World Academy of Science, Engineering and Technology
International Journal of Electrical and Computer Engineering
Vol:9, No:07, 2015

Characterization of Leakage Current on the Surface of Porcelain Insulator under Contaminated Conditions

Authors : Hocine Terrab , Abdelhafid Bayadi, Adel Kara, Ayman El-Hag

Abstract : Insulator flashover under polluted conditions has been a serious threat on the reliability of power systems. It is known that the flashover process is mainly affected by the environmental conditions such as; the pollution level and humidity. Those are the essential parameters influencing the wetting process. This paper presents an investigation of the characteristics of leakage current (LC) developed on the surface of porcelain insulator at contaminated conditions under AC voltage. The study is done in an artificial fog chamber and the LC is characterized for different stages; dry, wetted and presence of discharge activities. Time-frequency and spectral analysis are adopted to calculate the evolution of LC characteristics with various stages prior to flashover occurrence. The preliminary results could be used in analysing the LC to develop more effective diagnosis of early signs of dry band arcing as an indication for insulation washing.

Keywords : flashover, harmonic components, leakage current, phase angle, statistical analysis
Conference Title : ICEETA 2015 : International Conference on Electrical Engineering: Theory and Application
Conference Location : Paris, France
Conference Dates : July 20-21, 2015