Special Issue

New Trends in Reliability and Lifetime Improvement in Power-Electronic-Controlled Machines and Devices

Message from the Guest Editors

The innovative and efficient design of electrical insulation in power-electronic-controlled machines and devices is critical for enhancing their reliability and extending their operational lifetime. The inclusion of power electronics into the power system environment results in repetitive voltage impulses, harmonics from switching systems, and slow/fast rising voltage transients. These factors are known to introduce additional electro-thermal stresses, which results in significantly accelerating the aging process of electrical insulation. This accelerated aging occurs at a rate that is unpredictable based on existing life models. As a result, the traditional methods of predicting insulation lifespan and reliability are becoming less effective, necessitating new approaches and advanced diagnostic techniques to manage and mitigate these emerging stresses. Worldwide, researchers are invited to submit their original work relevant to the improvement of reliability and performance of power-electronic-controlled devices in electrical grids, which includes, but is not limited to, the implementation of advanced insulation materials and technologies.

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There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

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