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## ABSTRAK

Abstrak; Mumayyiz Arifin dan Astra Firman (2019), Salah satu peralatan yang berperan penting dalam penyaluran daya listrik yaitu transformator daya. Transformator daya merupakan peralatan listrik yang sangat vital, oleh karena itu transfomator harus dipelihara agar dapat beroperasi secara maksimal dan jauh dari gangguan-gangguan yang dapat meyebabkan kegagalan transformator. Transformator dalam sistem tenaga membutuhkan tipe proteksi yang berbeda-beda. Salah satu relai yang akan digunakan untuk memproteksi transformator adalah realai differensial. Penelitian ini menunjukkan performa relai differensial terhadap transformator daya pada gangguan internal dan eksternal. Ada tiga tipe gangguan yang akan disimulasikan di PSCAD/EMTDC yaitu gangguan satu fase ke tanah , dua fase dan tiga fase, dengan resisitansi gangguan 2 ohm, 10 ohm dan 20 ohm. Sistem yang dikaji pada penelitian ini memiliki sumber 230 kV, 3 fase, 50 Hz dengan transformator *step up*, 23 kV/230kV, Y-Y, 100 MVA . Simulasi gangguan hubung singkat dan relai pada transformator menggunakan software PSCAD *(Power System Computer Aided Design).* Hasil simulasi menunjukkan bahwa relai differensial mampu mengirimkan signal trip untuk semua gangguan internal dan tetap blok untuk semua gangguan eksternal.

Kata Kunci : Proteksi Transformator, Relai differensial, PSCAD/EMTDC

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## ABSTRACT

Abstract; Mumayyiz Arifin and Astra Firman (2019), One of the equipment that plays an important role in the distribution of electrical power is the power transformer. Power transformer is a vital electrical equipment, therefore the transformer must be maintained so that it can operate optimally and away from disturbances that can cause the failure of the transformer. Transformers in power systems require different types of protection. One relay that will be used to protect the transformer is a differential reality. This study shows the differential relay performance of power transformers in internal and external interference. There are three types of noise that will be simulated in PSCAD / EMTDC, namely one-phase, two-phase and three-phase disturbances, with 2 ohms, 10 ohms and 20 ohms interference resisittance. The system studied in this study has a source of 230 kV, 3 phases, 50 Hz with a step up transformer, 23 kV / 230kV, Y-Y, 100 MVA. Simulation of short circuit and relay interference on the transformer using PSCAD (Power System Computer Aided Design) software. Simulation results show that differential relays are able to send trip signals for all internal disturbances and remain block for all external interference.

Keywords: Transformer Protection, Differential Relay, PSCAD / EMTDC