ABSTRACT

In electrical distribution system, the medium voltage cables are important as the neural in human body. A prototype cable fault locator was designed to enable the operator during the cable test to see any small voids, keeping the cable healthy, estimating the location of the fault before using burning process or thumper on the cable with TDR (The Time Domain Reflectometer) which may cause a corrosion of the cable sheath or sudden damage for the cable insulation.

The Very Low Frequency (VLF) Medium Voltage test with partial discharge and tan delta tests were chosen with MATLAB to prevent any sudden faults or cable damage by the high voltage test, estimating the life of the cable and help to have a decision before using cable burning or thumper on the cable with a TDR signal.

The conventional high voltage VLF testing device were developed in this research to have an interface between the VLF high voltage test and the partial detector circuit which achieves the estimation of the fault location and measuring the defect value (void, water tree, actual fault) by designing a VLF generating circuit involved with a partial discharge detection circuit, and simulating the circuit on MATLAB SIMULINK.

The operator can measure the insulation resistance of the week points on the cable, estimating the fault location by partial discharge detection system with WAVELET method and have a correct decision to complete or stop the test.