

Department of Electrical and Computer Engineering

Title: « The Effect of Dielectric Covers on Impulse Behavior of Non-uniform Gaps »

Petros N. Mavroeidis
Post-Doctoral Researcher, KIOS Research Center
University of Cyprus

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Room ΠΤΕΡ E113, Old Campus
University of Cyprus

Abstract:

A common objective in the design of high voltage systems is gap compaction meeting safety and environmental standards. This can be achieved by using composite gaseous/dielectric insulation, which, utilizing dielectric covers, results in improved dielectric performance of insulation systems. Employing dielectric covers is a modern trend in high voltage technology assisting in gap compaction, giving an alternative to the use of SF₆ (Greenhouse effect gas), and having also applications such as in distribution overhead Lines.

The subject of this seminar is an experimental investigation on the impulse behavior of composite short rod-plane air gaps with a dielectric-covered rod under positive lightning and switching impulse voltages. The discharge development pattern at breakdown for these gaps is described as: an initial corona, emerging in air at the vicinity of the cover tip, is followed by coronas emerging along the cover surface, developing partly along the dielectric cover and in air alone. These surface coronas, increasing the electric field at the cover upper end, determine the inception conditions of a secondary corona. The latter emerging at the cover upper end may eventually cause breakdown, through a spark, that develops either along the cover surface or partly or solely in free air, bridging the gap that includes the dielectric cover length.

Biography:

Dr Petros N. Mavroeidis is a post-doctoral researcher at KIOS Research Center in the research project "Enhancement of power system integrity and stability using novel sensing technologies". He holds a MEng and a PhD in Electrical and Computer Engineering awarded from the Aristotle University of Thessaloniki, Greece, in 2002 and 2010 respectively. He is also equipped with a BSc in Economic Sciences awarded by the National and Kapodistrian University of Athens, Greece in 2012. He has extensive laboratory experience both in conducting experiments and in analysing and interpreting experimental data. His research work includes air and surface discharges with an emphasis on composite insulation. Currently, he focuses on power systems monitoring and stability enhancement. Petros is a member of IEEE since 2001 (S'01, M'10) and a member of the Technical Chamber of Greece since 2003.