

INTISARI

Penelitian ini bertujuan untuk mendesain sistem proteksi *Startup Auxillary Transformer* (SAT) dari gangguan internal dan eksternal dalam 3 skenario operasi. Desain sistem proteksi tersebut mencakup penetapan *rating Current Transformer* (CT), *rating Circuit Breaker* (CB), *setting* rele arus lebih dan *setting* rele diferensial. *Tools* Digsilent PowerFactory 18.1 yang digunakan untuk menentukan *rating* CB dan CT adalah *Load Flow* dan *Short CIrcuit Analysis*, sedangkan untuk menentukan *setting* rele arus lebih SAT dan *setting* rele diferensial SAT digunakan *tools Protection and Arc Flash Analysis*.

Hasil yang diperoleh berupa *rating* CT sesuai standar IEC 60044, *rating* CB sesuai standar IEC 60694, koordinasi rele arus lebih dan koordinasi rele diferensial. Berdasarkan hasil simulasi, *setting* rele arus lebih SAT sudah mampu berkoordinasi dengan sistem proteksi *eksisting* dan mampu menjadi *backup* bagi rele diferensial SAT. Disamping itu, *setting* rele diferensial SAT sudah terkoordinasi karena hanya beroperasi ketika terjadi gangguan di dalam zona proteksi diferensial dan tidak beroperasi ketika gangguan terjadi di luar zona proteksi diferensial.

Kata Kunci: *Rating* CT, *rating* CB, *setting* rele arus lebih SAT, *setting* rele diferensial SAT dan berkoordinasi.

ABSTRACT

This study aims to design a Startup Auxillary Transformer (SAT) protection system from internal and external faults in 3 operating scenarios. The design of the protection system includes determining the Current Transformer (CT) rating, Circuit Breaker (CB) rating, overcurrent relay settings and differential relay settings. Digsilent PowerFactory 18.1 tools used to determine CB and CT ratings are Load Flow and Short Circuit Analysis, while to determine SAT overcurrent relay settings and SAT differential relay settings are used tools Protection and Arc Flash Analysis.

The results obtained are in the form of rating CT according to IEC 60044 standard, CB rating according to IEC 60694 standard, coordination of overcurrent relay and differential relay coordination. Based on the simulation results, the SAT Overcurrent Relay setting has been able to coordinate with the existing protection system and is able to become a backup for SAT differential relay. Besides that, the SAT differential relay setting has been coordinated because it only operates when there is fault within the differential protection zone and does not operate when fault occurs outside the differential protection zone

Keywords: *rating CT, rating CB, SAT Overcurrent relay setting, SAT differential relay setting, and coordination.*