 3422.25A. Hasil simulasi ETAP menunjukkan waktu kerja rele bekerja dengan baik, dimana saat terjadi gangguan di penyulang LH3 rele OCR pertama memutus adalah rele OCR pada penyulang. Hasil penelitian *setting* arus lebih OCR *incoming* dan *outgoing* berdasarkan hasil perhitungan dengan data yang ada masih dalam kondisi yang sesuai, namun masih terdapat selisih pada *setting* arusnya. Selisih pada *setting* arus *incoming* sebesar 0.901 sedangkan di *outgoing* terdapat selisih 1.7. *Setting* TMS hanya memiliki selisih 0,001 antara perhitungan dan data di lapangan. Nilai TMS yang di setting pada incoming sebesar 0.07 sedangkan pada incoming sebesar 0.12 sesuai perhitungan.

Kata Kunci: *Setting* rele, OCR, Gangguan Hubung Singkat, dan ETAP

ABSTRACT

Pita Elisa Pratiwi Siahaan: *Analysis of Overcurrent Relay Settings in Power Transformer Bay 2 at PT PLN Lamhotma Main Substation. Thesis. Faculty of Engineering, State University of Medan. 2024.*

The magnitude of the short circuit fault current that may occur in an electrical system needs to be known before the actual fault occurs. The known short circuit current value will be used for setting the protection relay. The aim of this research is to determine the relay settings based on the magnitude of the short circuit fault current at the LH3 feeder of the Lamhotma substation according to the calculation and simulation analysis in this research. The feeder length method is used to analyze the fault current flowing along the feeder. The greater the value of the short circuit current, the faster the relay termination time. Protection relay settings are carried out so that the continuity of the electrical system can be maintained and disturbances that occur can be controlled selectively and accurately. The calculation results of the largest short circuit current at the closest distance of 0% at the LH3 feeder is 5296.78A and the smallest short circuit fault current at the furthest distance of 100% is 3422.25A. The ETAP simulation results show that the working time of the relay works well, where when a disturbance occurs at the LH3 feeder, the first OCR relay to disconnect is the OCR relay on the feeder. The research results of the incoming and outgoing OCR overcurrent settings are based on calculation results with existing data which are still in suitable condition, but there are still differences in the current settings. The difference in the incoming flow setting is 0.901, while in the outgoing setting there is a difference of 1.7. TMS settings only have a difference of 0.001 between calculations and data in the field. The TMS value set for incoming is 0.07 while for incoming it is 0.12 according to calculations.

Keywords: Relay Settings, OCR, and Short Circuit Faults, ETAP