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Reference: **ISH2015_486**



Type:

ISH Collection

Title:

Influences of voltage waveforms on very low frequency (VLF) partial discharge behaviours

Abstracts

Very Low Frequency excitation is an alternative method of continuous AC high-voltage testing that overcomes the problem of large reactive power requirement associated with testing at normal power frequency (50/60 Hz). However, for partial discharge diagnostic testing and in particular under very low frequency sinusoidal voltage excitation, it has been found that the test results are different from those performed at power frequencies. On the other hand, partial discharge tests under standardised cosine-rectangular voltage waveforms give similar patterns when they are compared with results at power frequency. In this paper, the influences of excitation voltage waveforms on partial discharge characteristics at very low frequency are studied. Various voltage waveforms including sinusoidal, cosine-rectangular, sinusoidal with DC offset are applied on samples to investigate the partial discharge behaviours at very low frequency. Experimental results show that inception voltage of partial discharges is dependent on voltage waveforms. The rate of rise of the applied voltage might have influences on partial discharge magnitudes and occurrence rate. Also, there are considerable differences in partial discharge patterns, especially the phase distribution at different frequency excitations.

More Informations :

File Size:342 KB **Year:**2015
