عنوان مقاله:

Impact of Gas Insulated Switchgear Structure on PartialDischarge Electromagnetic Wave Propagation

محل انتشار:

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خلاصه مقاله:

Different components of the Gas Insulated Switchgear (GIS) structure can have impacts on Partial Discharge(PD) Electromagnetic (EM) wave propagation. This is important in selecting PD sensor placement to provide an optimumsensitivity in its measurement and to provide accurate localization of PD sources within the GIS. In this paper, impact ofthe PD sensor direction angle (with respect to a PD source), on PD EM wave's propagation characteristics is investigated.To quantify and analyze the calculation results, the first peak of related electric field and the signal's power over the twofrequency ranges (۰.۳-۲ GHz and ۰.۳-۳ GHz) are recorded. The impacts of different enclosure diameters, different typesof spacers, and various circuit breaker contact gap distances (under different voltage levels) on this wave propagationare studied. Additionally, the two standard GIS busbar profiles, named: L-shape and T-shape; are discussed in thispaper. The results of this study shows that the attenuation degree of the measured PD EM waves is strongly influencedby the busbar dimensions and its components configurations. The GIS busbar designer can employ these results to selectthe proper PD sensors and their installation locations.

کلمات کلیدی:

Gas Insulated Switchgear, Partial Discharge, Ultra High Frequency measurements, Electric Field andElectromagnetic Wave