

ABSTRAK

Proteksi diferensial memiliki peranan yang sangat penting untuk melindungi kinerja transformator tenaga dalam menyalurkan tenaga listrik. Proteksi diferensial transformator memiliki sensitivitas tinggi, respon cepat dan memiliki karakteristik operasi yang berbentuk bias dan *slope*. Oleh karena itu, pada desain dan aplikasi proteksi diferensial transformator harus diperhatikan syarat-syarat proteksi diferensial agar relai diferensial tidak salah respon atau *restraint* terhadap arus *inrush* transformator dan terhadap gangguan di luar zona proteksinya. Tujuan penelitian ini yaitu untuk menentukan seting, analisis serta pengujian karakteristik *slope* dengan menggunakan mesin penguji relai proteksi CMC-356 dan *Software Omicron Test Universe 3.41*. Hasil perhitungan seting dengan data seting eksisting tidak ada perbedaan yang berarti sedangkan hasil pengujian karakteristik *slope* menunjukkan bahwa fungsi proteksi terhadap arus *inrush*, harmonik orde-2 dan orde-5 adalah stabil atau *restraint*.

Kata kunci : Transformator, Relai Diferensial, Bias, *Slope*, *Restraint*



ABSTRACT

Differential protection has a significant role in protecting power transformers' performance in distributing electric power. The differential protection transformer has high sensitivity, fast response, bias, and slope operating characteristics. Therefore, in the design and application of transformer differential protection, the requirements for differential protection must be considered so that the differential relay does not respond incorrectly or is restrained against transformer inrush currents and against disturbances outside its protection zone. This study aims to determine the settings and analyze and test the slope characteristics using the CMC-356 protection relay testing machine and the Omicron Test Universe 3.41 Software. There is no significant difference between the calculation results and the existing data settings. In contrast, the results of the slope characteristic test show that the protection function against inrush currents, 2nd order and 5th order harmonics is stable or restrained.

Keywords : *Transformer, Differential Relay, Bias, Slope, Restraint*

