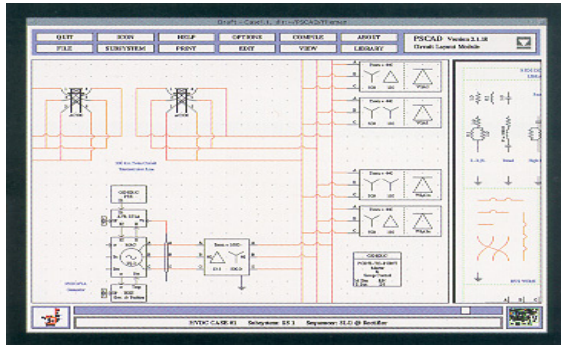




R&D Fund Project

Advanced Techniques For The Simulation And Testing of Protective Relays



The control interface of the RTDS Simulator



A view of the RTDS Simulator

Project Overview

Protective relays are vital for safe operation of power system. Nowadays, modern relays are equipped with a vast array of features to improve protection performance and to offer flexibility of application. In order for utilities like TNB to verify that the performance of a relay is in accordance to the required technical performance, several stages of conformance testing have to be completed. One of the most important methods to evaluate the actual behaviour of protective relays is the dynamic performance test, which is sometimes termed as transient network analysis.

This project aims to develop specific test cases that are directly related to TNB protection requirements. The project focuses on developing advanced test cases based on CIGRE general recommendations mainly for 3 types of protective relay i.e. distance/impedance, current differential and busbar relays.

Deliverables

- Procedures for testing the dynamic performance of busbar relays, transmission-level distance impedance protection relays, transmission-level current differential protection relays and distribution-level current differential relays, using newer models and modeling techniques
- Techniques and simulation models for applying electromagnetic saturation of CT models into real-time simulation, for automated testing relay VTF supervision and CTF supervision functions, for automated testing of interruption of DC power supply and techniques and computer program for full automation of routine tasks during dynamic performance test
- Custom-designed device for interfacing digital signals between RTDS simulator and relays under test, for implementing simulated VT and CT failure test using RTDS simulator and for implementing simulated DC power supply failure test using RTDS simulator

Benefits

- Promoting expertise and research within TNB in the field of real time dynamic relay testing
- RTDS simulator may be used for testing other equipment e.g. control devices
- Reducing dependency on foreign/ manufacturer laboratories for relay performance evaluation
- Helping to ensure a more stable and reliable electrical power system in Malaysia.