

# Testing and Diagnostics on Medium Voltage Cable Networks based on VLF

( Power Apparatus Testing Section : Lin, Wei-Ting )

Inspection and commissioning of newly installed HV equipment especially for the power transmission and distribution network is an important procedure to ensure the reliability and performance of the power supply. Since many years HV DC and HV AC testing at power frequency under laboratory and field conditions have been reliable tools for insulation assessment.

Beyond recent development in the international standards, the newer method and testing frequencies were added to these new standards like VLF – rather than power frequency. The assessment of aging and preventing damages of medium and high voltage underground cable system is highly important for utilities today.

Technologies and standards have been developing during the last decades. Numerous technical papers have been presented on international platforms and conferences. Physical and chemical procedures around and about medium voltage underground cables and its

accessories have been elaborated and analyzed into very detail. Technologies that can understand and measure have been developed and evaluated.

For insulation coordination it is needed to test the withstand strength of equipment with a stress similar for the stress in operation. Diagnostic procedures are more or less free in the stress of insulation. Requirements are not to damage proper insulation in the first and second to archive a sufficient of the status. DC testing conflicts both requirements when testing power cable.

Recognizing the danger of DC testing, VLF was one of the possible alternatives. First VLF was used as a possible withstand at operation voltage for a long time. Later dissipation factor measurement and partial discharge measurement have been analyzed.

Data reference : HV Cable testing and diagnostic Handbook

Original Author : Tobias Neier