

PD Test in Gas Insulated Substation Using UHF Method

Authors : T. Prabakaran

Abstract : Gas Insulated Substations (GIS) are widely used as important switchgear equipment because of its high reliability, low space requirement, low risk factor and easy maintenance, yet some failures have been reported. Some of the failures are due to presence of metallic particles inside the GIS compartment. The defect can be generated in GIS during production, maintenance, installation and can be due to ageing of the component. The Ultra-High Frequency (UHF) method is used to diagnose the insulation condition of GIS by detecting the PD signals in GIS. This paper identifies PD patterns for free moving particle defect and particle fixed on cone using UHF method. As insulation failure usually starts with PD activity, this paper investigates the differences in PD characteristics in SF6 gas with different types of defects. Experimental results show that correct identification of defects can be achieved based on considered PD characteristics. The method can be applied to prove the quality of assembly work at commissioning, also on a regular basis after many years in service to detect aged and conducting particles as a part of the condition based maintenance.

Keywords : gas insulated substation, partial discharge, free moving particle defect, particle fixed on cone defect, ultra high frequency method

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020